

THE
SURVEY AND SETTLEMENT MANUAL.
VOLUME II.
RELATING TO THE
SYSTEM OF MEASUREMENT AND
CLASSIFICATION UNDER THE REVENUE SURVEY
OF THE
BOMBAY PRESIDENCY.

Compiled by Order of the Government of Bombay.

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PREFACE.

The present compilation is designed to be a supplement to the Survey and Settlement Manual published in 1882, and together with it to form a complete and authoritative book of reference on all matters connected with the Bombay system of Survey and Settlement. The fundamental principles on which the system was established are expounded in the well-known Joint Report of 1847, which, together with the interesting correspondence in connection with it, is contained in the existing Survey and Settlement Manual. The present compilation is devoted to explaining in detail the methods of working and the rules of procedure under which those principles were carried out in the varying circumstances of different districts both at Original and Revision Surveys. The materials used in the compilation have been (1) the published Settlement Selections, (2) the Departmental Rules of the several Survey charges, (3) authoritative publications such as "The Land Revenue of Bombay" by A. Rogers, Nairne's Hand-book, Cordeaux's Compilation, the old Circular Orders, and (4) the records of the Survey and Settlement Commissioner's office.

For the sake of convenience, the compilation has been divided into two volumes, Volume II and Volume III—the existing Survey and Settlement Manual forming Volume I of the whole work.

The compilation consists of four Parts, viz. :—

- Part I—Measurement.
- „ II—Classification.
- „ III—Settlement.
- „ IV—Miscellaneous.

Parts I, II, are contained in Volume II, and Parts III and IV in Volume III.

Part I—Measurement—has been compiled by Mr. F. B. Young, Superintendent, Land Records and Agriculture, C. D.; Section I—Deccan and S. M. C. Classification—of Part II has been compiled by Mr. J. C. Whitcombe, Superintendent, Southern Marátha States Survey; the remaining Sections (II—North Kánara, III—Gujarát, and IV—Konkan) of Part II and the whole of Part III have been compiled by Mr. H. V. Sathe, Assistant Superintendent, Konkan Revenue Survey on Special Duty, and Part IV by the office of the Director of Land Records and Agriculture.

All available information bearing on different points either directly connected with Settlements, or forming the routine of the Settlement Branch of the Department, has been carefully collected, and that relating to each point has been compiled in a separate chapter in historical sequence. All matters which have no direct bearing on the subject-matter of the chapter or which are not required for immediate reference, such as Departmental rules, forms, statements, &c., are relegated to appendices, which are arranged and paged separately under separate headings.

It is hoped that the compilation, together with the exhaustive introduction which is given at the beginning, will be found to contain a complete record of the chief functions of the Bombay Revenue Survey and Settlement Department.

H. V. S.

Poona, 31st August 1900.

INTRODUCTION.

These Volumes (II and III) of the Survey and Settlement Manual have been compiled under the instructions conveyed in Government Memorandum No. 7738, dated 30th November 1898, in order to provide, as far as possible, a complete record of the methods of working and the rules of procedure of the Bombay Survey and Settlement Department, in view of the final closing of the Department and the transfer of its records to the Land Record Staff of the Revenue Department. The general principles on which the operations of survey and settlement have been carried on have been described in the following introduction, which includes an historical summary showing the origin of the system of measurement of the land, classification of the soil and settlement of the revenue, and their development down to the present time, when the two former operations are no longer necessary on an extended scale, while the revision of the revenue settlements does not call for the maintenance of a special department.

2. About the year 1828 the Deccan was in a state of great impoverishment and exhaustion, partly in consequence of wars and natural calamities and partly of the continuous fall in prices of agricultural produce and of the consequent yearly increasing pressure of the State demand on the land. With the view of providing relief for the agriculturists Government determined to introduce a regular survey and assessment, and measures were proceeded with under the denomination of the "Survey and Assessment of the Deccan," and placed under the direction of Mr. Pringle of the Civil Service.

3. Mr. Pringle's Survey comprised a field measurement of all the cultivated and culturable lands of the village accompanied by a regular classification of the soil. He prepared elaborate estimates of the produce of the different kinds of soil, and after allowing for expense of cultivation, a certain percentage (55 per cent.) of the net produce was taken as the assessment of the land.

4. The execution of the different operations of Mr. Pringle's Survey was entrusted entirely to native agency which did not possess either the experience or integrity needed for the task, and at a subsequent period the results obtained were found to be nearly worthless. The preliminary work of measurement was grossly faulty and the estimates of produce which formed such an important element in the determination of the assessment and

which had been prepared in the most elaborate manner were altogether erroneous.¹

5. From the outset the assessments based on such a system proved to be quite unworkable without heavy adjustments and large annual remissions. In some districts the assessments were not even introduced at all, in none were they retained in their integrity, and in some instances after being introduced they were abandoned, and the former assessments again adopted. Things now went rapidly from bad to worse. Every year brought its addition to the accumulated arrears of revenue and the necessity for remissions or modifications of rates. The state of confusion in the accounts engendered by these expedients was taken advantage of by the native officials to levy contributions for themselves. Every effort, lawful and unlawful, was made to get the utmost out of the wretched peasantry. Numbers abandoned their homes and fled into neighbouring Native States. Large tracts of land were thrown out of cultivation, and in some districts not more than a third of the culturable area remained in occupation.

6. It was when matters had reached this crisis that, at the end of 1835, an examination and correction of the operations of Mr. Pringle's survey in the Indápur Taluka of the Poona Collectorate were ordered with a view to revise the settlement in that district. The duty of conducting the work was entrusted to Mr. Goldsmid of the Civil Service, then an Assistant Collector, and Lieutenant Wingate of the Engineers. With these gentlemen Lieutenant Nash of the Engineers was subsequently associated. This was the real commencement of the "Bombay Survey and Settlement System," which has since formed the ground-work of the Revenue administration of the entire Presidency.

7. The Department thus organized, which was called the "Poona Survey," commenced its operations in the beginning of 1836. As the operations progressed the extremely defective character of the original survey became apparent. Much of the measurement had to be undertaken *de novo*; but where areas were not faulty to any great extent they were accepted as the basis of the new assessment. All attempts to arrive at a theoretical ideal of assessment by endeavouring to discover the yield of different soils and assigning a certain portion of this as the Government demand, were abandoned and a simpler method of classing the

¹ The causes of the failure of Mr. Pringle's system will be found described in detail in the Revision Settlement Compilation of the Indápur Taluka and in the discussion in the Legislative Council which preceded Act I. of 1865 at pages 127—130, Survey and Settlement Manual, Volume I.

lands with regard to the character and depth of soil in each field was adopted. A land register was framed, and assessments were fixed on purely practical considerations as to the capability of the land and the general circumstances of the district.

8. This new survey and settlement, which was first introduced experimentally into the Indápur Táluka, proved so successful¹ that its operations were rapidly extended to other districts, the same results following everywhere. In the course of a few years, *i.e.* about 1840, a separate survey was organized for the Násik District under the charge of Lieutenant Davidson, who had been one of the early Assistants of Lieutenant Wingate in the Poona Survey. A year or two previous to this a somewhat rough survey of the Násik Dáng or hill country had been commenced under Mr. Fraser Tytler, C. S., the Assistant Collector in charge. This survey after the completion of Násik proceeded with the survey of the Ahmednagar Collectorate, and was afterwards entrusted with the survey and settlement of Khándesh.²

9. A year after the formation of the Násik Survey, that is August 1841, another separate survey was organized for the Southern Marátha Country and placed in charge of Mr. Goldsmid, C. S., and afterwards in charge of Captain Wingate on his return from furlough, in the beginning of 1844. Captain Wingate at once brought his former experience to bear and set to work to devise systematic procedure in every branch of the work. The duties of every officer were clearly defined in writing, and the two field operations,—measuring and classing,—were separated and kept quite distinct under separate officers. In all matters of test by the European officers, whether of measurement or classifi-

¹ In the second year of the Indápur Settlement the Revenue Commissioner reported to Government as follows:—"The sum *actually collected has never been so great* except during the first four years of our occupation, when, it is generally acknowledged, our demands were much too high;" and again, "the outstanding balances *have never yet been so low at the end of the official year as they were last year.*" A marked extension of cultivation was one of the immediate results of the settlement; nearly 68,000 acres of waste land having been brought under the plough by the end of the second year besides more than 3,000 acres reclaimed by immigrants from other districts, attracted to Indápur by the revived prosperity of the táluka. (Extract from paragraph 6 of the Government Selections entitled "Character of Land Tenure, &c. &c.")

² In 1847 the Nagar Survey was, on the departure of Captain Davidson, the first Superintendent, placed under the charge of Lieutenant G. S. A. Anderson, hitherto an Assistant Superintendent in the Southern Marátha Country Survey, and on his vacating his appointment by departure on furlough in 1854, his Assistant, Mr. F. Davidson, succeeded to the charge of this Survey, which by that time had moved into Khándesh. (Appendix B. to Colonel Anderson's No. 1045 of 1880.)

cation, a precise form of procedure was established, and the use of native agency for purposes of test was reduced to a minimum.

10. In 1851 Captain Wingate became Survey Commissioner, and Lieutenant W. C. Anderson succeeded him as Superintendent, Southern Marátha Country Survey, having served in that survey from the commencement of active operations in 1842. A considerable extension of the Survey Department was then effected as shown below :—

(1) The Poona Survey, which was then drawing to its completion, was placed under the charge of Lieutenant Francis, who had been for some seven years in charge of a classing establishment in the Southern Marátha Country Survey. On completion of the work in the Poona Collectorate, the survey of the Thána Collectorate, including Kolába, was assigned to this survey.

(2) In the same year (1851) a separate Survey Department was created for the Ratnágiri District¹ and another for Gujarát. The former was placed under Lieutenant Kembball, an Assistant detached from the Southern Marátha Country Survey, and the latter under Captain Fanning, also an Assistant Superintendent transferred from the Southern Marátha Country Survey, with an officer of the Civil Service associated with him to aid in settlement duties on account of the peculiarity of some of the land tenures in Gujarát.

(3) The Ahmednagar Survey (which was afterwards amalgamated with the Survey of Khándesh) had, in 1847, as previously stated, been placed under the superintendence of Lieutenant G. S. A. Anderson, an Assistant transferred from the Southern Marátha Country Survey.

11. Thus by 1852 (*i.e.* within about a year after Captain Wingate's appointment as Survey Commissioner) all the surveys in the Presidency were under the immediate charge of officers who had been trained under Captain Wingate in the Southern Marátha Country Survey.

¹ This survey was placed in abeyance as a separate Survey Department in 1856, doubt and difficulty having surrounded the work from the first, partly connected with the legal position of a large portion of the landholders of the Collectorate—the Khots—and partly from other causes, not the least of which was Lieutenant Kembball's health after a year or two compelling him to leave the Survey Department. No settlement had been effected and little progress of any kind made. This survey was afterwards absorbed in the Poona and Thána Survey. (Extract from clause 2nd of paragraph 9, Appendix B, to Survey Commissioner's letter No. 1045, dated 7th October 1880.)

12. It has been stated above that the first introduction of the system in Indápur in 1836 having proved a signal success, the survey operations were rapidly extended to other districts, the same results following everywhere. As experience was gained improvements were introduced in the methods of procedure, with the view of rendering them as simple and susceptible of thorough check and control as possible as well as to adapt them to the varying circumstances of the districts which successively came under the survey. But it was not till 1847 that a definite and permanent form was given to the system of survey operations. In that year, in accordance with the orders of Government, the Superintendents¹ of the three Surveys met at Poona and drew up a Joint Report² setting forth what they considered to be "the best means for bringing the somewhat diversified operations of the several Revenue Surveys of the Presidency into conformity as far as practicable and also for ensuring the results of the surveys being turned to the best account and maintained in their original integrity in the future management of the districts." The Superintendents besides defining the objects of a Revenue Survey, and the general principles on which the assessment on land should, in their opinion, be conducted, submitted a body of rules for (1) definition and demarcation of fields, (2) the settlement of boundary disputes, (3) the classification of soils, (4) the interior regulation of surveys and the administration of settlements, which having received the approval of Government, became an authoritative Manual for the conduct of all future survey operations. Up to this period, though there had been a general adherence to main principles, some diversity of practice had prevailed in different surveys. A greater degree of uniformity and completeness was now given to the system by these rules which are generally known

¹ (1) Mr. Goldsmid, (late) Superintendent of the Revenue Survey and Assessment in the Deccan; (2) Captain G. Wingate, Superintendent of the Southern Marátha Country; (3) Captain Davidson, (late) Superintendent of the Ahmednagar Survey.

² The rules and regulations laid down in this report were framed entirely on those then in use in the Southern Marátha Country Survey. It has been often erroneously supposed that those rules were not only in main principles but also in all particulars intended to be applied in all Surveys, whether in the Deccan or elsewhere. Such was however not the case. Those rules were never intended to apply in detail otherwise than generally to Deccan Surveys, in the circumstances then existing in the Deccan, as explained in paragraph 79 of the Joint Report. General "principles and results" were alone laid down "without entering into details upon points which are not of general application." To have attempted greater minuteness would, without answering any useful purpose, have fettered the operations of the Survey by enjoining particular methods of procedures which local circumstances might render inapplicable (paragraph 7 of Appendix B. to Survey Commissioner's letter No. 1045, dated 7th October 1880).

as the "Joint Rules."¹ The system as propounded in the Joint Report comprises three principal operations, *viz.* (1) Measurement; (2) Classification, and (3) Settlement. Each of these operations may be divided into the following sub-heads:—

I.—Measurement.

- (A) Sub-division of village lands into fields.
- (B) Determination and settlement of village boundaries.
- (C) Demarcation of village boundaries, erection of boundary marks.
- (D) Construction of maps.
- (E) Preparation and examination of measurement records, or Barsát Tapásni.

II.—Classification.

- (F) General procedure followed in classification.
- (G) Modifications subsequently introduced.
- (H) Test of classification.
- (I) Collection of statistics.
- (J) Barsát Tapásni of classification work.

III.—Settlement.

- (K) Pôt Paháni, and submission of settlement proposals for Government sanction.
- (L) Detailed calculation of rates.
- (M) Announcement of rates or Settlement Jamábandi.

13. As these operations have been treated of in detail in the respective parts of this work, a brief sketch of the principal features of each operation and of the procedure followed will suffice here.

¹ These will be found published in Vol. I. Survey and Settlement Manual, pages 31—45.

Six years before the submission of the Joint Report an interesting correspondence passed between the Bombay Survey officers and those of the North-Western Provinces on the subject of the advantages resulting from the system of Surveys followed in the two Presidencies. This correspondence will be found published as Appendix No. 1, pages i. to xxxv. of the Survey and Settlement Manual, Volume I., and a complete resumé of it will be found given in pages 117—124 of Volume II. on the "Land Revenue of Bombay" by Mr. A. Rogers.

I.—*Measurement.*

14. This operation is performed by native subordinates called measurers. The measurement is done by chain and cross-staff. The standard of measurement adopted is the English acre¹ with its sub-divisions—gunthas and annas. Before commencing the measurement of a village an order is sent to the village authorities intimating that on a certain day a measurer will arrive at their village for the purpose of effecting its measurement and directing them to give every assistance to him in carrying out the operation. A measurer is then sent to the village provided with the necessary measuring instruments, writing materials, &c. In commencing his work the measurer selects a field adjoining the village site and enters it in his Field Book as No. 1. He then measures the field and after entering the measurement details in his field book in the manner laid down in the

¹ The English *sub-division* of the acre has been rejected in favour of that adopted by Sir Thomas Muuro and Mr. Pringle, viz. :—

Annas.	=	Guntha.	
16		1	
		40	=
			Acres.
			1

The measuring chain (of 33 feet) is composed of sixteen links. The chain multiplied by one of its links is an anna. The chain square is a guntha, and forty square chains equal an acre. Regarding the advantage for calculation of these divisions of the acre Lieutenant Nash, previous to the commencement of the Survey, favoured me with the following remarks:—“The division of the acre into gunthas and annas seem to me to be one in every way accordant with the spirit of Indian calculation, and at the same time well adapted for the multiplication of the contents of the field by the rate, to find the amount of assessment. By having sixteen links in a chain measuring one side of a square guntha, you are enabled, without having an awkwardly long chain, to preserve the favourite native proportion between the divisions of the superficies of a field

$\frac{1}{4} + \frac{1}{16}$, or as they write it, ४१—* which, I think, it would be difficult to effect in any other way, also by dividing the acre into 40 gunthas you are enabled with ease to find what the amount at 1 rupee per acre comes to (on which according to the native custom you calculate the proper sum by taking so many sixteenths of it), for instance, if your rate is 7 annas you take $\frac{7}{16}$.

Thus if your field measures 5 acres 16 gunthas by merely placing different points and adding a nought, you are enabled to say, without altering a figure, that at 1 rupee per acre the assessment is 5 rupees 1 qr. 60 reas. That in a field measuring 7 acres 25 gunthas, it is 7 rupees 2 qrs. 50 reas. These advantages are of great importance with natives, and, I dare say, Mr. Pringle had them in view when he made choice of this division. I think also, that if you find it necessary to introduce a new system of measurement into the Násik District, unless outbalanced by the recommendations which the Káthi or some other native system of measuring may possess they ought to weigh much with you for the introduction of the anna chain. [Note (a) on page 20 of the Chándor Revision Selection, No. CXXX., New Series.]

rules on the subject (Part I. of this Volume) proceeds to measure the next adjoining field, and so on, until he completes his survey of the village. He is required to submit to the officer (Assistant Superintendent) in charge of the establishment to which he belongs reports (called "Vardi" reports) of the nature and quality of the work done every working day. The work done by the measurer is subjected to a regular and frequently-recurring¹ test by the Assistant Superintendent in charge of the establishment. No fixed amount of test is prescribed,² though it has been generally the practice to subject the measurer's work to a test not less than 10 per cent. It is essential that the test should be evenly distributed between the three items of measurement work, viz. :—

- (1) the Fields or Survey Numbers,
- (2) the Vaslas or Trapezia, and
- (3) the Area.

(A) *Sub-division of village lands into fields.*

15. This is effected by measurers. The ordinary minimum field is the area which can be cultivated by a pair of bullocks. This measure varies according to the soil and the kind of culture.

¹ In all the Surveys after 1852, a certain uniformity of practice as regards measurement and mapping prevailed. Though no precise regulations as regards the mode of testing the measurement existed, yet the test was generally efficient, and the measurement part, so far as regards correct area of fields, was correctly executed, and great improvements were in process of introduction in the mode of constructing village maps. No regulations had been laid down in the Joint Report in regard to the mode of testing measurement; it was a simple matter of common sense and honest work. But in 1855, some laxities in the mode of taking test of measurement which had been ascertained to exist in the Thána Survey led to an order (Government Resolution No. 3207, dated 7th July 1857) by Government prescribing, among other points, that all entries of test measurements should be taken in the officer's own hand. (Paragraph 11 of Appendix B. to Survey Commissioner's letter No. 1045, dated 7th October 1880.)

2. No fixed amount of test is prescribed; the amount and time of taking it may vary according to the confidence which may be placed in the work and qualification of the measurer or classifier. It is, however, desirable, when conveniently practicable, that part of the test should be taken after the measurer or classifier has completed his operations and left the villages. Superintendents of Revenue Survey are held responsible for the sufficiency and accuracy of the tests taken.

In the case of any measurement having been accidentally omitted or mistaken in the original Test Survey, the Assistant is at liberty to send a Kárkun to re-measure the omitted or doubtful line only, where from other data of his own, he can check the truth of the measurement so obtained. When his own work does not contain such means of check he must re-visit the spot and take the requisite measurement in person. (Paragraphs 7 and 8 of Government Resolution No. 3207, dated 11th July 1857, printed on page 20, Southern Marátha Country Departmental Circulars.)

The ordinary maximum field is double this area. Every holding which falls within these limits is made a separate field; larger holdings are divided and smaller holdings can be clubbed together, but not so as to include in one field different kinds of culture or lands held on different tenures. Every field (survey number) is shown on the village map.

16. The typical survey number is a field belonging to one man just large enough to be cultivated by him with one pair of oxen. It varies in area, therefore, with the character of the land and of the cultivation, but in practice it has not been possible to adhere to the type and therefore arose the necessity of clubbing several properties to form the survey number. Theoretically, as has been stated, the Survey unit is the area of land, however small, held by the registered occupant, but as the survey tenure places no restriction on sub-division of properties it became necessary to limit the size of the unit for convenience of Revenue Administration. In 1868, a limit was recognized by Government which varied in different tracts and in different classes of land.¹ Fields smaller than the prescribed limit are only permissible, with the express sanction of the Survey Commissioner, which sanction is given only in special cases.

(B).—*Determination of village boundaries and settlement of disputes relating thereto.*

17. While the survey operations in the Deccan were confined to districts which had been surveyed by Mr. Pringle, the cases of disputed boundary were comparatively few and unimportant. In other districts, Lieutenant Wingate gave it as his opinion that without some definite plan for fixing village boundaries the operations of the survey must be comparatively valueless. Nothing, however, would appear to have been done in the matter until 1847. In that year the subject was again pressed on the attention of Government in the well-known Joint Report in which a set of general rules for the determination of village boundaries and settlement² of disputes relating thereto was proposed

¹ *Vide* the scale of minima, &c., for different districts under section 98, Sathé's Land Revenue Code.

² Boundary disputes, though generally unimportant in themselves, are a most fruitful source of ill-feeling and contention. It is therefore highly desirable to settle them expeditiously on best data available. Survey officers have the best opportunities of ascertaining the correct boundaries of the villages to which their operations extend, and they have, therefore, been able, even without the power of enforcing the attendance of witnesses, to settle many thousands of boundary disputes; but it is necessary to give a finality to their decisions, and to place them in a position to obtain all procurable evidence relative to the subject of dispute. (Para. 3, page 126, Survey and Settlement Manual, Vol. I.)

by the three Superintendents. These rules were sanctioned by Government in their letter No. 5593, dated 22nd September 1848, and afterwards remained in force till 1865, when they were repealed by the provisions of the Bombay Survey Act I. of 1865. These provisions were repealed in 1879 by sections 118 to 121 of the Land Revenue Code which contains the present law on the subject. Under this law the disputes are settled either by arbitration, or after a formal inquiry by a Survey officer, subject to the Survey Commissioner's judgment in appeal, which is final.

(C).—*Demarcation of village boundaries—Erection of boundary marks.*

18. The erection and preservation of boundary marks on village or field boundaries have, from the days of the Joint Report, been considered and insisted on as essential to the system. In the early days of the Survey the importance of these marks was not sufficiently understood, and in Mr. Pringle's survey no artificial boundary marks were made use of; rivers, nálas, &c., wherever they existed, being recorded as the boundaries of villages or survey fields. When the revision of Mr. Pringle's work was commenced by the Poona Survey in 1836, no boundary marks were erected, and it was not till some four or five years after that any attempt to put up artificial marks was made in this survey, and even then the use of stones was much resorted to. In the Southern Marátha Country Survey the work had not proceeded more than a month or two, when the difficulty and the expense of procuring stones and the probable unsatisfactory nature of such marks, induced the authorities to try earthen banks as boundaries. In the first instance continuous ridges about one and a half foot high were tried. These were at once found to involve more labour than could be promptly obtained, and, from their small elevation, to be of doubtful permanency. Next, ridges, $16\frac{1}{2}$ feet long and 3 feet high, were ordered to be erected at the corners of survey fields and at intervals along their sides 5 chains apart. After a time the size of these marks was somewhat reduced and also the distance between them was somewhat increased. The ordinary distance between two boundary marks on a straight line was put at 10 chains or 110 yards, the length of each bándh (mound) or ridge being reduced to $10\frac{1}{2}$ feet. By marks of this kind, supplemented by stones at the minor bends, the whole of the lands measured by the Southern Marátha Country Survey were demarcated. The distance between the bándhs (mounds) has since been somewhat increased involving the erection of fewer bándhs.

19. In the Deccan, the system of demarcation has from the beginning been generally the same as in the Southern

Marátha Country Survey, though, as above remarked, stones were largely used in place of bándhs up to 1852. In this year by a Government order,¹ dated 20th August 1852, the use of bándhs, supplemented by stones at bends, was generally ordered for the Deccan, and where they had not been systematically put up at the time of survey the duty of getting them erected was left to the Collectors.

20. In the Konkan Survey fields or Survey numbers were made of small area ranging from 1 to 5 acres, and a number of separate holdings were included in one survey number as Pót or subordinate Survey numbers, each being separately measured, classed, assessed in proportion to its quality, and separately recorded²; but no boundary marks were erected to define the limits of these subordinate numbers within the Survey numbers, while the boundaries of the latter were demarcated exclusively by stones. This exclusive use of stones as boundary marks encouraged encroachments on waste and varkas lands to such an extent that in 1878 it was proposed to take steps for the better definition of boundaries without waiting for the Revision survey. The magnitude of the task and the inefficiency of the agency available, however, prevented any immediate measures being taken, and it was not until the commencement of the revision Survey that any attempt was made to assimilate the Konkan Survey system of demarcation to that in force in the Southern Marátha Country and Deccan Survey.

21. In the Gujarát Survey it was the custom to demarcate only the principal corners of Survey numbers by boundary marks, the bends and angles on the boundary lines being left undemarcated. This system was in 1878 condemned by the Survey Commissioner, Colonel Anderson, who considered it "objectionable and likely to frustrate the objects of the survey at some future time." He therefore proposed to Government that the Southern Marátha Country system of boundary marks should be adopted in Gujarát. This proposal was endorsed by the Commissioner, N. D., and finally approved by Government in their Resolution No. 2608, dated 21st May 1878.

22. In this Resolution it was decided that, with the exception of the Panch Maháls in which the original Survey was then proceeding, in all districts in which bends and angles had not been demarcated, the Collectors should arrange for the erec-

¹ Pages 16 to 20, Part I.—Measurement—of this Volume.

² Pót numbers are not shown in the map but in the sketches called 'Gats' in the Pakka Súd. (*Vide* remarks on Pakka Súd, page 165 Section IV. Part II. Classification.)

tion of boundary marks with the help of their available taluka establishments. Accordingly in the Panch Mahals the work was taken in hand by the survey parties and completed; and in the other districts orders were issued by the Commissioner, N. D., that the village officers should undertake the duty, and that in the event of their failing to do so, they should be made to pay the cost of having it done by trained measurers.

23. Under these arrangements the work of demarcation on the Southern Marátha Country system was completed in the whole of the Surat and Broach Districts and also in nearly the whole of the Kaira District by 1884. In Ahmedabad, however, owing partly to the inability of the Talátis to carry out the work, and partly to the near approach of the revision survey, very little progress was made. Two years later, that is in 1886, Revision Survey was commenced in that district, but as the measurement operations were carried on on the "partial" system,¹ the work of demarcation had to be left over to be done by Talátis as in other districts. Very little progress was made in carrying out the work in the subsequent years, and the matter was eventually set at rest by the following orders² of Government:—

"It is stated, however, that in the Ahmedabad District there are marks at the larger angles, and as the Commissioner, Survey Commissioner, and local officers are satisfied that demarcation has already been carried out as far as is necessary to prevent encroachments, no further action appears to be required in that district."

24. The present law on the subject of erection and maintenance of boundary marks is contained in sections 122 to 125 of the Land Revenue Code and the Rules (100 to 107) passed under section 214 of that Code.

25. The different descriptions of boundary marks used in different Surveys may be enumerated thus:—

Kinds of boundary marks.	In what Survey generally used.
1 Bándhs or "Iranis" (mounds) ...	All the Surveys.
2 Burajs (cairns) ...	Konkan Survey.
3 Stones ...	All the Surveys.
4 Khunts (a masonry pillar) ...	Gujarát Survey.
5 Wooden Posts ...	Kánara Survey.

¹ *Vide* para. 54 *infra*.

² Government Resolution No. 2753, dated 26th April 1898.

A "vacant strip" of ground between two survey marks is also considered¹ a survey mark within the definition of section 3 (9) of the Land Revenue Code.

(D).—*Construction of Maps.*

26. In the early days of the Survey village maps were constructed on measurement work of the roughest description and without the aid of instruments for measuring angles. As the work advanced and stricter supervision was exercised, some degree of excellence was attained, but it was not until the commencement of revision operations in the Poona District about 1864 that an attempt to give any scientific precision to the survey, or to ensure accurate topographical results was made. The question as to the plan on which the revision survey should be conducted formed the subject of considerable discussion, and under instructions from Government, the then Survey Commissioner (Lieutenant-Colonel Francis) held a conference with the officers of the Great Topographical Survey with the special object of incorporating the work of the Bombay Revenue Survey with that of the Topographical Survey so as to produce maps based upon points fixed by the latter Department. The result of the conference was that a system² of traverse survey was first introduced as a new feature into the Bombay Revenue Survey, and Indápur, which was then being re-measured preparatory to revision settlement, was the first táluka to which that system was first applied. In reporting the results of the Traverse Survey in this táluka Colonel Francis observed as follows³:—

"From a personal inspection of the táluka map as well as from information obtained from Colonel Laughton (under whose supervision the work was carried out), I am convinced that under this system of survey we shall be able to turn out a more accurate district map than any hitherto prepared by our Department, while at the same time the village maps, owing to their being plotted in a circuit protracted with the mathematical accuracy which is obtained under this system will be more accurate than before."

Government considered these results "very satisfactory," and ordered that the traverse system should be adopted wherever found suitable⁴.

¹ Government Resolution No. 4609, dated 31st May 1892.

² For rules regarding this system, see Chapter VII.—Part I.—Measurement.

³ Survey Commissioner, N. D.'s letter No. 352, dated 9th November 1865.

⁴ G. R. No. 5006, dated 15th December 1865.

27. The plan of thus working in co-operation with the Imperial Survey¹ which has since been extended to other districts has proved successful, and at the present day the village map which is constructed with great accuracy and scientific precision, besides presenting a thoroughly correct delineation of field boundaries (its chief object), shows village sites, roads, paths, tanks and the physical features of the country within its limits with considerable fidelity.

28. As a rule three copies of the village map are prepared, viz. :—

(1) The kacha or original map.

(2) A copy for the use of the classer and for the Pôt Paháni (detailed field inspection).

(3) A fair copy or Pukka map to be finally sent for printing.

29. All maps of plain country are now made on the uniform scale of 8 inches to one mile, a scale sufficiently large for every purpose. In some parts where survey fields run very small, the use of double this scale is found to be advisable.²

30. Under section 213 of the Land Revenue Code, the village map is included in the "Survey Records," and all the rules and orders regarding inspections, extracts or copies of such records are applicable to the former.

(E).—*Preparation and examination of the measurement records or Barsât Tapásni.*

31. A general sketch has now been given of the operations performed by a measuring party during the 'fair' or 'field season' as it is called, which in this Presidency commences in October and continues until the 5th of June. At the close of the fair season the party returns to Head Quarters, where it is employed throughout the recess season on the "Barsât Tapásni," otherwise called the "recess examination" of the measurement records prepared during the previous field season. In the course of this examination the rough and fair field books are carefully compared

¹ In all the surveys preparatory to the present revision of settlement the Great Trigonometrical Triangulation has been taken as the basis of survey and the system of village traversing has been adopted, thus giving the maps when combined into taluka and district maps a topographical as well as revenue value.

² Village maps shall be prepared under the orders of the Survey Commissioner showing each survey number. The positions of the boundary marks of each survey number shall be shown on the said maps. [Rule 5 of the Rules under Rule 55, Land Revenue Code.]

in order to see whether or not the entries of the measurements of all the Waslas of both culturable and unculturable numbers have been correctly copied from the former into the latter, and also whether the boundary marks entered in the boundary sketch of the fair correspond with those in the rough field book. The lengths and breadths of the Waslas and the distances of the boundary lines as entered in the rough field book are taken off a scale and applied to the corresponding lines in the sketches of survey numbers in the fair field book and map (original or kacha) in order to see whether these are drawn correctly. The positions of temples and other buildings in these sketches and in the map, and the directions of roads and nálas shown in them are also examined by scale and compasses. In making this examination if an error is found of less than 8 annas,¹ it is not taken into account; an error of more than 8 annas and less than 1 chain is considered a small error, and anything in excess of a chain is considered a large error. Such errors, whether large or small, if they are found in the map are always corrected when it is possible to do so.

32. After the rough and fair books and the map have been examined in the manner above explained, the areas of the several numbers as computed and recorded by the measurer (in a Patrak statement called the Gunákar Book) during the field season are examined by calculating them afresh Wasla by Wasla and any errors found are shown to the Assistant Superintendent and are corrected under his orders. The area finally fixed in this examination is then entered in the column provided for it in the fair field book.²

33. A fair copy of the map (pukka map) is then made by pricking off the kacha or original map on a clean sheet of paper and copying every thing from it first in pencil and then in ink on the clean sheet, and also another (called the classer's map) on a tracing cloth. When the examination of the rough and fair field books has been carried out, the areas verified and confirmed, and the copies of the village maps prepared in the manner above detailed, all the operations connected with measurement are considered perfect and complete and all the papers and statements prepared in the course of the Barsát Tapásni are then sent to the Head-Quarter Office.

II.—Classification.

34. The operation which follows Measurement is that of Classification, which has for its object "the determination

¹ Annas 8 = 8 links; *vide* footnote on page ix *supra*.

² Formerly a separate paper called Kacha Súd was prepared in which all the numbers of the village with the area of each number as finally fixed were shown

tion of the relative value of the fields into which the land is divided during the process of measurement." This operation is minutely technical in character, and as its results do not admit of being ascertained with anything approaching to mathematical exactness, it is greatly dependent for its accuracy and uniformity on the method of procedure, as well as on the ability, experience, and integrity of the agency employed in carrying it out. The operation is therefore entrusted to a special agency called the Classing Party composed of trained and experienced native subordinates called Classers. These are guided by a set of fixed rules (these as applied to different districts are detailed in Part II.) and their work is closely supervised and subjected to test by the European officer (or Native Surveyor or Nimtádar¹) in charge of the party. In the course of this operation, while every field is again subjected to examination, and the accuracy of each entry in the measurer's field book tested and established, the varieties and proportions of soils in each field with a minute description of every well or other source from which water for the purpose of irrigation is obtained, &c., are entered by the classer in his field book, which is kept in the same manner as that of the measurer's (para. 14 above).

(F).—*General Procedure followed in Classification.*

35. The procedure followed in carrying out the operation may be explained thus:—As in the case of Measurement an intimation is sent to the village authorities that on a certain day a classer will arrive at their village to classify its lands, and directing them to give him the necessary assistance in the operation. A classer is then appointed to the village provided with the necessary books, writing materials, and classing instruments. When the classer comes to the field he is going to class, he first pricks off an outline sketch of it in his field book from the village map and according to the area divides it up into a number of squares or compartments of from one to two acres each, according to the size of the field and the difficulty of classification, but never into less than two "shares," however small the field may be. He then classes each of these squares or shares, as they are technically called, separately digging in about the middle of each to ascertain the depth of soil, and if necessary, on account of the variation in the depth of soil appearing to be great, digging also

¹ Of late years the paucity of European Assistants has made a system necessary whereby each party is placed in the immediate charge of a Native Surveyor of experience, and two or more parties have been linked together under a European Assistant responsible for the test of the work of both the Surveyor and also to a certain extent of the men under him.

in other places besides the middle. Having satisfied himself as to the average depth of soil the classer notes this and the description or "order"¹ of the soil and any depreciating qualities (faults)² such as very undulating surface and intermixture of stones, &c., in his field book in the square or share in question, and also the class of soil, resulting, according to the rules of the district, from the combination of all he has recorded. Each class bears a certain technical valuation in annas. Having thus proceeded through all the "shares" of the entire field, he then makes up the average valuation in annas of the entire field and records it below the entry of the field in his field book.

36. The classer also notes in his field book the distance of the field from the village and from water as well as any circumstances, apart from the quality of the soil which, in his opinion, affects its value. Thus every field in the village is independently classed on its own merits.

(G).—*Modifications subsequently introduced.*

37. The general principles of classification and the scale of values as laid down in the Joint Report have been followed up to the present time, with such modifications in details as were found necessary to meet the circumstances of different kinds of cultivation or the peculiarities of the different districts, which successively came under the Survey. Thus, in the Hangal Taluka of the Dhārwar Collectorate which came under the Survey in the year following that of the submission of the Joint Report, a detailed system of valuing the supply of water to rice and garden lands was for the first time introduced.³ When the operations reached

¹ In every district, varying with the geological formation, certain well-marked descriptions of soil are met with. These are defined in the detailed orders regarding the classification of each district.

There are three "orders" of soil recognized in the Joint Report, 1847. These are as follows:—ORDER I.—Of a fine uniform texture varying in colour from deep black to dark brown. ORDER II.—Of uniform but coarser texture than the preceding and lighter also in colour, which is generally red. ORDER III.—Of coarse, gravelly or loose texture, and colour varying from light brown to grey.

² These vary in different descriptions of soil and cultivation. *Vide* Part II.—Classification.

³ The plan followed for the classification of the soil in this district was the same as that described in the Joint Report by the Superintendents of Survey, dated 2nd August 1847, which has since been approved of by Government, but a new system was adopted for valuing the supply of water to rice land, which I shall now shortly describe.

The method is very simple, and quite as systematic as that adopted for the valuation of the soil. The varying supplies of water obtainable for the irrigation of rice lands are by this system referred to one or other of the following six classes which have been found sufficiently numerous for an equitable distribution of the assessment. Consistently with the attainment of this object, it is desirable to have

the rice-growing districts of the Konkan, where the rainfall being ample and certain, the water factor was considered of as much importance as the soil in the valuation of rice lands, the Joint Report scale of values was divided between the two factors, 8 annas being allowed to soil and 8 annas to water.¹ The same principle was subsequently extended to rice lands in Gujarát. As regards the classification of the water-supply of garden lands, the same general principles have been followed in the different Surveys as those enunciated in the Joint Report, though modifications in detail have been introduced from time to time to meet the peculiarities of each district as it came under the system.

(H).—*Test of Classification.*

38. The mode of test to which the original classification work is subjected has always been what is called an "Independent Test."² The testing officer is required to select his field and proceed with every step of his classification proceedings in entire ignorance of what the classer has done, how many shares he has taken and how he has valued each. When he has completed his classification of the field and recorded the result, then, and then only, is he to look at the classer's field book and see what the classer's valuation has been, and in case of any marked difference from the test valuation he can go to the spots, the entries of which in the classer's field book have caused the difference in valuation, and see if the classer's entry is clearly erroneous from want of judgment, want of due care, or wilful error. In some cases in very difficult soils he may find that the classer's valuation is more correct than the test in which certain points of depreciation have escaped notice, in which case the testing officer is not allowed to alter his own valuation in the returns of differences

the number of classes as few as possible, as by this means the distinctions between each are more strongly marked, and the work at once rendered more simple and easy to test. [Extracts from paragraphs 15 and 16 of Mr. Wingate's Report No. 235 of 1848, on the Talukas of Kod, Dhárwár, and Mishrakote Division of Hubli, pages 51 and 52 of the volume.]

¹ In our classification scale we take 8 annas as the highest rate for soil and 8 annas for water, making a one rupee scale for the two elements combined. [Paragraph 10 of Colonel Francis' Report on the Original Settlement of the Panwel Taluka, Kolába District.]

² A test of the original classification made by the subordinate officers employed for this purpose shall be taken by the officers in charge of classing establishments, in such manner and to such extent as may be directed by the Survey Commissioner. The said test shall be an independent test, that is to say, it shall be made by the testing officer in entire ignorance of the original classer's proceedings or records until it has been completed and its results have been finally determined, when only the original classing valuation and the test valuation shall be compared and their separate results recorded. [Clause 8 of Rule 55 under section 214, Sathé's Land Revenue Code, page 293, 2nd Edition.]

between test and original classification, but is required to note that his own valuation is by so much in error. This mode of test was introduced by Captain Wingate in the Southern Marátha Country Survey, and has since been, with rare exceptions, punctiliously adhered to in all the Surveys.

39. The system of classification above sketched out is so simple and so easily worked by Native subordinates in conformity with certain established principles that the average difference between the original classification and test does not exceed six or seven pies in a maximum valuation of one rupee. The classer takes the class at intervals of about 80 to 100 yards, and then strikes the average of the entire field. The classification of a 20-acre field does not take more than 20 or 25 minutes, and 7 or 8 such fields are done in one day by one classer of whom 13 to 15 form a classing party under one officer, Assistant Superintendent, Head Surveyor, or Nimtáandar. A proportion varying from 5 to 15 per cent. is done over again by way of test by the officer in charge in the manner explained in the preceding paragraph.

(I).—*Collection of Statistics.*

40. In addition to the actual field work, the classer collects a mass of statistics required for Settlement Reports. This is done in the afternoons, the mornings being devoted to field work. The points relating to which the statistical information is collected will be found enumerated in Chapter V.—Statistical Information—Part III.—Settlement.

(J).—*Barsát Tapásni of Classification work.*

41. The next and the last operation of the classing party is to examine carefully the entries in the classing books and other papers prepared in the course of the classification during the field season. As in the case of measurement, this examination is called the "Recess examination of the classification work" or the "Classing Barsát Tapásni" and is effected during the five months of the recess season. In this examination the measurer's and classer's books are compared to see whether the entries in the former as to the relative sub-division of each Survey number, its tenure, the name of the holder or occupant, &c., agree with those in the latter. When a difference is found in any of these entries, the case is referred to the officer in charge and dealt with according to his orders. The entries of culturable and unculturable (kharáb) areas are then examined, and corrections or alterations, where necessary, are made under the orders of the officer in charge.

42. After the measurer's and classer's books have been compared in the manner above explained, the classer proceeds to examine the classification of each number entered in the sketches

of Survey numbers in the "classing book" "share by share." When this is being done, if any difference is found between the entries in the sketch and the other entries in the classer's book of the valuation annas deduced therefrom, the sketch entries are considered correct and the other entries are corrected and made to correspond with them. In the case of numbers subjected to test, if there is any difference between the original and the test valuation, the necessary correction is made under the orders of the officer in charge.

43. In the case of rice and bagáit numbers, the valuation annas as well as other particulars relating to the duration of the water-supply, &c., are carefully examined, any corrections or alterations found necessary being made with the officer's sanction.

44. Of the numerous statements and papers prepared in the

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|------------------|---|--|
| 1 1. Paháni Súd. | 3 3. Register or Akár-band (Súd ¹ in the Konkan Survey). | course of this examination, only the three marginally noted, which are |
| 2 2. Darwari. | | |

of a *quasi* permanent character, are prepared in connection with the final operation of the Survey, viz. Settlement. The remaining, which are prepared for temporary use, are either destroyed or relegated to the B. Class records after the táluka to which they relate has been brought under the settlement.

III.—Settlement.

45. The settlement which forms the last stage in the Survey

I. Submitting settlement proposals (i.e. writing of the Settlement Report) for Government sanction.

II. "Pót Paháni" or detailed field inspection.

III. Calculation of assessment.

IV. Announcement or Introduction of assessment—the Jamábandi.

and Settlement operation comprises the marginally noted subsidiary operations. These operations have been treated of in detail in Part III. Volume III., and the order in which each of the operations is undertaken has been

explained in the introductory remarks to that part, so that a passing reference to them is all that is necessary in this place.

(K).—*Pót Paháni and submission of Settlement proposals for Government sanction.*

46. At the completion of the Classing Barsát Tapísni, the papers necessary in connection with the Pót Paháni operation

¹ *Vide* form of Paháni Súd and the remarks thereon—page 132, Section III. Part II. Classification.

² *Vide* Appendix N. to Section I. Part II. Classification.

³ The Akarband is the valuation roll of the village; *vide* Chapter XXV. Survey Records, Part III. Settlement. Vol. III.

⁴ *Vide* form of Súd and the remarks thereon—pages 164 and 165, Section IV. Part II. Classification.

(Chapter II., Settlement, Part III., Vol. III.) are made available, and the first step which the Superintendent takes is to write to the Táluka authority—through the Collector—to have that operation carried out. The Superintendent then proceeds with the settlement scheme (fixing the groups and rates, &c.). Guided by his own experience, and also by the information supplied by the Assistant Superintendents, as to local peculiarities of climate, rainfall, communications, &c., and the past revenue and the agricultural history, the Superintendent first divides the tract for settlement into groups or assessment circles, and proposes rates of assessment which he thinks suitable. When his scheme is completed and he has satisfied himself as to the suitability of the proposed rates by working them out in detail in a few cases, and calculating the revenue of each village, he submits it for the sanction of Government in a report called the Settlement Report. In this report, among other matters, the physical characteristics of the tract, its climate, population, state of agriculture, past revenue history, &c., are fully described. The report is accompanied by tables containing statistical information and a statement (now called Appendix Q.) which shows at a glance the existing revenue as contrasted with the revenue estimated to result under the proposed rates in the case of each village comprised in the tract for settlement.

47. The report is submitted through the Collector, the Survey Commissioner, and the Commissioner of Division, and it is on the joint opinion of all these officers that Government decide and issue their orders.

(L).—*Detailed calculation of Rates.*

48. On receipt of the Government orders, the detailed calculation of assessment on the data as to area and valuation of every field recorded in the Akárband is proceeded with. When the detailed calculation is completed and the assessment column of the Akárband is filled up, the papers are sent to the Mámlatdár with instructions to prepare the Vasulbáki Patrak (statement showing the original and revised assessment of each holding in the village—*vide* Chapter on Pót Paháni, Part III. Vol. III.) and other subsidiary statements required in connection with the final operation of the Survey Settlement, viz. the announcement of rates.

(M).—*Announcement of rates. The Settlement Jamábandi.*

49. In the early days of the Survey the practice was for the Superintendent of Survey to make the first Jamábandi¹

¹ With the Register (No. 1) as a basis to go upon, the Village Accountant proceeds every year to record the actual state of the whole of the village lands

Settlement of a surveyed district. The cultivators were called up village by village and the area and assessment of his holding as recorded by the Survey were explained to each. Any objections to the entries made or the assessment fixed by the Survey were duly heard and disposed of; also lands were set apart for public or Municipal purposes according to the requirements of each village, and all questions as to exemption from Land Revenue tenures, &c., were enquired into and settled. All the village accounts were then prepared, and after the collection, according to the Survey rates, had been made for the year, a report, called the "Final Report," showing the actual effect of the Survey as contrasted with the estimated revenue shown in the preliminary report, was submitted to Government. If in their orders on the final report Government desired any amendment or alterations to be made in the grouping or rates, these were duly carried out, and the papers were then handed over to the Revenue Department.

50. Under the present practice which has originated with the Revision Survey, only one report is submitted, and any changes ordered by Government are made before the rates are finally calculated and announced in the manner described above. After the announcement has been completed and a notification fixing the period of the duration of the rates has been published in the *Government Gazette* the papers are handed over to the Collector for the future administration of the Revenue Survey Settlement.

51. Such are the chief features of the Bombay Revenue Survey system, which, commencing in the Indápur Táluka of the Poona District in 1836-37, had by 1894 extended throughout the Presidency, the last táluka brought under it being the Peint Táluka of the Násik District.

52. By 1867, the earliest settled tálukas began to fall in for revision, and as the policy of Government had always been to keep

and the amount to be levied from various parties for their occupation. The examination and approval of this annual record by competent authority is termed the Jamábandi.

The word Jamábandi properly means the fixing of the land revenue to be levied during the year. The revenues to be assigned to Local Funds (consisting of one anna cess on items of Land Revenue and of certain items which, if not assigned, would be treated as Miscellaneous Land Revenue) are also considered Jamábandi items. Revenues other than Land Revenue and Local Funds should not be included in the Jamábandi papers (Forms 6, 7, and 10), though there is no objection to including them with proper distinction in the Village Ledger and Day Book (Forms Nos. 5 and 11). [Page 2, Introduction to Symonds' Village Account Manual.]

the preliminary field operations within the "narrowest limits necessary," only such operations were sanctioned and undertaken in each district as were "absolutely necessary to obtain a correct Survey record" as a basis for the revised Survey assessments. These operations, which are known as the "Revision Survey operations," and which were first commenced in Indápur,

have now been completed in all but the marginally noted four districts of the Presidency. Of these four districts, in the first two the revision field operations (measurement and classification) have been completed and the revised assessments will be introduced as the original leases expire. The last two districts in which the field work of the original Survey is considered sufficiently accurate for the purposes of the Revision Settlements have been declared not subject to any future¹ general revision. This assurance refers to the field operations only and not to assessments, which will be revised as the original leases expire on the basis of the original Survey records brought up to date by the Revenue agency.

53. The following are the principal features of the Revision Survey as distinguished from the Original Survey:—

- (1) Partial remeasurement.
- (2) Separation and formation of recognized occupancies into new Survey and Pôt Numbers, or recognized shares.
- (3) Partial reclassification.
- (4) Adjustment of original classification to present standard.
- (5) Abandonment of well assessment and substitution of a small addition in the assessment under the name of Position Class or Subsoil Water Assessment.

¹ Moreover, as the revised Survey record is sufficiently correct for the purposes of a standard, His Excellency the Governor in Council has resolved that it shall be accepted as final and not subject to any future general revision. This Resolution secures from any farther general alteration of the valuation of land for revenue purposes the whole of the Southern Marátha Districts, except a few tálnkas, and the greater portion of the Deccan. In the districts of Ratnágiri and Kánara, in which original Settlements are still in progress, the work of the Survey is sufficiently accurate to admit of the extension of the same guarantee to them. The power of Government to direct a re-valuation of soils will therefore be exercised almost solely in the province of Gujarát, the districts of Thána and Kolába, and in Khándesh and Sátára; and in these it is believed that a partial re-survey will suffice. (Extract para. 15 of G. R. No. 2619 of 26th March 1854, Revenue Department.)

(6) Exemption from assessment of Pôt Kharáb deducted at the Original Settlement.

(7) Limitations of enhancements in Revision Settlements and gradual levy of the enhancements resulting.

(1).—*Partial Remeasurement.*

54. In the Indápur Táluka and the other tálukas of the Poona and Sholápur Districts of which the Original Settlements were based on Mr. Pringle's Survey, an entirely new Survey was found necessary. Similarly, in the earliest settled tálukas of the Násik and Ahmednagar Districts of the Deccan, and Kaládgi (now Bijápur) and Dhárwár of the Southern Marátha Country, where the original measurement work, having been carried out by "men comparatively raw and inexperienced," and under the supervision of officers "who had not the full experience of the country," was imperfect, entire remeasurement was found necessary. In the other tálukas of the last named districts, and also in the Belgaum and Sátára Districts, which were dealt with by the original Survey after the Joint Report principles had come into full operation, the plan of Partial remeasurement was found sufficient for the purposes of Revision Settlement. Under this plan, which was first introduced in the latterly settled tálukas of the Dhárwár District, actual measurement was carried out only in cases of subdivision¹

¹The following are the principles on which the subdivision of the original Survey numbers was effected at the Revision Survey in the Dhárwár District:—

- 1st.—Every original Survey field or "number" of more than 30 and under 50 acres is divided into two Survey fields, every field of over 50 acres and under 70 into three Survey fields and so on, so as to secure no Survey fields ranging above between 20 and 30 acres. One acre of rice land is reckoned as equal to three acres of dry-crop land, and one acre of garden land as equal to five acres of dry-crop land.
- 2nd.—Every occupancy having already separate recognition and entry in the village accounts is separately measured and defined unless it is dry-crop land and of less than one acre, in which case it may be clubbed in one Survey field with a similarly under-sized occupancy if such is adjacent and made a "Pôt" or subordinate "number."
- 3rd.—In all cases when Inám and Government land are included in one and the same old Survey "number," the land of each tenure is to be made into separate new Survey numbers.
- 4th.—All Inám land included in one old Survey "number" and held by separately recognized and independent holders is to be divided into Survey numbers according to holdings.

Ordered by G. R. No. 4248,
dated 24th July 1873.

- 5th.—All existing Survey fields comprising both dry-crop and irrigated land are remeasured in order to ascertain the area of the land now under irrigation.
- 6th.—All lands measured up by the first Survey into large blocks, on account of their being considered to be of such low quality as to be unfit for cultivation, are now to be divided up into Survey fields of convenient area for cultivation if they are of such quality as now is ordinarily cultivated, or if these large Survey numbers are found to be actually

of large Survey numbers or fields, and also in cases of separation of recognized occupancies clubbed into one Survey number at the time of the original Survey. Other Survey fields or numbers were not remeasured, but had their boundaries examined and compared with those recorded on the map, all cases of difference between existing and the recorded boundary being corrected after actual measurement.

55. In the district of Khândesh and the Konkan Districts of Thána and Kolába in which the Revision operations were commenced in 1882, the remeasurement was carried out on the Dhár-wár plan of Partial remeasurement, modified so as to meet the varying circumstances and local peculiarities of each district.

56. Four years later Revision operations were commenced in the Dholka Táluka of the Ahmedabad District in Gujarát. Here the original measurement work having been carried out on a system of sufficient detail very similar to that adopted in the original Survey of the Southern Marátha Country District, was found sufficiently accurate for Revision purposes and was confirmed after a careful preliminary test and after such partial remeasurement as was necessary in the case of division of large Survey numbers and separation of clubbed occupancies. Shortly after the completion of the Revision operations in Dholka, the Gujarát Survey records were destroyed by fire at Surat (in 1887), and it was for some time contemplated to carry out entire remeasurement of the fields of which the original records had been lost, but after further consideration this work was found unnecessary.¹ With the exception of a very few villages of which, in addition to the measurement records, the original Survey maps had also been destroyed by fire, and in which entire remeasurement had therefore to be done, the Revision measurement operations were carried out on the plan of partial remeasurement adopted in the Dholka Táluka.

(2).—*Separation and formation of recognized occupancies into New Survey or Pót Numbers or recognized shares.*

57. Up to 1887 the separation of recognized occupancies, clubbed together in one Survey number at the original Survey, formed one of the principal items of Revision operations in all the

under cultivation, as is often the case, they will be made into Survey fields according to the provisions of Rules 1 and 2 above. [Extract from paragraph 53, page 10, Colonel Anderson's Report No. 1045 of 7th October 1880.]

¹ G. R. No. 1385, dated 28th February 1888, and G. R. No. 2587, dated 27th April 1888.

surveys. In this year, when the Progress Report of the Department was under consideration, the large amount of labour and expense incidental to this operation in the several Surveys attracted the attention of Government, who thereon addressed the Survey Commissioner on the subject as follows:—

The survey is primarily a *revenue survey*, and it is not a necessary part of its functions to demarcate properties except when it is charged with this duty on behalf of decree-holders and at their expense. Any subdivision of land which is not required for administrative purposes must be justified on other grounds than the convenience of the present holders. When land has been divided into the areas most suitable for revenue purposes, the presumption arises that further subdivision should be only at the expense of the parties interested. It is probable that there are well understood rules and principles laid down for the guidance of Survey officers on this question, but looking at the facts reported regarding subdivision of lands and remembering the supreme necessity for curtailing all operations and all expenses, His Excellency the Governor in Council desires to have a full report regarding the principles followed in each Survey, together with any suggestions or recommendations on the subject.

58. The Survey Commissioner, after consulting the several Superintendents, submitted a detailed report on the subject explaining that in all the Surveys the practice generally followed was "to make every recognized occupancy which is above the minimum prescribed by the Survey Commissioner under section 98 of the Land Revenue Code into a new survey number at the Revision Survey." The Survey Commissioner further remarked: "this plan of subdividing survey numbers has gradually developed until it has been given the force of law by Rule 55, Clause 1,² of the Rules issued under the Land Revenue Code. Under this rule every separate occupancy recognized in the village accounts is required to be made into a survey number or a subordinate survey number and to be measured, demarcated, classified, and assessed on its own individual merits." The Survey Commissioner further added that "the present rules for subdivision of lands have been gradually adopted after prolonged experience gained in all parts of the Presidency. Commencing with a system of somewhat arbitrary division of lands into survey numbers, the survey has now become actually a survey of holdings. But all that is done now in the matter of subdivision is done in the *interests of good revenue administration only* and not for the convenience of the cultivators. Any subdivision over and above that required by the rules is only undertaken at the expense of the occupants."

¹ Government letter No. 4451, dated 15th July 1887.

² Every separate occupancy recognized in the village accounts shall be separately measured, classed, and assessed and defined by boundary-marks, and shall be comprised in a survey number or in a subordinate survey number.

By "Subordinate Survey Number" is meant a portion of survey number bearing a subordinate number and separately demarcated and assessed.

59. In their Resolution¹ passed on the above report Government, while acknowledging that the practice followed in all the Surveys in the matter of subdivision of Survey numbers had been in accordance with rule 55, clause 1, of the Rules under the Land Revenue Code, expressed doubts as to the wisdom of making this rule of "unrestricted and general application," and finally observed as follows:—

Doubtless there are many cases in which the separate demarcation and classification of recognized shares has been well worth the cost incurred, securing not only a more equitable adjustment of demand, but a better revenue than under the system of proportioning demand on each share to his interest such as is prescribed for occupancies held in common; but it is difficult to believe that in tracts of a homogeneous character there are any such public advantages in demarcation of shares as to warrant the entire cost of the operations necessary being borne by Government.

No general rule is possible, but His Excellency the Governor in Council thinks that it may be left to the discretion of the Commissioner to sanction the refusal by the Superintendent of Survey in any class of cases of the separate demarcation of recognized shares without payment of the cost or a portion thereof. This would require an addition to Rule 55, and the Survey Commissioner should be requested to put himself in communication with the Remembrancer of Legal Affairs on the subject of amending Rule 55, so as to leave it to the discretion of the Survey Commissioner to refuse, in cases in which he considers it unnecessary to go to any expense in the matter, the separate demarcation and classification of recognized shares unless the parties interested prepay the cost of such operations.

60. To give effect to the wishes of Government above specified, Rule 55 (1) was amended,² with the result that the work of

¹ Vide Government Resolution No. 357, dated 15th January 1889.

² (a) Every occupancy separately recognized in the village accounts if not less in extent than the minimum for survey numbers fixed in relation to such land under section 98, shall be separately measured, classified, and assessed, and defined by boundary-marks, and shall be made a survey number.

Note—[In the Phálui operations in the Konkan, the Phálui Tukdás in Varkas, and Pôt numbers in Rábi land shall not, unless the Survey Commissioner so directs, be made into survey numbers, even though in area above the minimum prescribed by the orders under section 98 of the Land Revenue Code.]

(b) Every occupancy separately recognized in the village accounts, which is less in extent than the minimum for Survey Numbers fixed under section 98 in relation to such, shall, unless the Survey Commissioner otherwise directs, be separately measured, classified, and assessed and defined by boundary-marks, and the Survey Commissioner may, at any time, either by general order or in any particular case or class of cases, direct that such operations shall not be proceeded with unless and until an application accompanied with prepayment of all the costs of such operations, or such portion thereof as the Survey Commissioner may direct, has been presented by the parties interested.

Recognized shares of survey numbers so defined by boundary-marks shall be called "Subordinate Survey Numbers," but shall be regarded for all purposes as recognized shares of survey numbers.

separate measurement, &c., of recognized occupancies which up to 1887 formed a large proportion of the Revision operations, has since been considerably minimized, and that it has in consequence been found possible to bring the Revision field operations to a speedier completion than would otherwise have been the case.

(3) *Partial Reclassification.*

61. As in the case of measurement, every endeavour was made to minimize the classification operations at the Revision Survey. But in the districts of Poona, Sholapur, Násik and Ahmednagar, most of which were originally settled in the early days of the survey and before the Joint Report principles "were fully understood and applied," the original classification having been found to be too imperfect to be accepted as a correct standard for the Revision Settlement purposes, a complete re-valuation was deemed necessary both in the interests of the rayats and of the public revenues and was carried out with the previous sanction of Government.

In the Dhárwár and Bijápur Districts, on the other hand, the original classification, though carried out under circumstances not very dissimilar to those of the above named districts, was found to be of sufficiently good quality to admit of the plan of partial re-classification being adopted with success.

Under this plan, which comprised the following operations, no more classification field work was done than was absolutely necessary:—

¹ (1) In the better class of soils, those classed by the former survey at above 10 annas, a percentage of 15 numbers in the first 100 survey numbers and of 5 per cent. of every following 100 numbers was re-classed in order to ascertain the general standard of the old classification.

(2) In the inferior soils a much larger percentage (25 per cent.) was re-classed in the first instance and an additional amount, or the whole re-classed if found necessary.

(3) In the case of Rice lands the soil classification of all the fields, of which the revision areas differed more than one-third or 50 per cent. from the original survey areas, was entirely re-done.

(4) The classification of water supply was entirely re-done in the case of all rice and garden lands.

¹ *Vide* Government Selection No. CLIX, old Ránebennur Táluka, page 4, para. 9.

(4)—Adjustment of Original Classification to present standard.

62. After the reclassification had been carried out on the above plan detailed statements for each village contrasting the old and the new classification were forwarded to the Survey Commissioner, who thereupon fixed adjustment scale for each tract, by the application of which the old classification was brought into accord with the present standard.

63. The same plan was adopted in Belgaum and Sátára and in the districts recently revised, with the result that gradually as the tracts latterly dealt with by the original survey came up for revision, the classification work became more and more partial, until in the Tálukas last dealt with the original classification was found to be sufficiently correct to be adopted as the basis for revision settlements without any detailed test or re-examination.

64. In Khándesh the old classification was found to have been carefully done and to be uniform, and was adopted for the purposes of revision settlement in its entirety except in the following cases where the operation was carried out *de novo*¹:—

1st.—In numbers which had been broken up and classed by the Survey Department before, but of which no test had been taken by an Assistant Superintendent.

2nd.—In large numbers which had formerly been classed as a whole, but which have now been broken up into numbers of easily workable areas.

3rd.—In numbers of which the classification had been done by the Survey subordinate employed in the táluka.

4th.—In waste numbers in which the area deducted as unculturable exceeded one-fourth of the total area.

5th.—In numbers shown as totally unculturable in the old records, and which consequently had not been classed at all.

6th.—In numbers which have suffered a considerable alteration in area or shape.

7th.—In the numbers formed wholly of alluvium, whether old or freshly deposited.

8th.—In the portions of numbers irrigated by páts.

65. In the Ahmedabad and Kaira Districts of Gujarát the revision classification comprised the following operations:—

- (1) Adjustment of the original classification to the present standard after a preliminary test of a certain percentage of the survey numbers in the field.

¹ Amalner Revision Settlement Selection, No. CCXXIX, page 2.

- (2) Re-classification of the water-supply in the case of rice and other irrigated lands and of soil also if the old classification books had been lost.
- (3) Re-classification of all numbers newly formed out of old survey numbers.
- (4) Re-classification of permanent Bháta lands originally classed as jiráyat.
- (5) Subsoil water classification of all lands having subsoil water facilities.

66. The re-classification operations in the Surat and Broach Districts were confined to—

- (1) All jiráyat numbers broken up under the revision measurement rules, if the field books of the original survey were not in existence.¹
- (2) All jiráyat numbers under and up to one acre if the field books were not in existence.
- (3) Survey numbers or portions of survey numbers converted since the last settlement from dry-crop into rice or which were formerly rice but not jiráyat.
- (4) All old rice numbers or portions of numbers, both for soil and water, if the old classification books were lost; but for water only if they were in existence, the original soil classification being confirmed.
- (5) All survey numbers in the Surat District, whether rice or jiráyat, which were originally classed as natural bágáyat.
- (6) All Bháta Survey numbers.
- (7) All numbers classed as bágáyat at the original survey, unless there were means of taking off the bágáyat kasar—water-cess—without resort to re-classification.
- (8) All survey numbers formed during the currency of the expiring lease out of large culturable waste numbers, which were not classed at all or which were only roughly classed at the average classification rate of the old large number.

¹ If the field books were in existence, the classification of the new numbers was to be made from the old recorded classification shares; and where that was not possible for any reason, re-classification was to be done with the sanction of the Head Surveyor. If the Head Surveyor in re-classing broken-up numbers found reason to suspect bad work elsewhere, he was to report for orders.

67. In the three* tálukas of the Panch Maháls which have had revision settlement rates introduced into them, the only classification operation undertaken was the classification of subsoil water facilities, with this exception the whole of the original classification was accepted for the purposes of the revision settlements.

* Jhálod.
Hálol.
Dohad.

68. In the Konkan districts, in the first revised tálukas, (Karjat, Khálápur, and part of Panvel), owing to the scale of valuation adopted at the original survey being different, an entire re-classification was found necessary and carried out. In all the other tálukas subsequently revised the revision classification was more or less partial and comprised chiefly the following operations:—

- (1) Examination of garden lands and the recording of the usual information regarding them.
 - (2) Re-classification of rice, Rabi, and Varkas erroneously entered as garden at the original survey.
 - (3) Re-classification of all Pulan lands erroneously entered as Varkas at the original survey.
 - (4) Re-classification of Rabi lands erroneously entered as Varkas at the original survey.
 - (5) Applying the Water and Position classes wherever necessary.
 - (6) Verification of the old classification of Rice numbers and correction of errors.
 - (7) Valuation of the capability of producing second crops in lands not originally classed for Dusota (second crop).
 - (8). Classification of Rabi and Varkas lands in connection with the Phálni operations.
- (5)—*Abandonment of Well assessment and substitution of a small addition in the assessment under the name of Position class or Subsoil water assessment.*

69. The most important feature of the revision classification is the abandonment of the special water rates on the well irrigated lands, and imposition in lieu thereof a small increase in the soil valuation of all lands possessing subsoil water facilities. In the Deccan and Southern Marátha Country districts this increase is made under the name of Position Class according to the rules which will be found detailed in Part II., Section (1), Deccan Classification. In the districts of Gujarát, on the other hand, the system under which the soil valuation was raised on account of subsoil water facilities is more elaborate and more thoroughly

identified with the ordinary work of classification ~~than~~ that pursued in the Deccan and Southern Marátha Country. This will be found fully dealt with in Chapter XII. Part III. Settlement. Vol. III.

(6)—*Exemption from assessment of Pôt Kharáb deducted at the Original Settlement.*

70. Another important point in connection with the re-classification is the treatment of arable land which under the name of Pôt Kharáb was included unassessed in survey numbers at the early settlements. Government had been inclined ever since 1874 to leave to the occupant the profit of bringing such land into cultivation, but as it was found that the area thus treated in the early settlements was very large and that to forego the assessment of it would occasion an unjustifiable sacrifice of the claims of the public revenue, it was determined to take action at some future time.

71. Ten years later when the settlements marked by great indifference to Pôt Kharáb had already been revised and those effected under the more careful system of the Joint Report introduced about the year 1854, began to fall in for revision, the question of "Pôt Kharáb" was again taken up and finally disposed of by Government in a manner which rendered any detailed notice of such area at revision classification unnecessary. This subject will be found fully treated of in Chapter IX. Pôt Kharáb. Part III. Settlement. Vol. III.

(7)—*Limitations of enhancements in Revision Settlement and gradual levy of enhancements.*

72. The important factors of the Revision Settlements are—

- (a) the limitations to enhancements in the settlements ;
- (b) the system of gradual levy of the increases resulting from the revision rates in individual cases.

The limitations (a) were first prescribed in 1874 and applied to Revision Settlements in the Poona and Sholápur Districts only. They were re-affirmed in 1884, and have been extended to all Revision Settlements since effected. The system of gradual levy (b) was first introduced into the Igatpuri Táluka in 1885, and has been extended to all the tálukas since revised. Both these points will be found fully dealt with in Chapter XIII. Enhancements in Revision Settlement. Part III. Settlement. Vol. III.

73. A summary has now been given of the chief operations of the Bombay Revenue Survey system, which is not confined to the

Presidency proper, but has extended over Sind, most of the Political Dependencies of the Presidency, the neighbouring territories of His Highness the Nizám, the Berárs, and the Province of Mysore. It fell to Sir L. Bowring, when Commissioner of Mysore, to decide upon what system he should adopt for that Province, and after ample opportunity of comparing it with the Madras system, he unhesitatingly gave his decision in favour of that of Bombay. Similarly in the territories of His Highness the Nizám, immediately bordering on the districts of Ahmednagar and Sholápur, the deliberate choice of the Darbár has fallen on the Bombay system, and the revenue is worked entirely on its principles. The advantages which are enjoyed by the occupants of land under the system may be thus described :—

- 1st.—A separate settlement with Government.
- 2nd.—A lease guaranteed for thirty years or other fixed period terminable by him as to the whole or part of his holding at the expiration of each year, but by Government only on his failure to pay the assessment.
- 3rd.—His occupancy is heritable and transferable by gift, sale, or mortgage, without other restriction than the requirement to give notice to the authorities.
- 4th.—He is at liberty to resign his entire occupancy or any part thereof which is separately recognized in the survey and village records, in any year, provided notice be given by a fixed date. If waste land be available, he may enlarge his holding at pleasure on application to the district officials.
- 5th.—He may sublet his lands, and Government will assist him, under certain limitations, in recovering rents from his tenants.
- 6th.—His holding cannot be encroached on by his neighbour, every recognized subdivision of it being clearly defined by boundary marks and susceptible of immediate identification by means of the village maps and registers. Further, the fact of his possession of any field or subdivision of it can be traced without difficulty in the village records year by year up to date. Thus the chances of dispute and litigation are entirely removed, or reduced to a minimum.
- 7th.—The right of the occupant to a renewal of the lease on the expiration of the term, at revised rates fixed, not with reference to any improvements made by the occupant from private capital and resources during the cur-

rency of any settlement under Bombay Act I. of 1865, or V. of 1879, but with reference to general considerations of the increased value of the land, whether as to soil or situation, prices of produce, or facilities of communication.

74. The Department has also done useful work in carrying out enquiries into the different Tenures (such as Khoti in the Konkan and Narwádári and Bhágdári in Gujarát) prevailing in different parts of the Presidency and preparing a complete record¹ of lands held on those tenures and also in the matter of fixing the remuneration of the Hereditary Village Officers in some of the districts, especially those comprised in the Deccan and Southern Marátha Country. A brief account of the different tenures in the Presidency will be found in Chapter XVI. Vol. III., while the methods adopted in fixing the remuneration of the Hereditary Village Officers in different districts will be found described in Chapter XX. of the same Volume.

Laws and Regulations.

75. The operations of the Department had been in progress many years before any question arose as to the expediency of giving them legal sanction. A Revenue Survey was a measure for which there were sufficient precedents, the whole of the Deccan having been surveyed by the direction of the celebrated Málík Amber and partial Surveys having been executed under the Marátha Government. But with the progress of British Adminis-

¹ (1) It shall be the duty of the Survey officer, on the occasion of making or revising settlements of land revenue, to prepare a record showing the area and assessment of each field, and containing all necessary information in regard to landed tenures and the obligations, rights, interests, and circumstances of the various classes of the community. [Extract from section 27 of Act I. of 1865, *vide* Survey and Settlement Manual, Vol. I. page 238.]

(2) The record referred to in section 27 was most useful to all persons having an interest in land as well as to Government. The inquiry which the section authorized Survey officers to make in order to enable them to prepare the records was not of a judicial character, and would affect no private rights. * * * *
* * * * Though it affected no rights, the survey record was still good evidence of actual possession, and in default of better evidence, entries in survey registers were often of value to establish rights. [Extracts from Mr. Ellis' speech on the Survey Act I. of 1865, pages 225 to 227, Survey and Settlement Manual, Vol. I.]

(3) In the North-Western Provinces (*vide* circular orders of the Sudder Dewani Adawlut, No. 514 of 1848) the Civil Courts in all suits regarding land admit this record as evidence, and their decisions are passed in accordance with it, unless the other party can prove the record itself to be erroneous. I think the Courts here would probably adopt a similar practice. (Paragraph 40, clause 2, of Mr. Pedder's report, No. 11, dated 21st March 1862, on Guzrát Tenures—*vide* old Kaira Selection, No. CXIV., page 22.)

tration the value attached to rights in the land, and the inclination to resist any attempt to encroach on them were constantly increasing. The Survey itself had largely contributed to this result, and as it advanced, valuable interests became affected by it and a disposition to question the legality of its proceedings began to be manifested. It became, therefore, imperatively necessary to confer on these proceedings a validity which could not be disputed. Accordingly, in the year 1864 a Bill was introduced in the Legislative Council "to provide for the survey, demarcation, assessment, and administration of lands held under Government in the Districts belonging to the Bombay Presidency and for the registration of rights and interests of the occupants of the same." This Bill was passed into law in the following year under the title of the Bombay Survey and Settlement Act (Act I. of 1865). This Act confirmed previous settlements, empowered Government to direct the extension of the Survey to any part of the Presidency, defined the powers and duties of Survey Officers, provided for the demarcation of field and village boundaries, and the settlement by the Survey Officers of disputes connected with them and for erection of boundary marks. It empowered the officer in charge of a Survey to assess Government and alienated lands and required him, when making settlements of land revenue, to prepare a record showing all rights and interests in the land and giving other necessary information. It also provided for the administration of Survey Settlements and empowered Government to direct a fresh survey and to revise assessment on the expiration of a term of settlement.

76. The provisions of the above mentioned Act were extended to Towns and Cities in 1868 by Act IV. of 1868, and in 1875 by an enactment (I. of 1875), the provisions of the former regarding the date of giving notices of relinquishments were defined, and new provisions regarding the year of "introduction of the rates" and the "first year of levy" were, for the first time, introduced.

77. These were the enactments which governed the Survey and Settlement operations until 1879, when they were all repealed and the provisions therein contained were re-enacted in the Bombay Land Revenue Code (Act V. of 1879). In this Code while all the provisions of the Bombay Act I. of 1865 relating to assessments in revision were re-enacted without any change, a new provision was inserted whereby a right was reserved to Government to take into consideration in fixing revised rates, certain classes of improvements effected by the owners or occupants from private capital. This provision was opposed to the fundamental principles of the Bombay Settlement system, and as it was considered likely to discourage the application of private enterprise and capital to

agriculture, it was repealed by Act IV. of 1886. By this Act the following principles, which had always been strictly acted up to in every Revision Settlement, were re-affirmed and laid down for guidance in future revisions, viz.,—

- (a) that assessments will be revised on consideration of the value of land and the profits of agriculture, and
- (b) that assessments will not be increased on revision on account of increase to such value and profits, due to improvements effected on any land during the currency of any previous settlement by or at the cost of the holder thereof.

Land Record Staff as the successor of Survey.

78. In 1883, in pursuance of the recommendations of the Famine Commission of 1878, the Department of Agriculture, or of Land Records and Agriculture, as it is now called, was established in this Presidency, and Mr. Ozanne was appointed as its head under the designation of Director of Agriculture (or Director, Land Records and Agriculture, as subsequently changed). The duties of this Department were defined to be that "it should take all possible means to utilize agricultural knowledge—should assist the better class of farmers to obtain capital and appliances and to bring them into communication with manufactures and exporters; should direct the agriculturists in making use of irrigational agencies and improved communications in any way possible, and should promote the interests and develop the intelligence of the cultivating classes." Contemporaneously with the creation of an Agricultural Department, a correspondence had been going on between the Bombay Government, the Government of India and the Secretary of State on the subject of the principles "on which future revisions of land revenue assessments should be made"¹ in the Bombay Presidency and also in other administrative charges subordinate to the Government of India. In the course of this correspondence, the Government of India forwarded a copy of a letter which they had addressed to the Government of the North-Western Provinces, pointing out the "evils"² of the system of carrying out "periodical revisions of assessments," and asked the Bombay Government whether the principles therein formulated

¹ Government of India's Resolution No. 539-R., dated 15th May 1883, printed on page 28 of Character of Land Tenures Selection.

² These evils were thus described:—"Uneasiness arising from uncertainty; the harassment of the agricultural classes; the discontent engendered by mistaken assessments; the check to expenditure on improvements; the positive deterioration of agriculture in the last years of the term of settlement, and the heavy cost and great delay involved in the operation." [Government of India's Resolution No. 525-R., dated 9th May 1883.]

with a view to avoid as far as possible those "evils" might not be applied *mutatis mutandis* to this Presidency, with advantage. This inquiry was accompanied by a proposal, among other things, that "revaluation of land should be eliminated in future from the scheme of land assessment," or in other words that the agricultural value of land having been ascertained with tolerable accuracy, that value should be taken as the basis for future adjustment.

79. The whole correspondence which ensued at that time was referred to Mr. Stewart, then Survey and Settlement Commissioner, for his opinion. In his report Mr. Stewart, after describing the progress made by the Department in the matter of Revision Settlements up to date, proposed arrangements¹ by which he expected within a period of eight years to remedy "all the recognized imperfections in survey and valuation throughout the Presidency and to bring up the record to such a pitch of excellence as would ensure its durability." Mr. Stewart added, "The operations will be confined to partial re-measurement and re-classification, no step towards which is, under existing orders, taken without the express orders of Government. After the partial measures necessary to place the work on a satisfactory footing, *re-measurement and re-classification*

¹ In paras. 16 to 19 of the letter to the Government of the North-West Provinces, I observe that, independently of the fact whether the period of existing settlements has expired or not, it is urged upon that Government that in all adequately assessed districts the existing revenue should be taken as the initial revenue upon which future adjustments on revision shall be directly based. Also that in districts in which the existing revenues are not considered to be adequate, fair revenues should be fixed without delay for adoption as the initial revenues, and that in districts where the necessary data are not available, initial revenues should be ascertained as soon as possible after the required survey and valuation. It seems to me that we may, to some extent, adopt the principle here advocated as a part of our programme. It is not necessary that in Bombay we should at once fix certain revenues to be adopted at future revisions as the initial revenues of the tract: all that we require is an accurate initial valuation of the land field by field which may be accepted as the basis of our revenues in future revisions. If we once have a good valuation of each field, the assessment can be fixed at any time on whatever maximum rate may be considered suitable. I would propose that, instead of waiting until the period of original settlement expires in each taluka of a district, we should proceed at once to review the work over the whole remaining area of the Presidency, so as once for all to secure a correct initial field valuation. The great advantages of so doing will be that there will be no temporary stoppage of the work of the Department, the duty will be performed by the present staff which has attained a pitch of excellence in surveying and soil-valuation, which no new staff could ever hope to attain, and instead of the remaining work being done at straggling periods and with reduced establishments until well into the next century, as will be the case if we are to await the expiration of each settlement, everything that is necessary for future revisions may be performed with the present survey establishments kept up to their full strength within a period of about 8 years. [Extract from para. 23 of Survey Commissioner's letter No. 1360, dated 27th June 1883.]

will cease altogether to be operations attendant on a revision of rates."

80. In the above report, or the "8 years' programme" as it is called, a suggestion was for the first time made by Mr. Stewart that the recently formed Agricultural Department should, with a view to obviate the necessity for field operations at future revisions, "take over the Settlement maps and records to keep them fully up to date and to collect year by year the statistics necessary to be considered at future revision of rates."

81. The above proposals were fully approved by the Bombay Government and also by the Government of India,¹ and thus in addition to its ordinary duties enumerated in paragraph 78 above, a new duty of "taking over the completed work of the Survey and Settlement Department, of maintaining its records and supplying the requirements of revision Settlements" was for the first time found for the Agricultural Department in 1884.

82. On the expiration of the sanctioned period of 8 years on the 31st March 1892, the Survey records of the completed districts were, in accordance with the policy above explained, handed over to the Land Records and Agricultural Staff. In the remaining

¹ The proposals of Mr. Stewart for the early disposal of the operations of the Survey Department in districts of the second class appear to the Government of India to be conducive both to the financial and administrative interests of the State as well as to the benefit of the agricultural population. His Excellency the Governor-General in Council is glad to accord his approval to the scheme set forth in Mr. Stewart's letter. Its chief advantages seem to be these—

(1) The concentration of settlement operations within a shorter period than would otherwise have been possible, and the consequent diminution of the cost of superintendence.

(2) The earlier correction of the village records and maps—a measure of great administrative importance.

(3) The greater facility with which a revision of maps, soils, and records can be made within the next few years than at any later date, in consequence of the fewer changes which will have taken place since the last survey.

(4) The greater knowledge which the Agricultural Population will be able at once to acquire of their future prospects at the termination of the present term of settlement.

The assignment of the important duties indicated by Mr. Stewart to the Agricultural Department is so completely in accord with the scheme for an Agricultural Department advised by the Government of India in its Resolution of December 1881, that it is needless for His Excellency the Governor-General in Council to assure the Bombay Government of his full acquiescence in this part of its proposals. The Government of India is glad to know that important administrative work will be found for the Department which will at the same time ensure its more complete acquaintance with the agricultural condition of every portion of the Presidency and also enable it to effect a considerable economy and accuracy in future revisions of settlement.

(Paras. 5 and 9 of Government of India, Revenue and Agricultural Department, No. 253-R. of 9th October 1883.)

districts much work still remained to be done, and a revised programme was submitted by Mr. Ozanne, who had succeeded Mr. Stewart in the Survey Commissioner's appointment. This programme, which was for five years, was, like other Survey programmes and estimates, not realized, and a further revised programme, this time for 4 years, was submitted in 1896. The closing date of this last programme has now been fixed as 31st October 1900, by which date the whole of the remaining survey records will be completed and handed over to the Land Records Staff of the permanent Revenue Department.

83. The rules and orders regulating the working of the Land Records Staff in the matter of the maintenance of the "Survey records" and the preparation and maintenance of the "Records of rights" are given in Part IV. Vol. III.

84. As regards the preparation and submission of "future Revision Settlements," Mr. Ozanne, whilst acting as Survey Commissioner in 1891, made a suggestion¹ that the Director of Land Records and Agriculture should be subordinated to the Survey Commissioner in order that he might acquire the knowledge and experience necessary to enable him to deal with Settlement proposals after the abolition of the Survey Commissioner's appointment. Government declined to accept this suggestion, and with a view to remove all future doubts regarding the duties of the Director of Agriculture in connection with settlements, passed the following orders² :—

With reference to paragraph 10 of Mr. Ozanne's report, I am directed to observe that the original view was not that the two appointments should be amalgamated on the completion of the survey record, but that the appointment of Survey and Settlement Commissioner with the whole of the appointments in the Survey Department should disappear, and that all the work connected with the maintenance of the survey record and the preparation of future revision settlements should be entrusted to the *Revenue Department*, the establishments maintained for the purpose in each district forming part and parcel of the Revenue Establishment. The function of the Director of Land Records and Agriculture in that Department was limited to inspection and advice, and he was expressly excluded from control over the district establishments, for the reason that if he exercised control over establishments subordinated to the Collectors an *imperium in imperio* and division of responsibility would be created. That view has been accepted by the Government of India, and is undoubtedly the right one, and it is necessary that it should constantly be borne in mind. For the above reasons the Governor in Council is unwilling to subordinate the Director of Land Records and Agriculture to the Survey and Settlement Commissioner for the purpose of survey record maintenance, which is a duty

¹ *Vide* paragraph 10, Survey Commissioner's letter No. 1420, dated 31st July 1891, referred to in Government Resolution No. 7071, dated 15th October 1891 Revenue Department.

² Paragraph 9 of Government Resolution No. 7069 of 15th October 1891.

of the Revenue Department in this Presidency, and as the Bombay administration is constituted cannot be delegated to the Agricultural Department without risk of dislocation of parts of the machinery. The function of the Director in that matter is to advise and assist, not to direct and control.

85. The policy enunciated in these orders has since been kept in view,¹ and consistently with it the following arrangements have been recently prescribed² by Government, to ensure in future the punctual and methodical submission of Revision Settlement Reports after the abolition of the Survey Department.

Before the 31st July in each year the Director of Land Records and Agriculture should report to the Commissioner of each Division the taluka or talukas in that Division the current settlement of which expires on the 31st July two years later, submitting at the same time his recommendations as to the arrangements to be made for the submission in due time of proposals for revision. Thus the Director should report before 31st July 1900 regarding all settlements expiring on or before 31st July 1902.

The following is the general outline of the programme which should be observed :—

(1) An officer should be selected with the approval of Government to prepare the proposals ;

(2) in the travelling season following the Director's report, the officers selected should thoroughly visit the tract to be reported on ;

(3) his proposals should be submitted to the Collector before the 1st of June following, those of the Collector to the Commissioner before the 1st of August, and those of the Commissioner to Government before the 1st October.

By arrangements on these lines Government will be enabled to pass orders on proposals for the revision of settlements in ample time to enable the new settlement to be introduced punctually before the close of the Revenue year in which it expires.

¹ There will be no difficulty in Assistant Collectors and Collectors formulating proposals for the revision of settlements after the initial measurement and classification are completed, provided the survey record is kept up to date by a properly trained establishment. The maintenance of this record is the only work which requires technical knowledge. The revision of the settlement will depend entirely on changes in prices, including such local changes as result from improvement of communications and shifting of markets, although all indications of an increase or decrease in material wealth and general prosperity will be a guide as to the suitability of the old assessment. The opinion of the Assistant Collector and the Collector on such points should be of more value than that of the Superintendent of Land Records and Agriculture, whose main function, while the office lasts, should be the supervision of the necessary correction of the survey record. But so long as the office lasts, there will be an advantage in the proposals emanating from that officer with an assurance that the survey record has been made correct. They should, however, come through the Assistant Collector and the Collector, and these officers should examine every detail, bearing in mind that in future the formulation of the proposals will probably rest entirely on them, and that it is therefore necessary that they should make themselves thoroughly acquainted with all the principles on which such proposals should be based. [Government Resolution No. 7404 of 2th October 1897.]

² Government Resolution No. 200, dated 2nd February 1900.

MEASUREMENT.

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PART I.

SURVEYING AND MEASURING.

CHAPTER I—HISTORICAL SUMMARY.

The earliest Survey operations undertaken by the British Government of which there is any record are those carried out between 1811 and 1820 in the Broach Collectorate under Colonel Monier Williams.

2. BROACH.—The following is taken from a manuscript volume received from the Collector of Broach—

“The mode of measuring the lands in the three purgunnas of Jamboosar, Amod, and Dehej is the same, viz., in Kumbhas and Monlas, or kumbhas and hundredth parts; and in this the practice differs from that of the other three purgunnas of the Collectorate; for in the Baroche, Unklesur, and Hansot purgunnas, the lands are measured and the accounts are kept in beegas, wussas, and wiswussas;—20 wussas being equal to 1 beega and 20 wiswussas equal to 1 wussa.

“A common standard Rod for measuring the kumbhas exists, and is now established in the three purgunnas of Jamboosar, Amod, and Dehej. And a common standard rod or guntha for measuring the beegas is also established in the three purgunnas of Baroche, Unklesur, and Hansot; and by these two standards the measurement of all the lands in the purgunnas in which they respectively prevail has been made.

“The standard Rod or ‘Báns’ or ‘Guntha,’ sometimes also called ‘Monla,’ for measuring the kumbhas, is nine (9) guz in length; the length of the guz is twenty-seven and a quarter ($27\frac{1}{4}$) inches—therefore the báns or rod is in length 20 feet $5\frac{1}{4}$ inches English measure. A square measuring ten (10) of these rods on each of its four sides is a kumbha, which is equal to 0 acres 3 rods 33 perches 422 dels. English land measure. Or 100 kumbhas are equal to 95 acres 3 rods 22 p^s. 2 dels. And in the comparison with the beegas of the Baroche, Unklesur, and Hansot purgunnas, one kumbha is equal to one beega, seventeen wussas, nine wiswussas, and 207 decimal parts of a wiswussa (1-17-9-207), or 100 kumbhas are equal to 187 beegas 6 w. 0 w.w. 732 dels.

“The standard rod or ‘guntha’ or ‘báns,’—sometimes also called ‘Wussa,’ for measuring the beegas in the Baroche, Unklesur, and Hansot purgunnas is seven feet five inches and six-tenths of an inch ($7-5\frac{6}{10}$) in length. A square measuring twenty of these rods on each of its four sides is a beega, bearing the following proportion to English land measure. One acre is equal to one beega, nineteen wussas, one wiswussa, and three hundred and twenty-eight decimal parts of a wiswussa (1-19-1328). And in an English square mile which contains 640 statute acres, there are 1,250 beegas 2 w. 11 w.w. 02 dels.

“ In the purgunnas of Jumbosar, Amod, and Dehej, the alienated lands of all descriptions are measured by the village people with a smaller rod than the standard. This differs in most villages, but it ought not to exceed (8) eight guz. The proportion therefore between these two measures is, in 100 kumbhas, 20 kumbhas, 98 mlas. 765 dels. or 79 kumbhas, 1 mla. 234 dels. of land by the standard rod, are equal to 100 kumbhas of alienated land.

“ The proportions between the different land measures of the country and that of the England (*sic*) are further illustrated as follows ” :—

	Square		
	Yards.	Feet.	Inches.
In an English Statute acre ..	4,840	0	0
In a standard kumbha of the Jumbosar, Amod, and Dehej purgunnas	4,641	0	20
In a standard beega of the Baroche, Unklesur, and Hansot purgunnas.	2,477	7	64
In a standard beega of the Ahmedabad Kaira, and Surat Collectorates	2,844	4	0

3. The objects of this survey were, to fix¹ a standard land measure, to ascertain the area of land in each village, and of this how much was cultivated, how much arable and unarable waste, how much of the arable was fitted for dry-crop, garden, and rice cultivation, respectively, and what area was, in the year of survey, under grain, tobacco, cotton, sugarcane, &c. It was to fix the village boundaries, but no attempt was to be made to divide the land into fields or to classify and assess those fields, it being better to leave details of this description, in the opinion of the authorities of those days, in the hands of the village communities, who were the best judges of the advantages and disadvantages under which each man tilled his lands. It had, however, to inquire into the titles under which land claiming to be held wholly or partially exempt from the payment of land revenue under various names and tenures was enjoyed. In this respect, especially, it carried out a very useful work, and before its close brought under partial or full assessment a considerable area, thenceforward yielding a large revenue. Although several changes in the system of revenue management were subsequently introduced,² no fresh measurement of the land was found necessary, as the result of Colonel Monier Williams' survey was found to be sufficiently lucid and to be depended on.³ In 1836 a wish for permanent

¹ See page 137, Vol. I, Bombay Land Revenue, by A. Rogers.

² Page 150, Vol. I, do. do.

³ „ 147, do. do. do.

settlements expressed by the Court of Directors was interpreted to mean the extension of the leasing system to periods not exceeding 30 years, and orders were issued to Bharuch accordingly. It was, however, never carried into effect to any great extent until the introduction of the regular survey assessment in 1870.

4. SURAT.—In 1815-16¹ a survey of the Chorasi Táluka of the Surat Collectorate, which was never applied to revenue purposes, was commenced, but gave way to that of Captain Newport in 1823-24. His measurements were adopted in 1827, and formed the basis of settlement until the introduction of the Revenue Survey in 1867.

5. From a minute by Mountstuart Elphinstone, dated 6th May 1821, it would appear that in 1817,² each man's land was measured and his rent fixed at the sum he had paid in the preceding year. Measurement³ of the land had been occasionally resorted to for the purpose of assessment by the Collector. The necessity for such a step is proved by the recorded fact that the estimated beegha varied in different parts of the Collectorate from $\frac{3}{4}$ of an acre to $1\frac{1}{2}$ acre. No professional survey appears to have been undertaken till 1823, when the larger portion of the charge was measured under the superintendence of Captain Newport; no boundary marks, however, were erected at this survey. Measurements on the principles of the Bombay Revenue Survey were extended to the Surat Collectorate in 1867.

6. POONA.—In the Poona Collectorate an attempt⁴ was made in 1819 to introduce a *rajatwári* in place of a village settlement, but in consequence of an epidemic of cholera from which the people suffered severely, little progress was made. A survey by Madras Surveyors in the Mávals, the hilly districts to the west of Poona, turned out to be badly done, and was not adopted. In 1825 Mr. Pringle, Assistant Collector of Poona, was appointed to carry out a detailed survey of the Collectorate. That officer's operations comprised a field survey of all the cultivated and culturable land of the village. Survey operations under Mr. Pringle were concluded in the Poona Collectorate in 1830-31; the results, however, proved to be far from satisfactory. As⁵ there were strong grounds for doubting the

¹ Page 214, Vol. I, Bombay Land Revenue, by A. Rogers.

² " 176 do. do. do.

³ Pages 178 and 179 do. do.

⁴ Page 96,—Vol. II, do. do.

⁵ Pages 109 and 110, Vol. II, do. do.

accuracy of the measurements as well as the other operations of Mr. Pringle's survey, the Revenue Commissioner in 1831 proposed that a special enquiry should be made into the whole matter. This proposal was carried out, and Government finally came unwillingly to the conclusion that the whole of Mr. Pringle's survey and assessment must be set aside. Being satisfied that they could not be made the basis of any revision, they directed that the whole operation should be commenced *de novo*. This was the commencement of the now well-known Bombay Revenue Survey and Assessment introduced by Messrs. Goldsmid and Wingate in 1837. The first *táluka* taken in hand was Indapur of the Poona Collectorate. ¹ Mr. Pringle's measurements were adopted in all villages in which the error on examination proved to be less than 10 per cent., but in all cases in which it was greater the whole village was remeasured. ² The accuracy of the measurement was tested by having a certain number of the fields of every village (marked off from the papers by the European officers) remeasured by the *kárkúns* of the establishment, whose work was subsequently tested by the Surveying officer, and accuracy ensured by the prompt infliction of punishment upon occasion of error or negligence on their part being brought to light. On the result of this investigation, should the survey measurements have been executed with a tolerable degree of accuracy,* they were

* Within 10 per cent. of the truth.

retained and corrected when necessary; but when it appeared that the errors were beyond reasonable limits and likely to vitiate the assessment, the village was wholly remeasured. At the end of the 30 years' lease, that is in 1867, the revision survey of the Indapur *Táluka* was taken in hand. The survey of 1837, as already stated, was based on Mr. Pringle's survey, which, though considered a good survey at the time Messrs. Goldsmid's and Wingate's settlement operations were carried out, was thought a very imperfect measure at the time of the revision in 1867, when measurements were considered faulty in an open country ³ like Indapur if errors of 3 per cent. were met with, the average difference per cent. between test and original measurement being not above 1 per cent. Besides a want of accuracy in the actual measurement of land, Mr. Pringle's survey was in other respects a most imperfect measure, it was confined for the most part to culturable lands, and did not generally include

¹ Page 111, Vol. II, Bombay Land Revenue. by A. Rogers.

² „ 45, Indapur Second Revision Settlement Selection.

³ Pages 55 and 56 of do. do.

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classification of lands and assessments carried out in Mr. Thackeray's survey were found to be very defective. Opinions seem to have been very conflicting as regards the best system of revenue management till 1843 to 1845, when the Bombay Revenue Survey was introduced, the Hubli Sub-Division being the first to be taken in hand. In 1874-75 the term of 30 years for which the survey settlement had been guaranteed having expired, revision operations were carried out. At this revision¹ all survey numbers in excess of 30 acres were divided into two or more survey fields so as to make all dry-crop numbers held by one occupant range from 15 to 20 acres. Each man's recorded share in a survey field was separately marked off and assessed so as to become a distinct property.

11. It was in the old Nargund Peta of the Dhárwár Colliery that the Partial System² of remeasurement was first given a trial in 1879-80, and having been found satisfactory, was adopted at all subsequent revisions.

12. AHMEDNAGAR.—Between³ 1825 and 1828 a survey, known as the old Deccan Survey, was introduced into part of Ahmednagar. This seems to have been somewhat on the plan adopted in the Ceded Districts of Madras, but neither its measurements nor classification of soils were ever put to any use. In 1838-39 a plan⁴ of survey and settlement prepared by Mr. Goldsmid was submitted to and approved by Government. It was divided into two branches. Mr. Goldsmid was to be in charge of the survey of the villages in the plains (*deshi*) and Mr. Tytler presided over that of the *dáng* or hill survey. During⁵ the years 1839-40 till the Survey Settlement was commenced in 1843 no⁶ general measure of reform in the revenue system of Ahmednagar was proceeded with, a few local revisions only being carried out with the help of Mr. Pringle's measurements in the south by the Collector and his Assistants. Akola and Sangamner were the Sub-Divisions first taken in hand by the Revenue Survey.

13. KA'NARA.—It appears that a survey of North Kánara was started by Major Munro in 1800; but as⁷ all trace of this

¹ Page 382 of Vol. II, Bombay Land Revenue, by A. Rogers.

² *Vide* para. 54 of Introduction.

³ Page 157 of Vol. II, Bombay Land Revenue, by A. Rogers.

⁴ " 159 do. do. do.

⁵ " 159 do. do. do.

⁶ " 159 do. do. do.

⁷ " 401 do. do. do.

has been lost, it is probable that it was not continued. In 1822¹ an experimental survey was commenced in the Sirsi Sub-Division and a survey² and assessment of four village groups in the country above the hills, and the measurement of Ankola, Supa, and Sonda were carried out in 1825. There is, however, nothing on record to show on what system the survey operations were conducted. In 1862, when Kánara was transferred to the Bombay Presidency, survey³ operations were at once commenced according to the Bombay Survey system, but owing to the unhealthiness of the climate, it was for several years considered impossible to continue them for more than three or four months in the year (February to May). In 1879 or 1880, however, it was found that four measurers who were appointed to carry out measurements in one of the unhealthiest parts in the month of December did not suffer in health in any way, so survey operations were subsequently, and until the completion of the survey of the district in 1889, carried on in some years from the middle of November to the middle of May, and seldom later than from January.

14. NÁSIK.—On the introduction in 1818 of British rule into the Násik District the farming⁴ system of the Maráthas was put a stop to and detailed statements of arable land and the rates it was considered capable of paying were drawn up by the district hereditary officers for every village, in such a manner as not to diminish the receipts below those of former years and on these rates per *beegha* were introduced. In the hill villages of Násik and Igatpuri measurements of individuals' holdings were ordered to be made and crop rates adopted, but in both cases the returns, being made by natives without any supervision, were found to be extremely inaccurate, and the measurements, after a year or two, were not made use of. In 1820-21⁵ the system of varying crop assessments was put a stop to, and *beegha* rates based on measurements were again introduced; the measurements, however, were very incomplete and inaccurate. In 1823-24⁶ the area was again nominally increased by about 22 per cent. by the adoption of a cubit of a different length, but the measurements were still very rough. No⁶ proper system of

¹ Page 403 of Vol. II, Bombay Land Revenue, by A. Rogers.

² „ 404 do. do.

³ „ 409 do. do.

⁴ Pages 31 & 32 do. do.

⁵ Page 32 do. do.

⁶ „ 33 do. do.

revenue management appears to have been introduced until 1839-40, when for¹ settlement purposes the *deshi* or plain and the *dángi* or hill villages of Násik were formed into two charges, the former being placed under the Survey Department, superintended by Mr. Goldsmid, and the latter under Mr. Tytler, the Assistant Collector. Chandor was the first sub-division to be taken in hand in 1840-41. In² the course of this settlement the method of substituting for stones continuous ridges of earth between fields as boundary-marks was adopted in the first instance, but subsequently modified by placing mounds of earth at the corners and at bends along the line of boundary, or, where this was straight, at distances of 130 yards.

15. THÁ'NA.—In the Thána Collectorate a survey³ had been made in the time of Nána Phadnavis, but it had only been acted on by the British Government for about ten years when the farming system was introduced. This had so changed the state of affairs, that the measurements could no longer be acted on. The³ Collector, therefore, in 1822 proposed to carry out a new survey. He³ was of opinion that one sub-division should be taken at a time. Government directed that this course should be followed, so that he might personally superintend the operations, and in the meanwhile test villages in other parts by measurements taken by people who were not supplied with data from the former survey. This survey⁴ seems to have been persevered in for a time, but, owing to the measurements being found to be untrustworthy, the attempt to carry out a settlement based upon them was abandoned. As in Surat, so in the Thána Collectorate, several systems of revenue management were introduced, but no professional survey operations were undertaken till 1852, when arrangements⁵ were completed for introducing the survey settlement. Nasrápur in the extreme south was the first sub-division taken in hand.

16. RATNA'GIRI.—In the early days (1812 to 1823) of British rule in the Ratnágiri Collectorate no change was made in the current system of revenue management. In or about 1823, the Collector⁶ seeing that not much could be done towards better-

¹ Page 33 of Vol. II, Bombay Land Revenue, by A. Rogers.

² Pages 36—37 do. do. do.

³ Page 228 of Vol. I, do. do.

⁴ „ 231 of Vol. I, do. do.

⁵ „ 237 do. do. do.

⁶ „ 5 of Vol. II, do. do.

ing the condition of the mass of the people without a survey, pressed one forward in different parts, but as the measurers were untrained, and not under European superintendence, the results were not trustworthy. It served, however, to bring to light the unreliability of old native measurements, and showed that the real area of cultivation was sometimes double and treble of what was recorded. In 1829-30¹ a survey was carried out under Lieutenant Dowell, but no action seems to have been taken on this survey. In 1849² Captain Wingate, Superintendent of the Survey Department in the Deccan and Southern Marátha Country, was directed to visit Ratnágiri and report on the advisability of undertaking a survey and assessment of the Collectorate. This report was submitted in January 1851. An experimental survey³ was first ordered in a few *kulargi* (tenant-held) as well as *khoti* villages, and its result reported on in the following year. Later on a survey was commenced, measurement and classification of lands carried out in two sub-divisions and parts of two others, and settlement introduced into three villages of which the Khots had resigned the management. In one of the latter villages such⁴ difficulties had to be encountered that the Survey officers felt they could not proceed without legislation, and Government finally suspended further survey operations, which, however, were again commenced under Captain Francis in 1859. In the experimental survey referred to above, it was decided by Government that⁵ a survey should, in rice, garden, and level dry-crop lands mark off survey fields of a considerable size, the existing fields within the limits of which should be measured, classed, and assessed as separate subordinate numbers. *Varkas* (hill land) was not to be measured in detail.

17. SHOLÁPUR.—The history⁶ of survey operations in Sholápur differs little from that of Ahmednagar and Poona up to the time of the introduction of the Bombay Revenue Survey in 1839-40. Mr. Pringle's⁷ survey, which was also introduced into parts of Sholápur, proved more or less a failure here also. In⁸ some sub-divisions his survey was found to be fairly correct, and an entire remeasurement was only found necessary in a few vil-

1 Page 6 of Vol. II, Bombay Land Revenue, by A. Rogers.

2	"	10	do.	do.	do.
3	"	12	do.	do.	do.
4	"	13	do.	do.	do.
5	"	11	do.	do.	do.
6	"	64	do.	do.	do.
7	"	65	do.	do.	do.
8	"	70	do.	do.	do.

lages, in others measurements proved so untrustworthy¹ that the whole of the land was remeasured. In Pandharpur a survey² was carried out between 1821 and 1829 by Captain Adams, when this *táluka*³ was included in the Sátára Collectorate. The first tract⁴ of land to be taken in hand by the Revenue Survey was the sub-division of Mádha in 1839-40. Revision survey operations were completed in the Sholápur Collectorate in 1888-89.

18. KOLA'BA.—In the Kolába Collectorate a regular⁵ survey in Sánkshi was proposed in 1836 by the Collector, and though this proposal was supported by the Revenue Commissioner and sanctioned by Government, it was never carried out, and except in a portion of the Alibág Sub-Division in 1851-52, where the lands⁶ were divided into large blocks by the Political Agent, no survey operations were carried out until the introduction of the Revenue Survey between 1854 and 1866, the portion of Alibág referred to above being remeasured. Revdanda⁷ in the south was the first portion to be taken in hand in 1854.

19. BELGAUM.—Belgaum⁸ was divided from Dhárwár and made into a separate Collectorate in 1836. The⁹ history of survey operations carried out till the introduction of the Revenue Survey in 1849-50 is similar to that of Dhárwár. Parasgad⁹ was the first sub-division taken in hand by the Revenue Survey.

20. KHA'NDESH.—The Khándesh District appears¹⁰ to have been surveyed in the time of Mullik Umbar. In 1819-20 a measurement of the lands was carried out under Captain Briggs, but the accuracy of¹¹ the measurements was doubtful, and his proceedings were disapproved of by Government. In 1823, as it was¹² quite evident from reports received from different parts of the country and the information acquired by the Governor, Mr. Elphinstone, that no thorough reform of the land revenue administration could be carried out without a regular survey, the gradual introduction of such a measure was authorised. Rules¹³ for the

1	Page 74 of Vol. II,	Bombay Land Revenue,	by A. Rogers.
2	" 75	do.	do.
3	" 273	do.	do.
4	Pages 72 & 73	do.	do.
5	Page 262 of Vol. I,	do.	do.
6	" 266	do.	do.
7	" 265	do.	do.
8	" 309 of Vol. II,	do.	do.
9	" 310	do.	do.
10	" 278 of Vol. I,	do.	do.
11	" 279	do.	do.
12	" 280	do.	do.
13	" 281	do.	do.

conduct of the survey were drawn up by the Deccan Commissioner and approved by Government. Many of his suggestions were subsequently adopted in the regular survey. In 1852 Captain Wingate,¹ who had for many years been engaged in perfecting the survey system in the Deccan and Southern Marátha Country, was deputed to report on the most suitable plan for introducing it into Klhindesh. In passing² orders on this report, Government laid down the following rules:—

(1) Measurement and division into survey fields with boundary-marks were to be confined to the actual cultivated land of a village, and a certain portion of arable waste sufficient to meet the probable expansion of cultivation for several years.

(2) The boundaries of villages were to be completely surveyed and marked off on the ground.

(3) The area of land not included in the first class was to be calculated in the lump.

(4) Only the land divided into survey fields was to be classified and assessed.

(5) The assessment of undivided land was to be calculated on the average of the surrounding lands.

(6) No field survey was to be made of villages lying totally waste.

21. According to the universal principle under the Survey management, each field marked off under a separate number and assessed was to be taken as a whole, and no room was left for fraud on the part of the village officers, as there would no longer be any annual measurements. A quantity of arable land having been measured off into numbers under the first rule quoted above, when that was exhausted and more land required for the extension of cultivation the arable waste on which no assessment had been placed was to be broken up into numbers, and, in order to encourage cultivation, given out at a uniform rate of half a rupee an acre. Considerable reductions were also to be made, with the same object, in lands irrigated or capable of irrigation from canals and wells.

Notwithstanding the great advantages the well-informed classes of the people knew would be conferred by the new system,

¹ Page 289 of Vol. I, Bombay Land Revenue, by A. Rogers.

² Pages 280 & 290 do. do. do. do.

considerable opposition was made to the commencement of the measurements in Sánda and elsewhere. There is little doubt that this was secretly fomented by the hereditary district officers, who saw that with everything regularly ordered and all assessments fixed by the Survey Department their own influence and power of enriching themselves by illicit means would disappear, and worked on the credulity of the ryots by spreading the most absurd stories of the intentions of Government. One of these it will be worth while to relate, to show how far ignorant ryots could be imposed upon. The cross-staves that were in use at the time were made of brass in the shape of a cup, in which slits were cut for taking perpendiculars to the corners of fields and other off-sets. The people were persuaded that these cups were for the purpose of measuring the women's breasts, according to the size of which a new tax was to be levied. Prompt measures were, however, taken to suppress, with the aid of the military, any organized obstruction or opposition, which ended as soon as the people saw that Government were really in earnest and intended to carry the matter through.

22. **BIJA'PUR.**—Bijápur,¹ or as it was called until lately Kaládgi, was first formed into a Collectorate in 1864 out of subdivisions formerly included in Sholápur, Belgaum, and Sátára. The Bijápur² Sub-Division had been included in the territory made over to Sátára on the overthrow of the Peshwa in 1818, and had been surveyed in common with the rest of the Sátára country between 1821 and 1828 by Captain Adams. Up to 1843-44 when the Revenue Survey³ was introduced, the history of survey operations of the portions formerly included in Sholápur and Belgaum is similar to that of those Collectorates respectively. The first tract to be taken in hand by the Revenue Survey was the Indi Sub-Division in 1843-44.

23. **PANCH MAHA'LS.**—The Panch⁴ Maháls has formed one of the districts of the Bombay Presidency only since 1861, and no survey⁵ operations appear to have been carried out until the Revenue Survey was regularly introduced between 1871 and 1885.

24. **EARLIEST SURVEYS.**—It will be seen from the foregoing that the object of the earliest surveys was in most cases merely to

¹ Page 234 of Vol. II, Bombay Land Revenue, by A. Rogers.

² „ 247 do. do. do. do.

³ „ 235 do. do. do. do.

⁴ „ 110 of Vol. I, do. do. do. do.

⁵ „ 112 do. do. do. do.

fix a standard land measure and to ascertain the area of land in each village. In some cases the land was divided into fields, but owing to the measurements being inaccurate and untrustworthy, and to the absence of boundary-marks, the measurements could seldom be adopted as the basis of any satisfactory settlement.

25. YEAR OF INTRODUCTION OF BOMBAY REVENUE SURVEY.—Revenue surveys have been in operation in this Presidency since 1836.

26. DESIGN OF SURVEYS.—The¹ design of these surveys is the regulation of the assessment on land so as to secure an adequate revenue to Government, the progressive development of the agricultural resources of the country, and the preservation of proprietary and other rights connected with the soil.

27. MAIN OBJECT OF REVENUE SURVEY.—The² main object of the Revenue Surveys is the imposition of a field assessment; and in³ the division of the village lands into fields the chief points to be kept in view are :

1st.—That the fields, or at least a majority of them, should not be larger than may be cultivated by *rayats* of limited means.

2nd.—That they should not be made smaller than is necessary for the above object without an adequate reason.

3rd.—It⁴ is of much importance also that the existing state of things in any village should be as little interfered with as conveniently practicable, and consequently that the holdings of different proprietors and cultivators of land held upon different tenures should not, when avoidable, be included in the same field.

Taking⁴ into account these and other circumstances which it is not necessary to enter into here in detail, the following general rules for the division of lands into fields were laid down :—

1st.—⁵The number of acres for each description of soil and culture capable of cultivation by a single pair of bullocks having been determined, the size of the fields should

¹ Page 125 of Survey and Settlement Manual, Vol. I.

² " 4 do. do. do.

³ " 5 do. do. do.

⁴ " 6 do. do. do.

⁵ Pages 6 and 7 do. do. do.

be so regulated as to contain from this to double this number of acres.

2nd.—The preceding rule does not apply to tracts of land incapable of cultivation or unsuited for it in their present state, from the presence of dense jungle or other obstructions, which should be divided into as large portions as may be convenient.

3rd.—Land held upon different tenures, as Mirás, Gatkul, Inám, Judi, &c., should be measured separately, and not together in the same field, even when of smaller area than required by Rule I.

4th.—Different kinds of culture, as dry-crop, rice, garden, &c., when in conformity with the usage of the district, should, as far as conveniently practicable, be measured into distinct fields.

5th.—Every holding falling within the limits prescribed in Rule I should be constituted a survey field.

6th.—Every holding in excess of these dimensions should be divided into two or more fields so as to bring the area of each within them.

7th.—When a holding is of less area than the limits laid down in Rule I, and there are other holdings on the same tenure contiguous to it, and also of less area than the rule prescribes, so many of these are to be clubbed together to form a new field as may be requisite to bring the acres of the latter within the limit, but no more.

8th.—When a holding of less area than required by Rule I does not adjoin another holding similarly circumstanced, it should be made a separate field, notwithstanding its deficient size.

28. All rules for the division of village lands into fields or numbers in different parts of the Presidency have been based chiefly on the above rules laid down by Messrs. Goldsmid, Wingate, and Davidson in their Joint Report dated 2nd August 1847, which, together with the correspondence connected with it, will be found in Vol. I. In Khándesh and the hilly parts of Násik Districts the above rules were not strictly followed,—in the former the measurement and division into survey fields with boundary-marks were confined to the actual cultivated land of a village and a certain portion of arable waste sufficient to meet the probable expansion of cultivation for several years. In the latter, as much rice land as lay together was measured into large fields with smaller subsidiary numbers.

In the Ratnágiri District also the lands were not divided into numbers strictly according to the Joint Report Rules, but the rice, garden, and portions of the dry-crop land sufficiently level for the use of the plough were measured off into sections of any size found most convenient, the various fields and sub-divisions comprised in each of these sections being measured and recorded as subordinate numbers within the section.

29. **CHANGES IN RULES FOR THE DIVISION OF LAND INTO NUMBERS.**—The changes introduced with regard to the division of land into numbers since the commencement of revision survey operations will be found under Appendices C, D, and E,—the Revision Survey Measurement Rules. It will be seen from these that whereas at time of original survey the lands of different individuals if of small area, were included in one number, at time of revision such lands, however small the area, have been made into separate numbers or Pôt numbers. Again, numbers measured at the original survey of over 30 acres are at time of revision survey broken up into two or more numbers according to the size of the original number. The Revision Survey Rules explain in detail the causes which at time of revision necessitate the breaking up into two or more numbers, numbers measured at time of original survey. There is therefore no necessity to enter here into any further details on this point. The present scale¹ for the regulation of sub-division of survey numbers will be found under Section 98, Land Revenue Code.

30. **PARTIAL SYSTEM.**—Until 1878, for the purposes of revision, the whole of the village lands were remeasured; a system of partial remeasurement, however, which had been tried and found successful in the Nârgund Petha, was sanctioned by the Survey Commissioner in that year, and has, with certain modifications to suit the local circumstances, since been applied at all revision surveys. The rules of the system as applied to different surveys will be found in the Revision Survey Measurement Rules relating to those surveys—Appendices C, D, and E.

31. **BOUNDARY-MARKS.**—At first a continuous ridge or mound of earth encompassing the number was the form of boundary-mark adopted, but this was found to be too expensive, and a system of partial ridging at the angles and at intervals along the sides with stones sunk at the corners and bends was finally adopted. The following are the rules for the maintenance and repair of boundary-marks passed by Government in 1852:—

(1)² The field boundary-marks to be erected are stones

¹ For the scale, *vide* Chapter XXIII—Sub-division—Part III—Settlement—Vol. III.

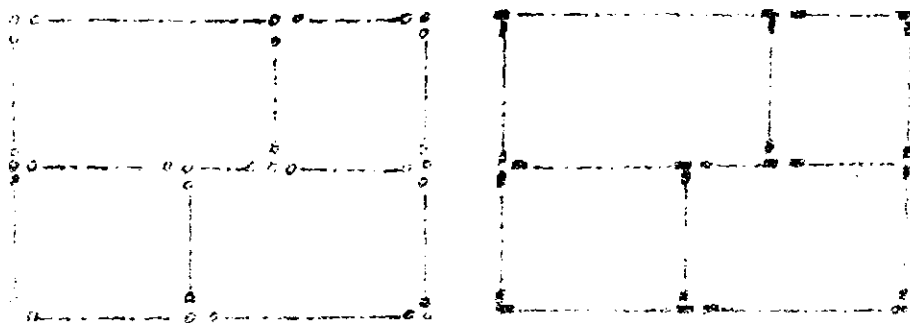
² Page 121 of Survey and Settlement Manual, Vol. I.

and mounds of earth or of stones of the following dimensions :

1st—Stones of 1 to 2 cubits in length, half sunk in the ground, and the exposed portion whitewashed.

2nd—Mounds of earth or of stones, 8 cubits long, 4 cubits broad at bottom, and $\frac{3}{4}$ cubit at top, $2\frac{1}{4}$ cubits high.

(2) Each corner of a field or survey number should be defined by two mounds, or by three stones, as shown in the subjoined examples. The mark \circ represents a stone, the mark — a mound.



(3) When the interval between adjoining boundary marks placed at the corners of numbers exceeds 12 and falls short of 24 guntha chains in length, there should be a single mound, or one stone in place of it, about the middle of the interval, and on the line of boundary. When the interval exceeds 24 chains in length there should be a mound or stone set up at every 10 or 12 chains along the line of boundary. In addition to these marks there should be a stone at every large bend or angle in the line of boundary.

(4) When a number is bounded on any side by a nála, river, canal, hedge, embankment, or stone wall, no boundary marks are required on that side, and any cultivator who may have good reasons for wishing to do so should be permitted to form a new hedge, ditch, canal, embankment, or stone wall, along any side of a number hitherto defined by boundary marks.

(5) Stones are more suitable for boundary marks than mounds of earth, in low situations liable to be flooded by the overflow of nálas or rivers, and in very rainy climates, where the mounds would be liable to be washed away during the monsoon; also in valuable garden or rice lands, when the numbers are small and the mounds would take up so

much space as to interfere with cultivation. In any of these situations, but in no others, stones may be substituted for mounds of earth, at the discretion of the local officers.

(6) At the annual inspection of field boundary marks enjoined by the 23rd¹ of the Survey Rules, when a mound is found to be not less than $1\frac{1}{2}$ cubit in height, it is to be considered in good repair; but when it has sunk below this height, it is to be considered as wanting repair, and is to be raised to the height of $2\frac{1}{4}$ cubits required by Rule I. Stones are to be daubed with whitewash during the course of the annual inspection.

(7) When more boundary marks than are required by Rules 2, 3, and 4, are found on any line of boundary, so many of them as may be in excess are to be allowed to fall to ruin and are not to be repaired. Such extra marks are not to be entered in the Inspection Register at all.

(8) When any mound requiring repair is found to be of greater length than 8 cubits, then a portion of it only of this length is to be repaired, and the remainder is to be left untouched.

(9) The village officers of every village in which mounds have been erected should be required to keep 3 rods, respectively 8, 4, and $2\frac{1}{4}$ cubits long, to measure the length, breadth, and height of the marks, and these rods should be taken to the field at all field boundary mark inspections.

(10) In the case of dry-crop land, a strip of 2 to 3 cubits in width must be allowed to remain unploughed between adjoining marks, in order that it may become overgrown with grass and bushes, so as to form a distinct and easily recognizable boundary to the number. Rice and garden lands have usually well-defined boundaries, such as banks or hedges; but when they have not, a strip of one cubit in width should be left unploughed, to connect adjoining marks, and constitute the boundary. And where the village limits have been defined at the time of survey by double lines of boundary marks, the intermediate strips of land are to remain unploughed.

(11) The foregoing rules apply to all villages in which field boundary marks were systematically set up during the course of the Revenue Survey, or have been so since its completion. They apply, therefore, to all villages in the Collectories of Dhárwár, Belgaum, Ahmednagar, and Kánarese tálukas of Sholápur, the Bírámáti Kurryat of the Indápur

¹ *vide* page 40 Survey and Settlement Manual, Vol. I.

Táluka, part of the Donja Petha of the Haveli Táluka, the Mámldár's division of Purandhar Táluka, and the entire Shivnar, Kheir, and Mával Tálukas of the Poona Collee-
torate.

(12) In the Maharatta districts of Sholápur, the tálukas of Indápur (exclusive of the Baramati Kurryat), Bhimthadi, Haveli (exclusive of part of Donja Petha), Pabhal, and the Supa Petha of Purandhar in the Poona Collectorate, field boundary marks were not systematically constructed at the survey, and the Collector should determine whether there are any villages in these districts to which the rules should be made applicable.

(13) In villages to which the nine first rules may be decided to be inapplicable, existing boundary marks of whatever kind are to be carefully kept up and Rule 10 regarding the breadth of space between fields to be kept unploughed is to be everywhere enforced. Also, in all cases of disputed or doubtful boundaries settled by the district authorities, stones are to be placed on the limits as required by Rules 2 and 3.

(14) Repairs to boundary marks in Khálsát uncultivated lands are to be made by the local officers at the expense of Government, unless the Collector is satisfied that the repairs would be as effectually and more cheaply made by the farmers to whom the grazing of this land is annually sold, under the 14th, 15th, and 16th Survey rules, when a clause requiring this to be done should be included among the conditions of the sale. When the former course is adopted, the farmers of waste should be freed from all responsibility whatever connected with the boundary marks, as the sale of the grazing farms must be injured by laying any amount of responsibility on them.

(15) To provide funds for the repair of boundary marks to Khálsát uncultivated lands, the Collector is authorized to deduct from the amount for which the grazing farms of each táluka or portion of a táluka to which the first nine rules are applicable may sell, a sum not exceeding 5 rupees for every 1,000 acres of waste, and hold this amount in deposit until the 15th day of July in each year, when any unexpended balance of it should be brought to credit on account of the grazing farm, so as to prevent any accumulation of funds beyond the close of the revenue year.

(16) In tálukas where the boundary marks to uncultivated lands have been allowed to fall into great disrepair, and the sum provided by the foregoing rule would not suffice for

their restoration, the Collector is authorized to expend from the collections on account of grazing farms double the amount allowed by the preceding rule or to the extent of 10 rupees for every 1,000 acres of waste, on reporting his reasons for this extraordinary expenditure, for the information of the Revenue Commissioner.

(17) The ryots are not to be allowed to dig out earth close around the boundary marks for the repair: they are to leave a space of 2 cubits in breadth all round the marks untouched, so as to prevent injury to the mounds from water lodging in the cavities from which the earth for the repairs is taken.

(18) The Assistant Collectors are personally to examine the boundary marks of some of the "Numbers" of several villages in every taluka, as soon as possible after the completion of the examination by the native local officers. In the case of districts which are under the immediate superintendence of the Collector, that officer is to mark off several numbers in the village register for examination by the Dufterdár or other high officer of the establishment.

(19) The Revenue Commissioners during their circuit are to take measures for preventing the inspection ordered in Rule 23, paragraph 84 of the Joint Report becoming a mere form.

Under Government Resolution No. 4036,* dated 5th November 1866, the following are the general principles and orders regarding the demarcation of field boundaries:—

* Printed in Sathe's Land Revenue Code under section 122.

The boundary⁽¹⁾ marks are to be of two kinds, viz. earthen bándhs and stones; and their dimensions should be as shown below:—

	Length.	Breadth at bottom.	Breadth at top.	Height.
Earthen bándhs)	5 annas.	2½ annas.	½ of an anna.	1½ anna.

Stones.—From 1½ to 2 cubits in length, of which one-half should be sunk in the ground, and not less than 2 inches thick; where thin stones are not procurable, the stones may be thicker, but must not be less under any circumstances than 1 cubit (háth) long.

Two earthen bándhs, forming an angle (but open at the angular point) should be raised at each of the four corners of each "Number".

(1) Page 148, Sathe's L. R. Code (Second Edition).

When the length of boundary between the corners of a "Number" is less than 25 chains, no bándhs should be raised in the interval; but in case there be bends, a stone should be fixed at each bend.

When the line of boundary between the corners of a "Number" is more than 25, but does not exceed 50 chains in length, one bándh should be raised midway between the corners, and stones fixed at all intermediate bends. It is not necessary, however, to place the intermediate bándh exactly halfway between the corners; when measuring the line of boundary, half the distance should be guessed by the measurer, and marks made there for the erection of the bándh. Under no circumstances must the intermediate bándh be put within 12 chains of the corner bándh.

When the line of boundary between adjoining corner of a "Number" is more than 50 chains in length, a bándh should be raised at every 20 chains, and stones fixed at all intermediate bends.

When a hedge, an old well-defined embankment, not less than one cubit high, a river or nalla, forms the boundary of a "Number," boundary marks are not to be made according to the preceding rules, but to those that follow.

When an old well-defined continuous embankment not less than one cubit high or hedge is the boundary of a "Number," stones of the standard size should be fixed at the corners and bends, but bándhs should not be raised along it; the corners will be defined by a stone and also by a bándh to show the direction of the line of boundary which branches off from it.

When a river or large nalla is the boundary of a "Number," instead of two bándhs at each corner, on the river or nala, a stone of the standard size should be fixed at each corner, and one bándh raised near the stone to show the direction of the line of boundary which branches off from it; and as the bank of the river or nalla is to be considered the line of boundary, no bándhs should be raised between the corners on that side.

When a made road is the boundary of a "Number," two bándhs should be raised at the corners as in other cases, and standard sized stones fixed at the bends along it; but bándhs should not be raised between these corners, as the stones at the bends will be sufficient to show the rayat what space he is to leave between the road and the boundary of his "Number."

When in accordance with the above rules the place for a bándh happens to fall along or across a water-course, where it would be liable to be washed away, the water-course should be avoided, and the bándh raised on the line of boundary out of reach of floods ; but if the water-course cannot be avoided, and the bándh to be raised is not a corner one, two stones of the standard size should be fixed instead, at a distance apart equal to the length of the bándh. When, however, the bándh happens to be a corner one, one stone of the standard size should be fixed at the corner of the "Number" and another in the direction of the line of boundary, at the distance of eight annas from it. In the neighbourhood of villages, and in other places where bándhs are likely to be trodden down by cattle, a stone of the standard size should be fixed at the corner of "Numbers" in addition to the earthen bándhs.

The foregoing rules regarding boundary marks are applicable to culturable "Numbers" only, not to *Parampok* (unculturable). The boundary lines of these when they are not also the boundaries of culturable "Numbers," but pass over hills or through jungle, should be shown by two bándhs with an intermediate stone of the standard size fixed at each corner or large bends in the line of boundary. Stones are not to be placed at the small bends of such lines of boundary except in places where the bends are easily recognized. And when a narrow ridge of hill, or a large nalla, is the boundary of a "Parampok Number," there is no necessity for fixing stones or raising bándhs at any of the bends along it ; all that is necessary is to fix a stone at each point where the boundary line diverges from the ridge or nalla, and to raise a bándh near the stone, to show the direction of this line.

All boundary mark expenditure on occupied land should be collected immediately the distribution accounts are sent to the Collector. In case of any special circumstances rendering it expedient to postpone the collection for a time, the Collector can do so with the sanction of the Commissioner of Division.

All boundary mark expenditure should remain on the Survey books till the measurement of the village is completed and the accounts made up. In cases where the final completion of a village is delayed on account of a little work, boundary disputes or such like, sending in the accounts of the completed main bulk of the village need not be delayed ; a supplementary bill being forwarded afterwards on the completion of the outstanding work.

32. **BOUNDARY DISPUTES.**—The following were the rules laid down for the settlement of village boundary disputes :—

1st—Before proceeding to the regular survey of a district, a few experienced Surveyors should be deputed to define, through the co-operation of the villagers and aid of the local Revenue officers, the limits of each village, and secure their preservation by proper land marks, and the preparation of a descriptive record or map for the use of the regular Surveyor.

2nd—Before proceeding to define the limits of any village, previous notice should be given to secure the attendance of the parties interested, and in the absence of any dispute, the boundaries should be marked off as pointed out by them.

3rd—In the event of the occurrence of a dispute, where the land is cultivated by both parties, the line of boundary is to be laid down according to actual possession.

4th—Trivial disputes, not noticed in the village papers, to the extent of a few feet on either side of the possible line of boundary, to be settled summarily on the spot by the Surveyor.

5th—In any case of a dispute, when the parties consent to abide by the award of one or more arbitrators, an agreement to that effect to be taken from them in writing, and the boundaries laid down accordingly.

6th—In cases where the Surveyor cannot obtain the consent of the parties to refer the dispute to arbitration, the aid of the Mámlatdár or other local officer should be called in, who should use all his influence to effect an amicable settlement; but failing this, and in the event of the dispute being of recent origin and not noticed in the village papers, he should himself inquire into, and decide upon, the line of boundary, which should immediately be marked off by the Surveyor.

7th—Disputes of old standing, recorded in the village papers of which the local officer may fail to effect a settlement, should be left over for adjudication by the Survey officers, who, after a careful consideration of the evidence adduced by the contending parties, should decide upon the line of boundary, and have the marks laid down accordingly.

8th—The settlement of disputes between Government and alienated villages, which the parties will not consent to submit to arbitration (or where this course may be unadvis-

able from an apprehension of collusion), should be made by the Survey officers, as in the preceding rule; but previous to the boundaries being laid down their awards should be confirmed by the Superintendent.

9th—All awards made under the preceding rules should be in writing.

33. MEASUREMENTS.—The ¹ measurements of the former Deccan (Pringle's) Survey were confined to the ascertainment of the area of the different fields into which the village is divided, and the preparation of a descriptive record of their name, tenures, and boundaries.

The present surveys were commenced with the same objects and on the same plan of measurement; but as the work proceeded, the imperfections of any kind of descriptive record of boundaries became apparent, and led to the super-addition of a rough sketch map, framed for the purpose of exhibiting the position and shape of the fields but without aiming at any degree of accuracy with regard to area. It was subsequently found that the ordinary plan of measuring with the cross-staff and chain was compatible with the accurate protraction of its results upon paper, and that without the aid of theodolites or other instruments for measuring angles, or any new process of survey, field, and village maps, possessing a degree of correctness sufficient for all practical purposes could be constructed.

34. The procedure adopted by the Revenue Survey in the measurement of the lands of a village is as follows:—² Each Measurer had a field book with every page on it numbered and signed, in which no erasures were permitted, but merely lines drawn under any mistake in entering that might be made, so as to show the original and the correction together. Each day the names of village officers and others present were entered with a view to fix the responsibility for entries made. The Measurer began his first number near the village site. The number of the field in the village accounts, with every particular as to occupancy, tenure, &c., was recorded and a rough sketch of the field drawn. He then chained round the boundary and measured the number with a chain of 16 annas (= 33 feet) and cross-staff by dividing it into triangles and trapezia. This done, he passed on to the next number and the one beyond, and so on till the whole village was complete. Each number was accurately plotted at home from the measurements taken, and transferred by tracing paper to the general village map.

¹ Pages 11 and 12 of Survey and Settlement Manual, Volume I.

² Page XX of the Survey and Settlement Manual, Volume I.

Assisted by the position of the village site and roads being fixed by theodolite or compass to make the field close in on the map, a sufficient degree of accuracy, it was then considered, was attained for all practical purposes. Subsequently, however, with a view to the village maps not being dependent for accuracy entirely on the fitting in of one field upon another until the whole

village space is filled in, base lines (* *Adhār-rah*) were first measured across the lands of each village from boundary to boundary, off-sets being taken from them to corners and bends of numbers in such a manner that each field could be plotted on the village map in its exact place, so that in addition to being all that can be required for revenue purposes, the maps were quite sufficiently exact for topographical purposes. The work (field, calculations, and mapping) of the Native Measurers is carefully checked by European officers. Errors in measurement of over 1 or 2 per cent. are rare.

35. Up to 1846 the cross-staff was the only instrument in the hands of the Measurers, and though well enough adapted for the survey of a level open country, is of little service in hilly uneven ground, tracts of jungle, or wherever obstacles exist to chaining in any direction. Moreover, few, if any, of the Native Surveyors were capable of delineating upon paper the configuration of the ground they measure. In this year (1846), therefore, orders were issued to all Assistant Superintendents of Survey that Measurers should receive instruction in the use of the theodolite and compass and in hill sketching. Hereafter level portions of land were measured with cross-staff and chain only, but for uneven and hilly land covered with jungle, the theodolite or field compass was also used, and the hills were sketched on the maps.

36. In 1871, in order to obtain an accurate general map, instructions were issued by the Survey Commissioner for an accurate traverse survey of village boundaries (*vide* Appendix F). Recently, in order to insure greater accuracy, the Measurers have been supplied with skeleton maps of villages on which are shown points, such as triple junctions (*towndas*), summits of hills, &c., already fixed by the topographical branch of the Great Trigonometrical Survey. The maps now constructed by the Revenue Survey are practically efficient both for revenue and topographical purposes. ¹At the Venice Geographical Congress, maps constructed with the aid of the Bombay Revenue Survey maps gained a gold medal.

¹ Footnote on page 4 of Government Selection entitled "Character of Land Tenures, &c., Bombay Presidency."

37. Amongst the Appendices will be found the following Rules and Maps :—

RULES.

Appendix

A.—Fixing the Base line.

B.—North Kánara Measurement Rules.

C.—Deccan and Southern Marátha Country Revision Measurement Rules.

D.—Gujarát do. do.

E.—Konkan do. do.

F.—Rules regarding Traverse Survey.

MAPS.

(1) Map drawn (not to scale) in the very early days of the Revenue Survey (1840-41).

(2) Map drawn according to scale without the aid of any instrument for measuring angles (1846-47).

(3) Map drawn to scale with the aid of the theodolite (1858).

(4) Map of village with boundary accurately traversed (1870-71).

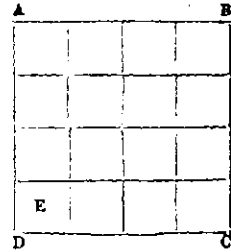
(5) Map constructed with the aid of points fixed by the Topographical Survey (1884-85).

CHAPTER II.
LAND SURVEYING.

(1) *Definitions.*

1. Area means the superficial contents of any plain geometrical figure estimated by the squares of some known lineal measure, which in the Bombay Revenue Survey are Annas and Chains, converted into square—Annas, Gunthas, and Acres.*

2. The area of any plain figure is the measure of the space contained within its extremes or bounds. This area or the content of a plane figure is estimated by the number of squares that may be contained in it. The side of those measuring squares being a link or a chain, the area or content is said to be respectively so many square links or square chains; thus if the measuring unit of the square E in the marginal figure A B C D, be a link or a chain, then as often as the said square is contained in the rectangular figure so many square links or square chains respectively are contained in the rectangle, which in the sketch is equal to, if links, 16 square links or 1 anna = $\frac{1}{16}$ of a guntha and if chains 16 gunthas or $\frac{2}{5}$ of an acre.



3. The acre contains 4,840 square yards, and is subdivided into gunthas and annas.

4. The chain used for taking the length and breadth of figures for ascertaining areas is divided into 16 links, each link being $2\frac{1}{16}$ feet, giving exactly 33 feet or 11 yards in length.

5. Land Surveying treats of—

- (1) Linear measurement—*i.e.*, measurement of straight lines for distance.
- (2) Angular measurement—*i.e.*, measurement of angles for direction.
- (3) Superficial measurement—*i.e.*, measurement of surfaces for area.
- (4) Mapping.

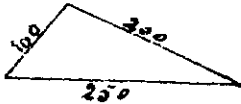
* TABLE OF MEASURES.

<i>Measures of Length</i>	<i>Square Measure.</i>
12 Inches = 1 Foot.	16 Square links = 1 Anna.
3 Feet = 1 Yard.	16 Annas = 1 Guntha.
11 Yards = 1 Chain.	40 Gunthas = 1 Acre.
160 Chains = 1 Mile.	640 Acres = 1 Square mile.

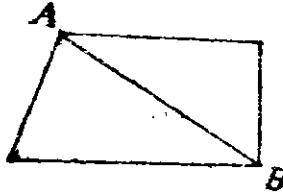
6. A straight line is the shortest distance between two points, such as the corners of a field. The sides of a field are straight lines.

7. A field cannot have less than three sides. If a field or any other space has three straight sides, its shape is a triangle. If it has four straight sides, it is a quadrangle or quadrilateral.

8. Any two sides of a triangle added together must be longer than the third side, thus—



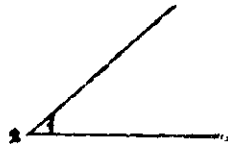
9. A quadrangle is divided into two triangles by a straight line joining two opposite corners, thus—



The line A B is called a diagonal.

10. An angle is a bend or corner formed by two straight lines meeting or crossing each other.

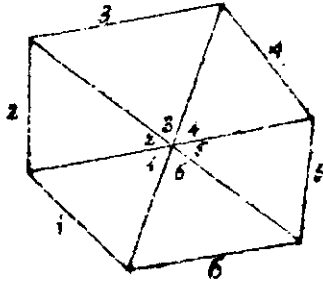
If the ends of two straight lines meet at one point, they form two angles, thus—



11. If three straight lines meet they form three angles, thus—



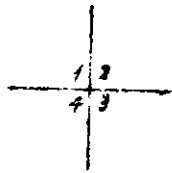
12. Any rectilinear figure can be divided into as many triangles as the figure has sides, thus—



13. If four straight lines meet at one point or if two straight lines cross each other they form four angles, thus—



14. If the four angles are all equal, they are called right angles, thus—



Surveying Instruments and the manner of using them explained.

15. The following are the instruments commonly required in the Bombay Revenue Survey :—

Chain—For linear measurement.

Rod—For testing chain.

Cross-staff—For measurement of right angles.

Scale and Compass—For mapping.

Area-Comb—For calculating areas of Nos.

Chain.

16. The chain used by the Bombay Revenue Survey is of iron, 33 feet or 11 yards long, divided into 16 links, each link being $2\frac{1}{16}$ feet in length. With each chain there are 10 arrows, also of iron.

17. To find the distance between two points such as two corners of a field, the straight line between the two points is measured with the chain in the manner described below.

18. The point from which the measurement begins is called the starting point and the other end of the straight line to be measured is called the closing point.

19. A flag should be held or fixed at each of these points and another in the middle of the straight line in an exact line with them, great care being taken in holding or fixing the staves upright.

20. Two men hold the chain, one at each end. One man is called the driver or back-chainman, and the other the leader or fore-chainman.

21. The driver holds one end of the chain with one hand and stands over the starting point. The leader holds the other end of the chain with one hand and the ten arrows with the other hand.

22. The leader drags the chain in the direction of the closing point until the chain is quite straight. The driver tells the leader to move to the right or left until the chain is exactly in a straight line between the starting and closing points. Both men then stoop down and hold the chain quite straight and close to the ground.

23. The leader then sticks one arrow into the ground at the end of the chain or, if the ground is too hard to allow of the arrow being stuck into the ground, the leader makes a cross thus X with the point of the arrow, and lays one arrow on the ground with the point touching the centre of the cross. This completes the measurement of the first chain.

24. Both men then stand up and swing the chain a little to one side to avoid disturbing the arrow, and they both walk in the direction of the closing point until the driver reaches the first arrow.

25. Both men then stop and the measurement of the second chain is made exactly in the same manner as that of the first just described.

26. The leader puts down one arrow at the end of each chain and the driver picks up the arrows and holds them, so that he can tell at any time how many chains have been measured by counting the arrows in his hand.

27. When the driver reaches the tenth arrow he carefully marks the place and gives the ten arrows to the leader before the measurement of the eleventh chain begins.

28. The best way to note that ten (10) chains have been measured is to direct the driver to pick up a small pebble or stone at the completion of every ten chains, the Surveyor also making a note of the fact.

29. When the leader reaches the closing point, he should not stop there, but should go forward till the driver reaches the last arrow fixed in the ground: he should then stop and place the chain against the staff. The total distance between the two points will then be the number of 10 chains noted by Surveyor (if any, they should tally with the number of stones in the driver's hand) + the number of arrows in the driver's hand + the number of links between the last arrow in the ground and the staff on the closing point, *e. g.* the Surveyor has noted 2 tens (tallying with 2 stones in driver's hand) = 20 chains, the driver holds 8 arrows = 8 chains + 10 the number of links between the last arrow and the staff = 10 annas = 28 chains 10 annas.

30. The chain is liable to many errors, 1st in itself; 2ndly, in the method of using it; and 3rdly, in the uncertainty of placing the arrows. Every possible precaution must therefore be used.

31. If the chain be stretched too tight, the measured line will be shorter than it really is; on the other hand, if it be not drawn sufficiently tight, the measure obtained will be too long.

32. The Surveyor should always follow the chainmen to ensure that they are proceeding in as straight a line as possible, and they should be taught to keep each other in a straight line with the flags, the leading-chainman by keeping the rear-chainman and the back station (on which there should be a flag) in a straight line with himself, while the rear-chainman directs the leading one in a straight line with himself and the forward station.

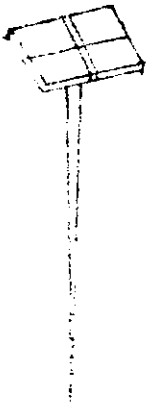
33. The length of the chain should always be tested with the testing rod before commencing measurement.

Rod for testing Chain.

34. This rod is either of wood or iron, four annas in length. To test the chain, measure carefully with testing rod on a level

piece of ground a distance of 16 annas and mark the distance by driving firmly into the ground at each end of this distance a wooden peg. Stretch the chain between these two pegs. If it exactly occupies the space between the pegs, the chain is right, if it falls short of or overlaps the space the necessary correction (+ or -) should be made at once. Once the distance (16 annas) has been pegged out, the pegs need not be moved, and all that is necessary is to extend the chain upon them before commencing measurement work.

Cross-staff.



35. The cross-staff consists of a piece of wood about 6 inches square and about an inch and a half in thickness, fixed on the end of a wooden staff about 5 feet in length with an iron spike at the end so that it can be fixed upright in the ground.

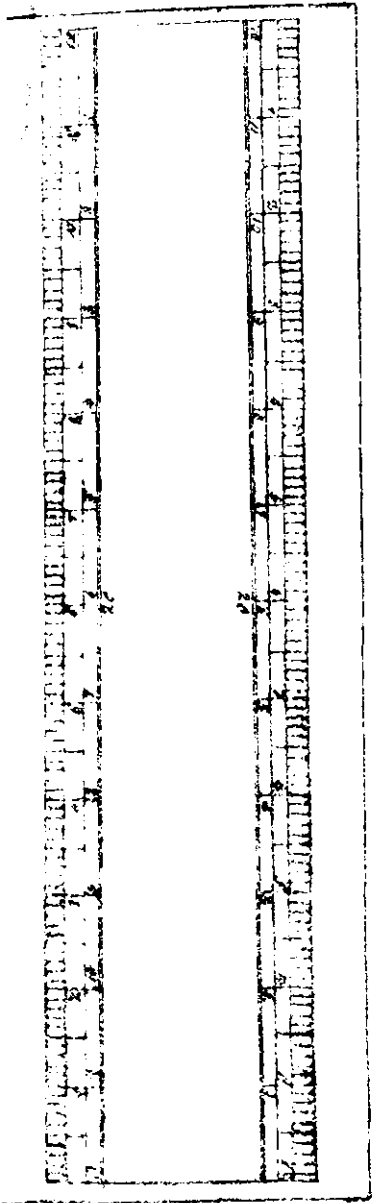
36. The square piece on the top has two grooves at right angles with each other.

37. When an offset has to be taken from the chain line to a flag on either side of it, the cross-staff should be fixed upright on the chain line by thrusting the iron point into the ground.

38. If when one groove is directed to the forward or back station the other groove is found to point directly to the offset flag, the staff is in the right place and the offset can be measured from the flag to the cross-staff; if, however, the second groove does not point directly to the offset flag, the staff should be moved backward or forward along the chain line until one of the grooves points exactly to the front and back stations and the other groove points exactly to the offset flag.

Scale.

39. The scale is a flat piece of cardboard, wood, or ivory with a straight edge, on which are marked any extent of equal divisions which are numbered 1, 2, 3, &c. The primary divisions are subdivided into ten equal parts and from these last divisions the scale is named. Thus it is a scale of 20 when twenty of these small parts are equal to one inch. The diagram in the margin represents a scale of 20 chains to one inch. The scale shows the ratio of the map to the ground.

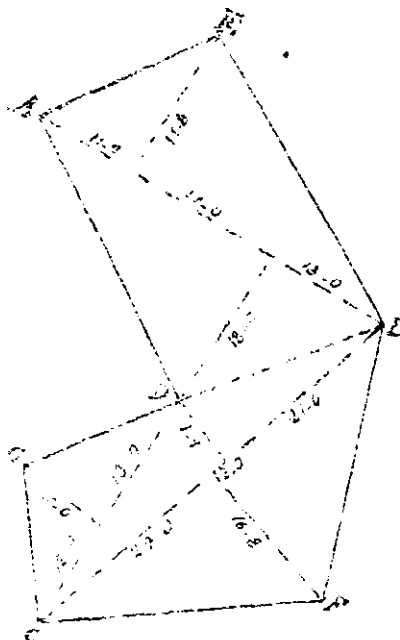


40. Two scales are generally used, a long one, called the plotting scale, is used for the chain line, and a short one, called the offset scale, is used for the offsets.

Drawing Compass.

41. This instrument consists of two legs movable about a joint, so that the points at the extremities of the legs may be set at any required distance from one another; it is used to transfer and measure distances and to describe arcs and circles.

42. As a rule the diagonals should be first plotted, then offsets, and lastly the outer boundaries of the field: thus to plot the field in the following diagram:—



First plot the line AB ; then the offsets from AB to E and D ; then draw the lines AE , EB , BD , and DA ; then with compass take off from the scale the distances BC , DC , and fix the point C , and from the two lines (BC , DC) fix the points (offsets) F and G ; then draw the lines DG , GC , CF , FB .

43. In making field sketches the top of the page should be made the North, the bottom will then be the South, the right side East, and the left side West. These bearings will of course be approximate.

Area-Comb.

44. The Area-comb consists of a brass or cardboard frame having cords, fixed perpendicularly across the open portion, parallel to and equi-distant from each other, according to the scale of the map of the Number the area of which is required. On the upper portion of the frame is shown a scale of 20 chains to an inch—the larger sections represent acres, the smaller ones four gunthas each.

45. The following diagram represents an Area-comb constructed to the scale of 20 chains to an inch placed over the map of a Number—drawn to the same scale—the area of which is required:—

46. To calculate the area of a Number, place the area-comb over the map of the Number so that one of the cords and one side of the number coincide, as shown in the diagram. Commence at A and measure with the compasses the distance A B ; keeping this distance in the compasses, place the upper leg of the compasses at C and open them out to D ; place the upper leg again at E and open them out to F, and so on to the opposite end of the Number ; then, keeping the compasses at this distance, extend them along the scale on the frame, the number of larger sections covered will be acres and the number of the smaller ones 4 gunthas each, that is, the area of the Number.

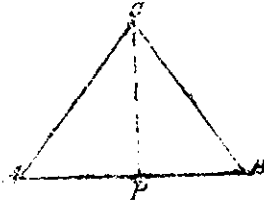
47. If the area of the Number is more than the capabilities of the compass to stretch, the area should be calculated in two or more operations.

CHAPTER III.

FIELD MEASUREMENT.

1. To measure a triangular field by the chain—

Figure 1.



Place flags at the corners $A B C$; measure with the chain from A to P where a perpendicular would fall from the point C ; set up a mark at P , noting down the distance $A P$, and measure and note down the distance $C P$; then measure and note down the distance $P B$.

The area is found by multiplying the length $A B$ by $P C$ and dividing the product by 2 or by multiplying the length $A B$ by half $C P$:—

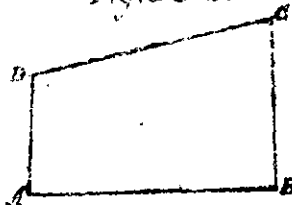
$$\begin{array}{l} A B = 24 \text{ chains} \\ P C = 16 \text{ ,,} \end{array} \quad A B \times \frac{P C}{2} \text{ or } 24 \times \frac{16}{2} = 24 \times 8 = 192 \text{ Gunthas}$$

$$\frac{192}{40} = \text{Acres } 4 \text{ Gunthas } 32.$$

2. The area of a trapezium is found by multiplying the base $A B$ by half the sum of the perpendiculars $A D, B C$:—

Figure 2.

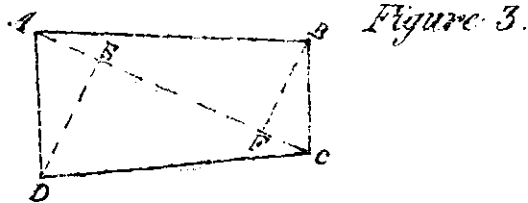
$$\begin{array}{l} A B = 25 \\ A D = 12 \\ B C = 18 \end{array}$$



$$A B \times \frac{A D + B C}{2} \text{ or } 25 \times \frac{12 + 18}{2} = 25 \times \frac{30}{2} = 25 \times 15 = 375 \text{ Gs.}$$

$$\frac{375}{40} = \text{Acres } 9 \text{ gunthas } 15.$$

3. To measure and find area of a four-sided field :—



Divide it into two triangles by a diagonal A C and measure ; and find the contents of each as shown in figure 1 ; or multiply the base A C by half the sum of E D, F B ; the latter method is the simplest.

$$\begin{array}{l}
 A C = 32 \\
 E D = 15 \\
 F B = 11
 \end{array}
 \quad
 A C \times \frac{E D + F B}{2} \text{ or } 32 \times \frac{15 + 11}{2} = 32 \times \frac{26}{2} = 32 \times 13$$

= 416 gunthas = Acres 10 gunthas 16.

4. To measure and find the area of any field, divide it into triangles and trapezia by running lines across from corner to corner taking offsets to bends and corners ; then calculate the contents of each triangle and trapezium separately as shown in figures 1 and 2 ; their sum will be the area.

- A P = 8
- P F = 18
- F B = 9
- A B = 35
- P D = 10
- F E = 12
- R C = 14

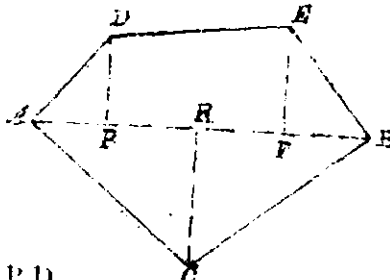


Figure 4

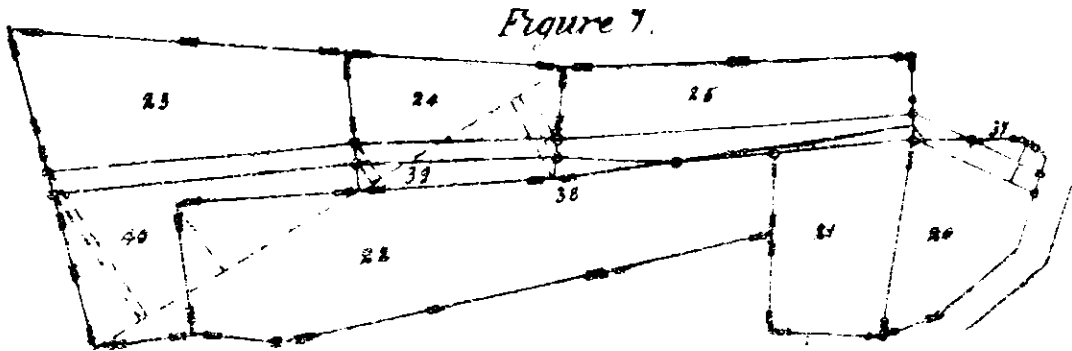
$$\begin{array}{l}
 A P \times \frac{P D}{2} \quad \text{or } 8 \times 5 = 40 \text{ gunthas.} \\
 P F \times \frac{P D + F E}{2} \quad \text{or } 18 \times 11 = 198 \text{ ,,} \\
 F B \times \frac{F E}{2} \quad \text{or } 9 \times 6 = 54 \text{ ,,} \\
 A B \times \frac{R C}{2} \quad \text{or } 35 \times 7 = 245 \text{ ,,} \\
 \hline
 \qquad \qquad \qquad 537 \text{ ,,} \\
 \hline
 \end{array}$$

537
40 = Acres 13 gunthas 17.

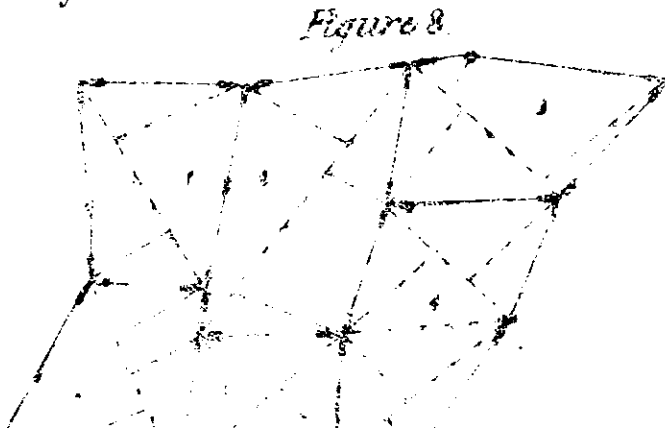
Measure the diagonal or base line $A C$ taking offsets to B and D ; then measure the lines $A B$, $B C$, $C D$, taking offsets to e , f , g , h , i , and j .

To find the area,—calculate the contents of each triangle and trapezium separately as shown in figures 1, 2, and 3; the triangle $B i C$, however, being outside the boundary of the field, its contents must be subtracted from the sum of the contents of the other triangles and trapezia; the result will be the area of the field in gunthas or in gunthas and annas, which divided by 40 will give the area of the field in acres &c.

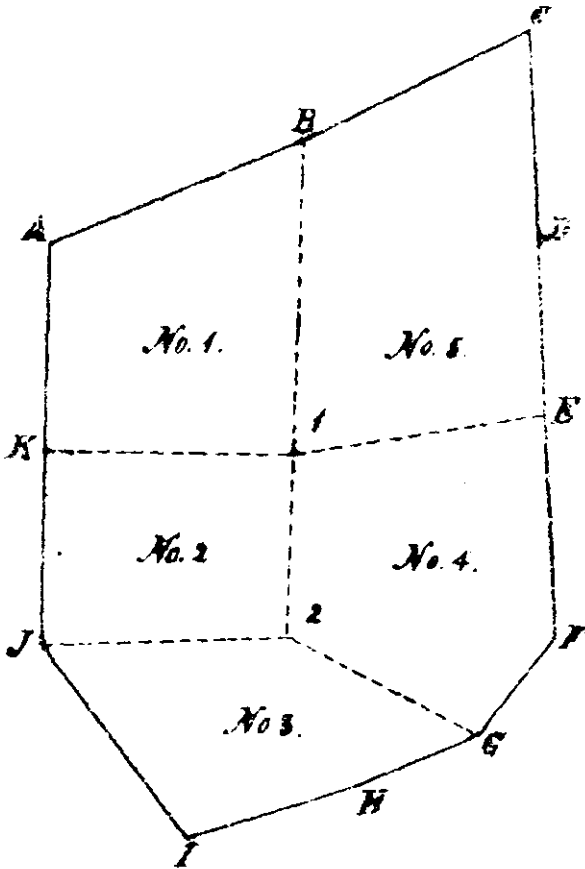
7. How to measure out a road, canal, or railway from adjoining fields will easily be understood from the dotted lines in the subjoined sketch. In Appendix A will be found details of all the necessary measurements, number by number:—



8. The subjoined sketch shows how to break up a large plot of land into Survey numbers with chain and cross-staff. The measurements to be taken are shown in dotted lines, and in Appendix B will be found details of necessary measurements, number by number:—



9. How to subdivide a plot of land into two or more numbers or Pôt numbers



bers or Pôt numbers according to the "Phalmi" system is shown below. The measurer takes into the field a Tippan or rough book, on a page of which he pricks off the boundary of the plot of land A B C D E F G H I J K required to be divided into two or more numbers or Pôt numbers as shown in the margin, with the four-anna rod measure B 1 and K 1, and taking off from the scale with compasses these two distances, fix by intersection the point 1, now draw the lines B 1, E 1, and K 1. Then measure

with four-anna rod from 1 to 2 and from J to 2, take these distances off from the scale with compasses and fix by intersection the point 2, draw the lines J 2 and G 2; the plot of land is now divided into 5 numbers. Areas to be calculated by area-comb. Had the point B not been already fixed on the map, it would be necessary to commence measurement by measuring from A to B and from A to K, and then measuring as described above.

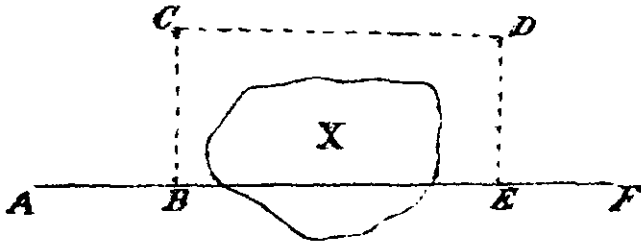
CHAPTER IV.

USEFUL PROBLEMS.

Problem 1.

To measure a line across a tank or pond, or to avoid an obstacle, such as a house or haystack in your chain line :—

Let $A F$ be the chain line and let X be the tank or obstacle.

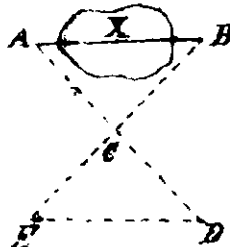


First measure $A B$ in the line $A F$. Then at the point B which should be, if possible, the end of a chain, set up the cross-staff and lay off the line $B C$ at right angles to $A B$. Measure in the direction $B C$ as many chains as are necessary so as to be quite clear of the obstacle or tank, and set up the cross-staff at C ; then lay off the line $C D$ at right angles to $C B$, and measure in the direction $C D$ as many chains as necessary. At the point D set up the cross-staff a third line and lay off at right angles to $C D$ the line $D E$ equal to $B C$. Then from E , which, if the work so far is correct, will of course be in the straight line $A B E F$, continue the measurement to F .

The distance $C D$ will be equal to the distance $B E$, the measurement of which was impeded by the obstacle or tank X .

Problem 2.

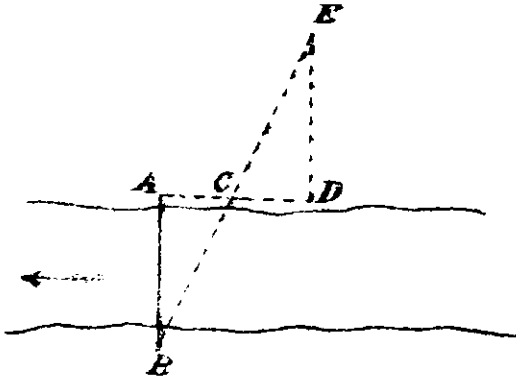
Another method.—Let $A B$ be the line to be measured and X the tank :—



Fix on some convenient point C ; measure $A C$ and $B C$ and prolong these lines till $C D$ equals $A C$ and $C E$ equals $B C$; then the distance between the points $E D$ will be equal to $A B$.

Problem 3.

To measure a line across a river:—



Let AB be the line required to be measured.

Set up the cross-staff at A and lay off AC at right angles to AB .

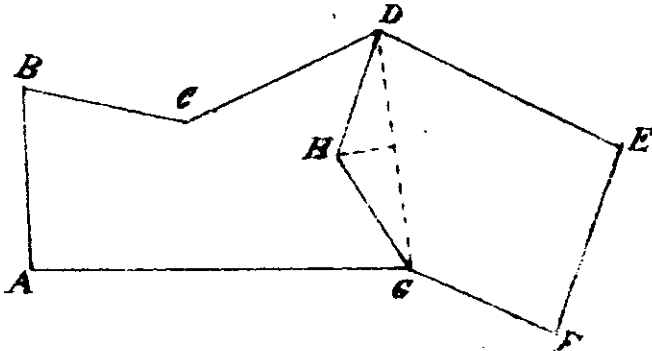
Then measure AC , say 6 or 8 chains, and continue the measurement in a straight line to D making $CD = AC$.

Then set up the cross-staff at D and lay off DE at right angles to the line ACD .

Then measure from D in the direction of E until BC and E are all in one straight line. DE will be equal to AB .

Problem 4.

How to take off a given portion from a plot of land:—



Let $ABCDEF G$ be the plot of land containing 11 acres; it is required to take off a piece that shall contain 5 acres.

Join any two points as D and G with the line DG (which we may nearly judge to be the partition line) and find the area of the part $DEFG$, which suppose may want 1 acre 25 gunthas of the quantity required to be cut off.

Measure the line $D G$ which suppose to be 25 chains. Divide 1 acre 25 gunthas or 65 gunthas by $12\frac{1}{2}$, half of $D G$, and the quotient $5\frac{1}{2}$ chains will be a perpendicular for a triangle whose base is 25 chains and the area 65 gunthas = 1 acre 25 gunthas; draw the lines $D H$, $H G$, and $D E F G H$ will be the portion of land to be taken off.

If the area of the part $D E F G$ is found to be more than is required to be taken off, the triangle $D H G$ should be measured on the side opposite to that shown in the sketch.

CHAPTER V.

PRACTICAL COURSE OF INSTRUCTION.

FIRST DAY.

Morning—Field.

The nature and use of the chain, testing rod, and cross-staff should be explained. The chain should be stretched out straight and pegs driven into the ground at its two extremities, and its length carefully tested with the testing rod. It should be shown how to read distances on the chain. Two flags should be set up a few chains (say 5 or 6) apart, and two other flags fixed to the right and left of them at any convenient distances and offsets taken with the cross-staff.

A small four-sided plot of land should be measured by chaining a diagonal and two offsets. A rough sketch of it should be made and the measurements recorded.

Afternoon—Office.

A scale of 20 chains to one inch and a drawing compass and area-comb should be shown and the manner of using them explained; several distances (diagonal and offset) should be taken off the scale and recorded and then plotted.

The land measured in the morning should be plotted to the scale of 20 chains = one inch.

Blank, rough, and fair field books should be shown and the manner of making entries in them should be explained.

SECOND DAY.

Morning—Field.

Two or three contiguous four-sided fields of a total area of about 10 or 12 acres should be measured, and the measurements recorded in a rough sketch of the fields.

The method of avoiding an obstacle in the chain line should be explained by actual measurements.

Afternoon—Office.

The fields measured in the morning should be plotted to the usual scale and their area calculated.

The sections of the Manual bearing on the work done up to date should be read and explained.

THIRD DAY.

Morning—Field.

Three or four contiguous fields of irregular shape of a total area of about 15 or 20 acres should be measured and the measurements recorded in a rough sketch of the fields.

Afternoon—Office.

The fields measured in the morning should be plotted and their area calculated.

FOURTH DAY.

Morning—Field.

The fields measured on the 2nd and 3rd day should be re-measured each in one block by chaining one diagonal across each and taking offsets to all bends and corners, both on the exterior boundary and on the boundaries between the included fields.

Afternoon—Office.

The measurements taken in the morning should be plotted to the usual scale and the area of each field taken off the plot with the area-comb.

The area thus obtained should be compared with the area previously computed.

FIFTH DAY.

Morning—Field.

Cut off from a given field a portion containing a required area.

Afternoon—Office.

Plot the measurement work done in the morning and explain all the "useful problems."

SIXTH DAY.

Morning—Field.

A portion (about $\frac{1}{4}$ th mile) of a made-road, canal, or railway should be measured out from adjoining fields.

Afternoon—Office.

A map of the measurement work done in the morning should be drawn, and the area of the numbers on either side of the road, canal, or railway and that of the latter should be calculated.

SEVENTH DAY.

Morning—Field.

A block of about 40 acres should be divided into fields of varying sizes and shapes, marks being placed in the field at bends and corners on the exterior boundary, and on the bends and corners of the included fields.

“Bāndh maps” of all the fields into which the block is subdivided should be taken and recorded.

Afternoon—Office.

The different statements, tables, and papers to be prepared in connection with measurement work should be shown and the nature of the entries and how they are to be made should be explained.

EIGHTH DAY.

Morning—Field.

The Survey fields included in the block marked out on the previous day should be measured with chain and cross-staff.

Afternoon—Office.

A map of the fields measured in the morning should be drawn to the usual scale showing the necessary boundary-marks and the areas calculated.

The rules for the erection of boundary-marks should be read and explained.

NINTH DAY.

Morning—Field.

The fields measured on the previous day with chain and cross-staff should be re-measured according to the “Phalni” system.

Afternoon—Office.

A map of the fields measured in the morning should be drawn to the usual scale from the Phalni measurements, the areas being taken off the map with the area-comb, and both map and areas compared with those drawn and calculated the previous day.

TENTH DAY.

Morning—Field.

The Village Officers should measure and demarcate a four-sided field without the assistance of the instructor.

Afternoon—Office.

The field measured in the morning should be plotted to the usual scale, and fair field book prepared, without assistance from the instructor.

ELEVENTH DAY.

Morning—Field.

The Village Officers should demarcate and measure a field of irregular shape, first with the chain and cross-staff, and again according to the "Phalni" system with rod.

Afternoon—Office.

The field measured in the morning should be plotted to scale from both chain and rod measurements and the area calculated "Waslewár," and also with the area-comb and fair field book prepared.

TWELFTH DAY.

Morning—Field.

The Village Officers should measure off from a given field and demarcate a required area without any assistance from the instructor.

Afternoon—Office.

The work done in the morning should be plotted to the usual scale and the necessary entries and sketches made in the fair field book without any assistance.

THIRTEENTH DAY.

Morning—Field.

The instructor should mark out an imaginary road through three or four contiguous numbers; the road so marked out and the portions of the numbers on either side of it should be demarcated and measured by the Village Officers without any assistance from the instructor.

Afternoon—Office.

A plot of the numbers out of which the road was measured on the previous day should be supplied to the Village Officers, who should without assistance fix the road in the plot according to measurements taken in the morning and prepare fair field books.

All the necessary corrections to be made in all the Survey and Village papers on account of the road should be explained by the instructor.

FOURTEENTH DAY.

Morning—Field.

A block of about 30 acres should be broken up into three or four fields of varying sizes and shapes demarcated and measured by the Village Officers without any assistance from the instructor.

Afternoon—Office.

A map of the fields measured in the morning should be drawn to scale and their area calculated and the necessary entries made in the Survey papers by the Village Officers without any assistance from the instructor.

CHAPTER VI.

ORDERS FOR THEODOLITE MEASURERS.¹

SECTION I.

Manner of using the Theodolite and verifying the angles taken.

1. A theodolite measurer, after having chosen his first station, must never begin work by fixing the direction of any line at 360° and working upon it; but he must always, after having levelled the theodolite, fix it at 360° north, as in so doing he can always verify the correctness of the angles taken and make sure of there being no mistake in the theodolite work.

2. To fix the theodolite at 360° north, the measurer must bring the arrow on the upper plate to point exactly to 360° marked on the lower plate, by turning the upper plate round as much as required. The upper plate must then be clamped and the lower plate turned round until the needle of the compass points exactly to the zero marked on the compass box. Then the lower plate being clamped the theodolite is fixed at 360° north.

3. The theodolite being thus fixed at 360° north, the measurer must unclamp the upper plate and turn it round until the telescope bears on the second station; he must then clamp the upper plate, read off and mark the angle, and proceed taking chain measurements to the second station.

4. Arrived at the second station, the measurer must put up the theodolite, level it, and making sure that the angle marked is the same as the one obtained at the first station, he must turn round the lower plate, without touching the upper plate clamp screw, until the telescope is brought to bear on the first station, then clamp the lower plate. He will then be looking back at the first station with the same angle marked on the theodolite as the one he obtained when looking from the first station in the direction of the second.

5. From the second station, having looked back at the first station with the same angle as that obtained when looking from the first to the second station, the measurer must unclamp the upper plate and turn it round until the needle of the compass points exactly to the zero marked on the compass box, and then the arrow on the upper plate ought to point exactly to 180° marked on the lower plate. Should this not be the case, the measurer

¹ Compiled by Lieutenant Godfrey, Assistant Superintendent S. M. C. Survey, 1868.

must have made a mistake in taking the former angle, and therefore the angle must be taken over again, but if the arrow of the upper plate points exactly to 180° marked on the lower plate, he is convinced of the correctness of the angle taken at the first station and must proceed to take the angle to the third station by turning the upper plate round until the telescope bears on the third station, then after clamping the upper plate he must read off and mark the angle and proceed with chain measurements to the third station.

6. At the third station the measurer again looks back to the second station with the angle already obtained at the second station, and after clamping the lower plate, he must unclamp the upper one, bring the needle of the compass to zero; and in this case the arrow on the upper plate ought to point exactly to 360°; that is to say, that the north will be alternately at each station 360° and 180°. If not, there is a mistake in the angle taken at the previous station. Having verified his angle, the measurer takes the angle from the third to the fourth station, and so on right through.

SECTION II.

Measurement of Village Boundaries.

1. When a measurer is appointed to do the theodolite work of certain villages, that is, fix all their boundaries and demark the jungle surrounding them, he will be given a group of 8 or 10 villages, out of which he must take one (a central one would be the best) to begin with, so that the boundaries of all the surrounding villages can be fixed readily as herein ordered. In the first village out of the group given him to do, he should proceed as follows:—

2. If the cultivated lands of the village have been previously measured with cross-staff, he should make his first station at one or other end of the base line, or at some convenient intermediate spot on the base line, so as to be able to take its direction and fix in the boundaries, &c., with reference to the cultivated lands already measured.

3. If the cultivated lands have not been measured but are to be measured after the theodolite work is finished, the measurer should choose for his first station a convenient spot from whence he can fix a base line passing through the cultivated lands, and which the cross-staff measurer will afterwards take up as the base line for the cross-staff measurements. In this case he must put up flagstaffs or marks of a permanent nature, which he must

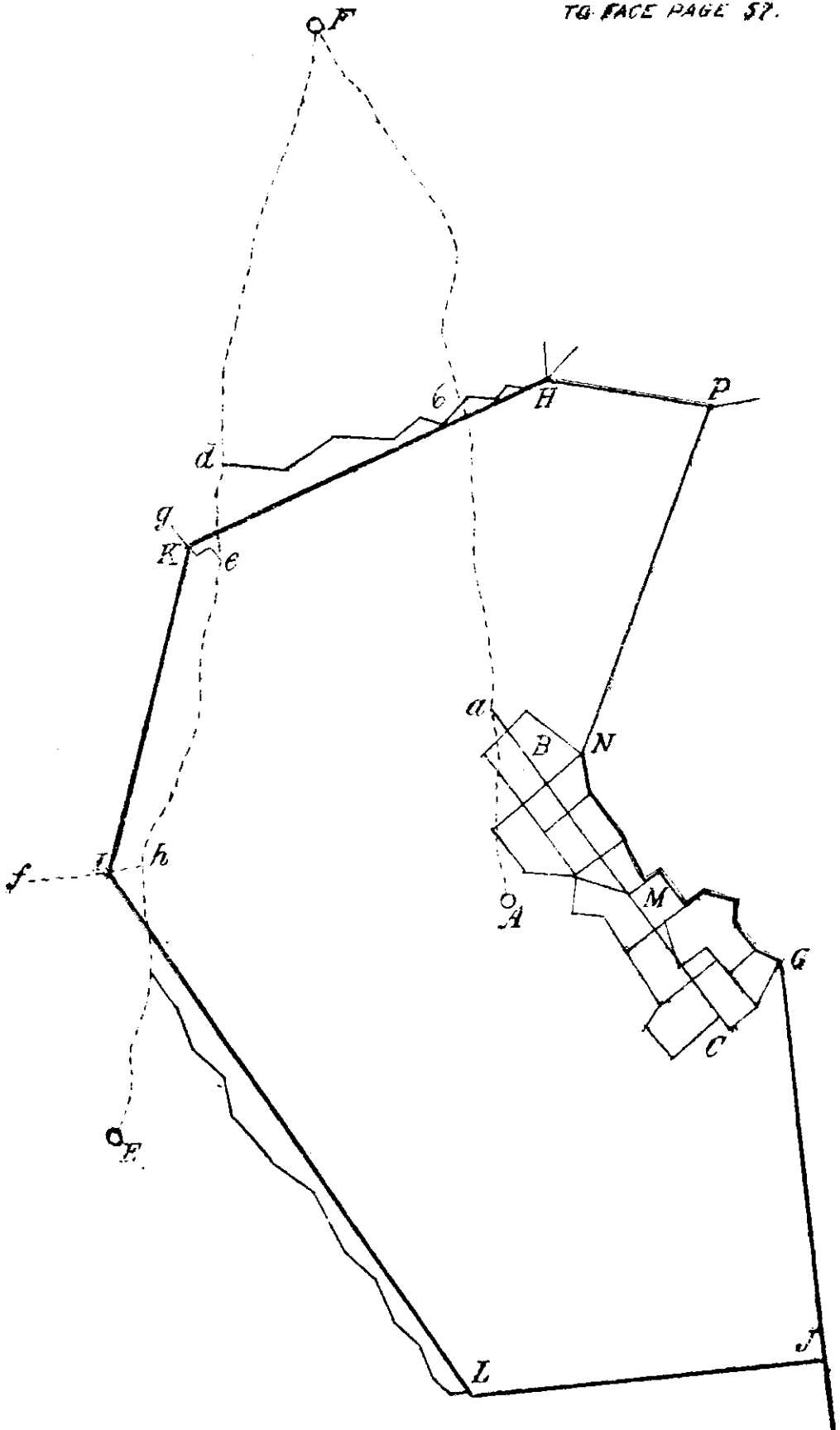
warn the villagers not to move, and which the cross-staff measurer will have no difficulty in finding.

4. The measurer must endeavour to make his stations and proceed from one station to another, as much as possible along roads and footpaths, where the lower brushwood and jungle is cleared away. He will then be able to see flagstaves at a greater distance, the stations will thence be further apart and the ground got over much quicker. Although he may in following a road go a good deal out of the straight line, the measurer must never attempt to go through the jungle, when there is a road or path near and going in the direction required. For instance, should he wish to fix the point B from a point A, and a path or road C D be passing near these places, he must try to get from A to the road as quickly as possible, proceed along it from *a* to *b*, and then take some offset angles and measurements to the point B; but he should never attempt to push through the jungle, as shown by the zigzag A B, when it is possible to avoid doing so.



5. A map is attached hereto, by the aid of which the explanations of the mode of procedure and the meaning intended to be conveyed will be better understood. A is a village of which the cultivated lands have been measured, the green line demarks the boundaries of the village, and D E F are adjacent villages. The red lines show the manner in which the measurements have been carried on.

6. The measurer should proceed from his first station B, on the base line, to the place where the boundary of two or three villages meet, such as H K I J. Supposing a path from the village A to the village F passes near the point H, let the measurer proceed from his first station B to the path at *a* and continue along the path until arrived at *b*; he must thence take offset angles and measurements to H, thus fixing it. He must then proceed from *b* to fix the boundary H K I, which he must do by choosing the clearest part of the jungle to make his stations, until he reaches the road F E at a point *d*, and continue thence making his stations along this road fixing from *c* the point K, and



from *h* the point I. From I he must proceed to J, fixing the boundary I L J, and so on until the village boundaries are all demarked and fixed.

7. Supposing the boundary of the village is according to the contour of some cultivated lands, as shown at G M N, the measurer should not, when G is fixed, leave off and proceed to H with a view to fixing the boundary H P N from H; but he should take as many stations as necessary through the cultivated land, in this case, supposing one at M, and continue the measurements from G to M, M to N, and so on until he reaches the point H; when if there is no mistake in his chain measurements, the point H, as found by his latter measurements, will coincide on the map with the point H already fixed from *b*. Should it not be so, then the measurer must have made some mistakes in his chain measurements, and he must therefore go over his chain measurements and test their correctness. In taking measurements through the cultivated lands, he should also take offsets to the corners of numbers, if the cultivated lands have previously been measured.

8. In thus contouring or measuring the boundaries of villages right round from one spot back again to it, a mistake cannot occur without its being detected. The correctness of the angle is ascertained as shown in Section I, and the correctness or otherwise of the chain measurements is ascertained as soon as the map is plotted.

9. At the places where the boundary of other villages meet the boundary of the village under measurement, the measurer should put up two permanent marks. For instance, in the map attached, at the point I, one permanent mark should be put up at the spot I, and one at the station *h*, made before reaching I, and from which the angle to I was taken. So that in doing the theodolite work of the adjoining village D, there is no necessity for the boundary K I, which is common to both the villages A and D, being again measured. The measurer can start the work of the village D at the spot I; fixing the upper plate of the theodolite at the angle obtained when looking from *h* to I and looking back from the station I to *h*, which latter is also fixed by a permanent mark, and then taking the angle to the next station *f*. Thus a great deal of time and trouble will be saved, and the measurer has only to enter in the village books of D the angles and measurements taken in fixing the common boundary from the entries already made in the books of the village A. In this case the boundary K I can be laid down on paper at once, and should the chain measurements of the village D be correct, the last station must coincide with the point K already fixed.

10. The angles being, as ordered above, taken from the north point, there is no difference to be made in the angles on entering them from one village book into another for a common boundary, and in continuing the theodolite work of the second village on the work already done in the first, as above directed; the check on the angles still remains the same, and each angle must be verified in the same way by seeing whether the arrow on the upper plate still points to 360° or 180° , when the needle of the compass points to its zero.

11. Thus in doing the theodolite work of a second, third, or any adjacent village, the first station must not be made on the base line, but must be made at one of the places where the boundaries of the two villages meet, and which is already fixed, and from thence the work of the second village is continued as directed in the last two paragraphs. In this case the measurer must, as most convenient when the boundaries have been demarked, come from one of his stations to the village, fix the contour of the village itself, and also the base line already taken by the cross-staff measurer or one which he will hereafter take as his base line.

12. Although in fixing the boundary of villages in the manner prescribed, one village may take a long time to finish on account of the jungle along the boundary being thick and no road near or going in the same direction, still, once the boundary is demarked in this way, time is gained, which will amply compensate, in doing the adjoining village for which no further measurements are required on that boundary. Besides the bends along the boundary, if any, are more correctly demarked, there is no fear of the boundary line cutting across cultivated and measured numbers of adjoining villages, as is often the case when only the places where several boundaries meet are fixed and a line drawn from one to another, and there is no doubt as to the correctness of the work. Measurers must not therefore aim only at fixing the places where the boundary of different villages meet and take a series of angles in each village, which are of no use in fixing the boundaries of adjacent villages, but measurers must try to fix the boundaries of each village and take angles and measurements in such a manner that they can be made use of in the work of all adjoining villages. In the manner ordered, taking a group of villages and working in them one after the other, several villages will have two, three, or more of their boundaries fixed by the measurements taken in the adjoining villages, thus reducing the work of each village in proportion to the number of adjacent villages previously finished.

13. When, as is commonly the case in Kánara, the villagers of two adjacent villages show a small nála or stream passing in a

zigzag course through thick jungle, as forming the boundary between two villages, there is no necessity to take every bend made by the watercourse or stream, but when measuring along that boundary, the measurer must make his stations pretty near the stream through the clearest part of the jungle, and fix by offsets taken at every 20 chains the course of the nála or stream. This does not apply to important rivers or nálas, which should be laid down according to their course.

14. Should there be a boundary dispute in the jungle between two villages, the measurer must measure it off at once and enter it in dotted lines in the maps of both villages, and send a copy of the boundary dispute map to the Assistant Superintendent, who will give further orders regarding the disputed land, when the dispute has been settled; and the necessary alterations can then easily be made in the maps of both villages.

15. Should a second theodolite be made use of to continue or do the work of villages adjacent to some already measured, it may happen in starting where the other theodolite was used, when the measurer brings the telescope to bear north, as ordered, that, although no mistake has been made in the previous angle, the arrow on the upper plate will not point exactly to 360° or 180° , when the needle of the compass points exactly to its zero. In this case the measurer must turn the upper plate round until the arrow of the upper plate points exactly to 180° or 360° , as the case may be, and observe then how the needle of the compass stands. Should it be pointing a certain number of degrees or portion of degrees East or West of the zero, the measurer must note it in his book, make a small mark with ink on the glass of the compass box, or remember how much the compass point East or West of the zero, and consider that spot at which the compass points as his zero. The amount of deviation from the zero shows the amount of error in the north point of the compass now used with reference to the north point as shown by the compass previously used; and in verifying the angles taken, when the needle of the compass points exactly to the spot thus observed and marked, the arrow on the upper plate ought to point exactly to 360° or 180° on the lower plate.

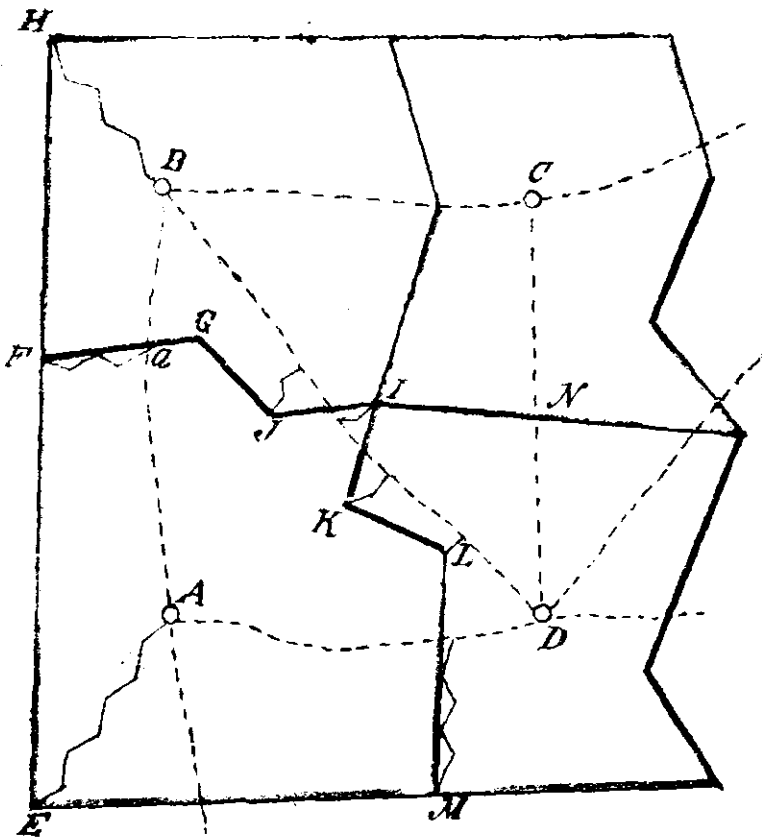
SUPPLEMENT TO SECTION II.

1. Whereas the rules laid down in Section II. are more applicable to open country or districts where the jungle is not very extensive or thick, and there would be some difficulty in demarking all the boundaries by going round from one spot and returning

to it in places where the jungle is very thick, the measurer should in such places make use of the roads there may be, and demark the boundaries of villages by fixing the corners at which the boundaries of several villages meet, also any intermediate spot on the boundary where it crosses the roads or paths along which he is measuring, and any important bend in the boundary that he may be informed of on enquiry, in the most convenient manner.

2. In order that this should be better understood, a map is attached, showing the boundaries of four adjacent villages A B C D, the contours of the boundaries of each village are shown by the red lines, and the dotted lines represent roads or paths going through the jungle from one village to another.

3. Supposing the measurer starts at the village A, from A let him fix the corner E going along a road, if any passes near it, and if not by a series of angles and measurements through the clearest part of the jungle.



From A let him then proceed along the path A B; arrived at a he must fix the spots F and G; then after reaching the village B, let him fix the corner H; then proceed along the road B D, fixing from it the corner I and the spots J K L as he comes near them. From the village D he can proceed along the road D A and fix from the nearest place possible the corner

M, and so on with each village. When working along the road D C he must fix the spot N, where the boundary crosses the

road. Should it be possible to measure from E to M, M to I, I to F without much difficulty, then so much the better, the measurer must do so. But there is no absolute necessity for these further measurements when the corners and principal bends in the boundaries have been fixed in this manner.

4. As a general rule, the measurer should, whenever it is possible to do so, measure along the boundary either in following a road going in the required direction or going through the jungle, when it is pretty clear and he has no difficulty in making his stations at reasonable distances apart. But should there be some difficulty in his doing so, on account of the great extent or thickness of the jungle, he must work as ordered in the above three paragraphs. In fact he ought to combine the two systems of working as much as possible so as to get the work done correctly and quickly.

SECTION III.

Measurement of Roads.

1. When a measurer is ordered to measure roads, with a view to ascertaining the area and demarking jungle and boundaries of villages included between them, he should in starting at one place, as directed, make his first and second stations on one side of the road, where there will be no difficulty or hindrance to his putting up permanent marks.

2. In measuring along the road, there is no necessity to take offsets to the side of the road; and the measurer need only ascertain the breadth of it at starting and at long intervals, except where he observes any considerable increase or decrease in it; he should, however, note in his book opposite each theodolite station whether his station is on the right hand side, left hand side, or centre of the road.

3. Should any important road cross or branch off from the road along which the measurer is working, he should make a station at that place, take angles showing the directions in which the road branches off on one or both sides, and make two permanent marks; writing in his book where the road comes from, to which village it goes, also at which stations the permanent marks were made; so that should it be necessary hereafter to measure along any one of these roads, the work can be taken up at the place where he has made the permanent marks, and angles and measurements taken in continuance of the work already done.

4. The measurer should endeavour to ascertain where the boundaries of different villages, through the lands of which he is measuring, cross the road along which he is working, and he should

note it in his book. He should note also the places where streams, nálas, and rivers cross the road, and show their breadth, which he can easily ascertain in taking his chain measurements from one station to another; he should also enter in his book the names of these nálas or rivers, if they have any. Whenever the road passes through a village, the measurer should show in his book where the village begins and where it ends, and enter the name of the village. When the road goes through some cultivated lands, he should show where the cultivation begins and where it ends, entering also the name of the village to which it belongs.

5. If the measurements are carried on along a made road, the measurer should take every opportunity of making a theodolite station, when convenient to do so, over the milestones, entering in his book which milestone it is. Also when he has to make permanent marks at certain intervals along the road, as ordered below, the milestone can be taken as one of the permanent marks, as it is not likely to be removed and may be depended upon as a permanent mark, at any rate for three or four years.

6. The measurer should make marks of a permanent nature that are likely to remain for three or four years, and which there will be no difficulty in finding :

1st. At the place where he begins work.

2nd. At all places where important roads branch off from or cross the one under measurement.

3rd. At all places where important rivers cross the road.

4th. At all places where the boundaries of villages cross the road.

Also should there be no such places along a road passing through extensive jungles, he should make permanent marks at every six miles distance along the road; but should there be permanent marks erected as in the above enumerated cases, there is no necessity to put up any further permanent marks at every six miles distance in the intervals.

7. When the measurer puts up permanent marks, he should always put up two, that is one at the station where it is required and another at the theodolite station next to it, either way as most convenient; because on account of the difference in the north point as shown by different compasses, the correctness of the work would not be ensured, when further angles and measurements are taken starting from one of the stations, already fixed, unless two permanent marks are put up.

8. At places where the measurer has to make permanent marks, should he be passing through cultivated and measured lands, the boundary marks, that is the corners of numbers, would be very

good permanent marks to choose; but he should then, if possible, state in his book which corners and of what numbers he has fixed as permanent marks. Milestones as already stated can be made use of as permanent marks, but should there be none of these, the measurer should dig a hole, about one or two feet deep, put in some charcoal and fix in the hole over the charcoal a stone of such a size that it will be easily found; and also when he has determined to put up a permanent mark at any theodolite station, he should, while the theodolite is still standing, take an angle to any large tree near the spot, enter the angle in his book, mark the tree in some manner that it will attract attention, take the distance from it to the theodolite station and the height from the ground at which the mark is made on the tree, and enter in his book with all these details the name of the tree. Whenever it is required to find a permanent mark thus made, the measurer can find the place where the stone has been buried by its bearing to the marked tree, and on taking up the stone and discovering the charcoal buried below it, he can make sure that it is the mark he is in search of. In making these permanent marks, the measurers must endeavour not to put up any thing that will attract the attention of the passers by or travellers on the road, as that would ensure its being removed sooner or later.

9. Should the road along which a measurer is ordered to measure have very high gradients, which is not likely with made roads, except on or near the Ghauts, but may happen with common country cart roads, he should make use of the vertical arc and vernier attached to each theodolite; and after theodolite has been properly adjusted by the Assistant under whom he is working, he should note in his book the degrees of rise or descent in the road and make the necessary deductions for the error in the chain measurement on account of the rise and fall in the ground, according to instructions received from the Assistant Superintendent, showing in his book the angles of elevation or depression, the actual superficial measurements as taken by him and the true measurements after correction.

10. When a measurer has measured a number of roads surrounding a large block of jungle, which is subdivided among several villages; should he be ordered to demark the boundaries of these villages, he must start from the places fixed by the road measurements, where the boundaries of the villages crossed the road or at any other permanent mark made on the road, as most convenient; and then proceed as much as possible along roads and fix in the boundaries of each village, as already ordered; remembering always to make as much of his work in each village, as possible, useful for the demarkation of the boundaries of adjacent villages.

CHAPTER VII.

SECTION I.

Traverse Survey.

The system of Survey by "Traverse" (with a traverse table) is generally adopted in this Survey whenever practicable. The superior ease and accuracy with which every part of the process is performed cannot fail to recommend it to practical men.¹

2. It has the following advantages:—

(1) After the meridian line has once been determined, a compass (which cannot be depended upon in delicate work) is not required.

(2) The sum of the inner angles of a Polygon bear a determinate proportion to the number of sides, thus affording an easy means of checking the correction of the angles.

(3) There is a ready means of checking the chain measurements, because if there is the *least* error the sum of northings (in the computation table page 62) will not be equal to the southings; or else the total eastings will not tally with the total westings.

(4) There are peculiar facilities for plotting the figure, with the greatest possible accuracy, as no protractor is necessary.

(5) The exact *area* of the Polygon is at once determined;

(6) A series of these exact areas of villages, drawn to the same scale, form when put together a very valuable district map.

3. In making a Traverse Survey, two simple rules serve to prove the work.

NOTE.

In actual practice the columns of latitude and departure will not balance exactly, for inaccuracies must arise from observations and chaining in the field, which no care can obviate. To adjust these differences previous to plotting, the rule is that if a discrepancy equal in the aggregate to 5 links for every station should be found between the totals, then an error must have been made in the field, which can only be discovered by re-survey. When, however, differences are within the above, the error must be apportioned among each of the distances of the survey by the following proportion:—

"As the sum of all the distances is to the whole error, so is each distance to its correction."

Having found the several corrections for each of the latitudes and departures, add them together severally and see whether their total agrees with the whole error, and if so, allot the corrections in the following manner:—

If the error be an excess of northings subtract each correc-

(1) For the angles. That the sum of all the interior angles of the Polygon shall be equal to twice as many right angles as the figure has sides less four right angles, and the sum of the outward angles shall be equal to twice as many right angles

¹ Compiled by Colonel C. J. Prescott, Acting Survey Commissioner, N. D.

tion from its collateral northings or add it to the collateral southing, if an excess of easting, add to the westing, and subtract from the easting the corrected sums of the corrected latitudes, and departures will then be found to agree exactly.

as the figure has sides *plus* four right angles.

(2) For the lines. That the sums of the northings be equal to the sums of the southings, and the sums of the eastings be equal to the sums of the westings.

4. It is not necessary to treat at any length on the system of Survey by traverse, as every book on surveying will furnish all the information necessary. It is, however, proposed to explain in as simple and familiar a manner as possible the way in which Traverse Surveys are done by this Department, and to give an example of the field book which it is desirable to keep, and a plot shewing the way in which the work is protracted on paper, from the field book, with the help of a Traverse table. It is necessary to observe that however correctly distances may be measured, unless the angular work is also correct, the result will be unsatisfactory, but with both these data accurately determined the proof will be positively *certain*.

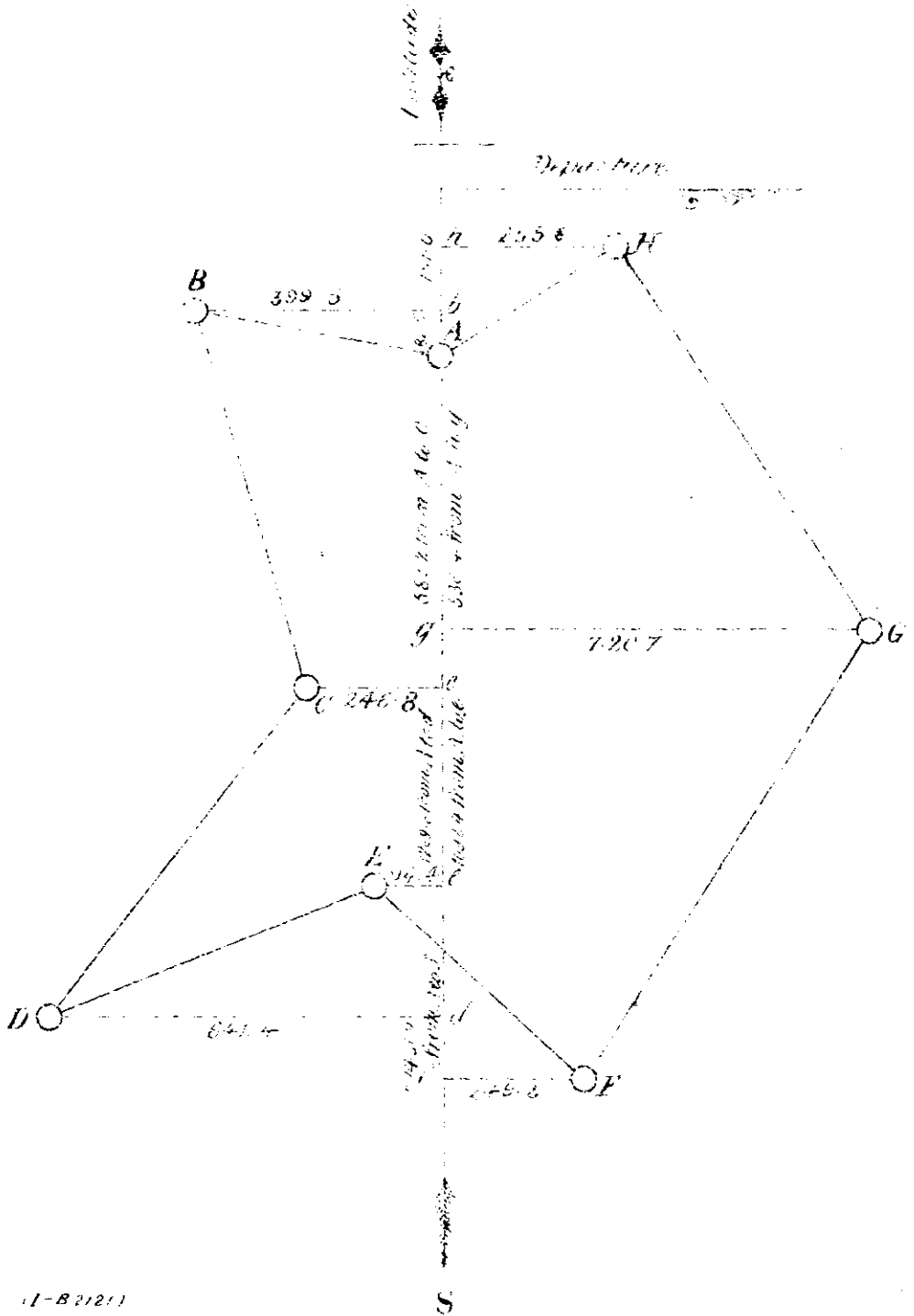
5. There is this great difference in a survey made by the rigidly mechanical method of the back angle, and by the comparatively speaking, scientific process of traverse. In the one, if an error creeps into any one of the lines, it remains all through the survey. In the other (as the lines are measured from the starting point of the one constant meridian and perpendicular) the error, if any, will only occur in the line in which it is made and not affect the next in the smallest degree.

STATIONS.		OBSERVED ANGLES.		BEARINGS BY THEODOLITE.		CARDINAL DIRECTION.		REDUCED BEARINGS.		DISTANCES MEASURED IN THE FIELD.		LATITUDE.		DEPARTURE.		LATITUDE.		DEPARTURE.		AREA.						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22					
Outward angles.		Inward angles.		Bearings by Theodolite.		Cardinal direction.		Reduced bearings.		Distances measured in the field.		LATITUDE.		DEPARTURE.		LATITUDE.		DEPARTURE.		AREA.						
												Distances on the meridian.		Distances on perpendiculars.		Distances on the meridian of each station from the first station on the series.		Distances on perpendiculars of each station from the first station on the series.		Sum of pairs of areas to be multiplied each other and 9 for area.		Products obtained by multiplying column 14 into columns 8 or 9.				
D.	M.	D.	M.	D.	M.	D.	M.	D.	M.	Chs.	Fms.	Chs.	Fms.	Chs.	Fms.	Chs.	Fms.	Chs.	Fms.	Sq. Lks.	Sq. Lks.					
A...	...	...	...	281°	30'	NW	78°	20'	4	08	...	...	...	...	3	90.5	...	...	W 3	98.5	...	0	32658		
B...	201°	35'	65°	30'	167°	05'	SE	12°	53'	6	53	...	...	...	...	...	N	...	W 3	99.5	W 6	46.3	4	30242	
C...	136°	30'	223°	11'	210°	16'	SW	30°	16'	1	95	...	...	...	...	...	8	5	83.2	W 2	40.8	W 8	94.2	0	13957
D...	317°	46'	42°	14'	72°	30'	NE	72°	30'	5	80	1	77.4	...	...	...	8	12	69.8	W 6	81.4	W 7	41.6	1	31500
E...	117°	30'	242°	11'	131°	41'	SE	43°	10'	4	83	8	10	93.4	W 0	94.2	E 1	55.9	...	0	52922
F...	286°	56'	73°	07'	27°	46'	NE	27°	46'	10	12	8	95.5	...	...	...	8	11	31.0	E 2	49.2	E 9	69.9	8	6946
G...	246°	51'	119°	08'	320°	55'	NW	33°	05'	8	30	0	87.4	...	...	...	8	6	36.4	E 7	20.7	E 9	76.3	6	71198
H...	267°	29'	92°	31'	239°	23'	SW	30°	23'	2	97	1	1	51.0	E 2	65.6	E 2	65.6	1	2	65.6
A...	137°	46'	222°	14'	281°	40'	NW	78°	20'	Total 18	32.8	14	12.9	15	20.8	15	20.8	25	83852	2	55735					

The sum of the Northings are equal to the sum of the Southings.
 The sum of the Eastings are equal to the sum of the Westings.
 Q. E. D.

Abstract.
 Sum of Northings ... 2683852
 Sum of Southings ... 2683852
 2722928117
 11964058
 40
 A. 6.
 Area 11.25
 2562220

Continued part 08.



(1-B 2121)

6. The following example will show how a Traverse Survey is performed.

7. Let N S (on the figure page opposite) represent the meridian or line of latitude of the first or starting station of the boundary survey of a village, then the way to determine the bearing of the station lines A B, B C, &c., is as follows :—

(1) Commence to work so as always to keep the figure you are surveying on your left hand.

(2) Set up your Theodolite at the first station A, and adjust it accurately in the plane of the *magnetic* meridian (*i.e.* see that 360° coincides with the north point as shown by the needle).

8. Next observe the bearing of the line A B.

9. Leaving your attendant measurer at \circ A, remove the instrument to \circ B, and observe both the outward and inward angle formed by the lines A B, B C, which is done by adjusting and fixing the instrument on the back station A, by turning the telescope round to the right until it covers the "nishan" staff at station C, when the *inward* angle A B C will be registered on the

• Column 3.

limb of the instrument, and must be entered in the field book.* Next adjust

the instrument to the fore station C, and by turning the instrument round as before, until the wires rest on the "nishan" staff at A, the outward angle C B A will be registered on the limb of

† Column 2.

the instrument, and must be noted in the field book† next to the inward angle.

Lastly, turn your instrument on C, and clamp the upper plate, now signal your measurer to chain from A to B, and when he

‡ Column 7.

gets up to you, note the distance in the field book,‡ and proceed in the same

way at every station for the remaining angles and sides.

10. As the sum of the inward and outward angles at *each* station should together make 360° , nothing can be so easy as to check the operation as it proceeds, and no error can possibly occur except through the carelessness or neglect of the observer.

11. So much for the mere surveying.

12. Now for the application of the Tables, and for a description of the work, which will be performed by the Surveyor and the Superintending Officer respectively.

13. The following is the field book and table combined, showing the mode of computing the area of any Polygon.

14. The only columns to be filled up by the Surveyor in the field are 1, 2, 3, and 7, all the remainder are deduced from them afterwards.

15. The Surveyor will invariably *observe* the outward as well as the inward angles, and if the sum of them when observed does not equal 360° , either the outward or inward has been taken incorrectly, and must be observed over again. Having filled in these columns on the lithographed sheet furnished for that purpose, the Surveyor will send a duplicate to the Assistant's office, as each village boundary is finished.

16. The Assistant will then proceed to fill in the remaining columns of the duplicate, according to the following rules.

17. Column 4 "Bearings by Theodolite."

RULE.

To the bearing, by the theodolite, of the line preceding that of which the bearing is sought, add the inward angle formed by these two lines, and the sum of the two angles increased or diminished by 180° (according as they may be less or more than 180°) will be the bearing of the line in the direction required as registered on the limb of the instrument, which enter in column 4.

The computations for the bearings are very simple as shown below. Take for example the side A B :

Observed bearing of A B	281.40	N.W.	
Add inward angle A B C	65.25		
	Total	347.05	
	Deduct	180	
		167.05	S.E.
Bearing of side B C		223.11	
Add inward angle B C D		Total	390.16
	Deduct	180	
		210.16	S.W.

and so on till (for example) the side G H is arrived at when the operation will be thus:—

* Bearing of the side F G	27.46	N.E.	
Add inward angle F G H	119.09		

* N.B.—If the sum of the preceding bearing and forward angle *after deducting* 180° amounts to more than 360° , deduct 360° from the total, the remainder will be the bearing of the next line.

	Total	146.55	
	Add	180	

Bearing of the side G H 326.55 N.W.

Now if the bearings are worked correctly, the bearing opposite **A** in the last line should come out the same by *rule* as it does by observation.

18. Column 5 is the cardinal direction.

19. Column 6.

Before the difference of latitude and departure can be taken out from the tables, not only the theodolite bearing, as now found and shown in column 4 is necessary, but also the reduced bearing, that is the angle which it forms with the meridian, counted from the north or south, towards the east or west, which is obtained as follows:—

When the bearing by theodolite is between 0° and 90° or N.E., no reduction is required.
 The cardinal direction indicated in column 5 is also found by this rule. 90° and 180° S. E. subtract it from 180° .
 180° and 270° S.W., subtract 180° from it.
 270° and 360° N.W., subtract it from 360° .

The column 6 (of reduced bearings) is obtained in the following simple manner—

Bearing of A B... $281^\circ 40'$ N.W.	Bearing of B C.. $167^\circ 05'$ S.E.
Subtract from ... $360^\circ 0'$.	Subtract from ... $180^\circ 0'$.
Reduced bearing... $78^\circ 20'$.	Reduced bearing... $12^\circ 55'$ S.E.

The reduced bearings obtained as above are to be entered in column 6.

20. Column 7. Distances measured. This has already been filled up by the Surveyor in the field.

You have now got the data (*viz.* columns 6 and 7) for finding from the Traverse Tables for each line and bearing the distances gone north or south, east or west, which, on being found, are to be entered in columns 8 or 9 and 10 or 11 (as the case may be) opposite to the distance for which they are taken out.

For example, take station C. The reduced bearing is $30^\circ 16'$ and the measured distance 7.95.

Now turn to page 63 of the tables * at the top of which you will find the index 30° . Look down the extreme left column, but one, marked **M**, till you come to 16 minutes, and from the column of distance **D**, take out:—

Latitude and Departure.

Bearing	30° 16'	First	700, = 604.582, — 352.817 ;
Distance	7.95	next,	90, = 77.732, — 45.362 ;
		then,	5, = 4.318, — 2.520.
			<hr/>
			7.95 686.632 S. 400.699 W.
			<hr/>

Thus the southings 686.6 will be entered in column 9 and the westing 400.6 in column 11.

Again, take ° F.—

The reduced bearing is 27° 46' and the distance measured 10.12.

Now turn to page 57 of the tables, at the top of which is the index 27°. Run down the left hand column, but one, till you come to 46 minutes. Now take out your distances from the column marked D, which will be as under—

Bearing 27° 46'—	Distance.	Latitude.	Departure.
First for	1,000	884.952	465.872
Then for	10	8.818	4.659
Then for	2	1.769	0.932
		<hr/>	<hr/>
		895.469 N.	471.463 E.
		<hr/>	<hr/>

Therefore 895.5 northings will be entered in column 8 and 471.5 easting in column 10.

21. It is unnecessary to describe further the manner of using Colonel Boileau's Tables for taking out difference of latitude and departure, as the explanation given in the introduction to them is as clear as daylight.

22. You have now filled in the columns relating to the Traverse and come to columns 12 and 13 which relate to Plotting.

They are deduced from the four preceding columns, and give the co-ordinates by which the whole survey can be plotted in a most simple and correct manner, much more so in fact than by any other attempted by Surveyors, as will be presently explained.

Take the distance of the line A B, the Traverses of which N. 82.5 and W. 3,99.5 are respectively entered in columns 8 and 11 in a line with the letter A as determining the position of the

point B, in latitude and departure taken from A, so they are entered in columns 12 and 13 against the letter B as it is the position of the point *which has been fixed*, and not *which has to be fixed*, that is now required to be shown.

The first Traverse being so entered, the remainder are found by taking the sum or difference of the latitudes and departures immediately succeeding each other, according as they are the same or of contrary denominations (*i.e.* north or south, east or west,) and entering them in the columns corresponding thereto. Thus in columns 8 and 9 the number following after N. 82.5 links is latitude S. 655.7 links, the difference of these two values, because they are of different denominations (*i.e.* one is north and the other south), leaves south 5,83.2 links to be entered in column 12, on the next vacant line or opposite C. Again, the number following in columns 8 and 9 is 686.6 links, which is to be added to the value last found or S. 583.2 links being the same denomination, and the sum S. 12,69.8 links entered in column 12 (south), immediately following the above in a line with D. The departures in column 13 for easting and westing are found in exactly the same way from columns 10 and 11, and these values express the positions of the several stations: with regard to the first station, whether N. or S.E. or W. of it: all (when you are plotting) *being scaled* from that station, or from a point on the meridian passing through it. These two columns (*viz.* 12 and 13) are used in plotting the stations and distances, as explained below, in detail.

Draw any line N.S. (*vide* figure to the right hand) to represent a meridian and take any point \circ A in that line to represent the first station of a survey. *Vide the field-book and table.* From A, mark off northwards on the meridian line 82.5 links, and to note the point put *b*. From "*b*" on a perpendicular line towards the west mark off 390.5 links, which will denote the \circ B. Then draw the line A B.

A *b* will represent the amount of northing and *b* B the quantity of westing of the \circ B as referred to the first station A.

Again, and still from A, mark a point *c* on the meridian line N. S. 583.2 links south, and from *c* on a perpendicular to N. S. take a point west 246.8 links, which will be \circ C. Then draw the line B C.

Next and still from \circ A, mark a point "*d*" on the meridian N. S. 1269.8 links; and from *d*, in a perpendicular to N. S., mark a point west 647.4 links, which will be \circ D. Draw the line D C.

Next from \circ A, mark a point "e" on the meridian line 1092.4 south and from that point lay off a perpendicular 94.2 west, which will give \circ E. Draw the line D E.

Next from \circ A, mark a point "f" on the meridian line south 14,31.9, and lay off 2,49.2 east, which will give \circ F. Draw the line E F.

Next from \circ A, mark the point "g" south on the meridian line 536.4 and on it the perpendicular g G 720.7, which will give \circ G. Draw the line F G.

Lastly, mark a point "h" distant north from the first \circ A 1.51, and from the point "h" lay off a perpendicular 2,55.6 east, which will give the \circ H. Draw the line G H.

Next draw the line H A, which will be 2 chains 97 links in length.

Now if the lines (A B), (B C), (C D), (D E), (F G), (G H) and (H A) are scaled, they will be found to correspond exactly with the lines measured in the field by the measurer as shown in column 7 of the Table and field-book.

23. You have now got the data for plotting the whole of the work, and can proceed to column 14, which is deduced entirely from column 13 and contains the sums of the distances on the perpendicular of pairs of co-ordinates, of the same denomination, which are to be multiplied into columns 8 and 9 for area, according as north or south products are required.

24. If at this stage of the proceedings your figure should have been plotted, turn to it, and you will see that your northings and southings represent the ordinary "lambhees" and your easting and westing the ordinary "roondees" of every day cross-staff measurement. Now if you call the co ordinates "roondees," you will at once see by an inspection of the following, that column 14 is only the sums of pairs of "roondees" of the same denomination collected from column 13 as below.

Line on the plot "Roondee".

	A departure of A to B or.....b	B = W. 3995
B C {	A to B.....b	B = W. 3995
	A to C.....c	C = W. 2468

W. 6463 Sum of the co-ordinates or
"roondees" b B & c C.

A departure of					
C D	}	A to C	...	...	c C = W. 2468
		" A to D	...	...	d D = 6474
				W. 8942	Sum of the co-ordinates or "roundees" c C d D.
D E	}	A to D	...	...	d D = W. 6474
		" A to E	...	...	e E = W. 942
				7416	Sum of the co-ordinates or "roundees" d D and e E.
E F	}	A to E	...	...	e E = 942
		" A to F	...	...	f F = 2492
				Difference 1550	Here you deduct because the denomination of co-ordinates changes from westings to eastings.
F G	}	A to F	...	...	f F = 2492
		" A to G	...	...	g G = 7207
				9699 E	As the co-ordinates are now both easting (the same denomination), you add again sum of co-ordinates f F and g G.
G H	}	A to G	...	...	g G = 7207
		" A to H	...	...	h H = 2556
				9763 F	Sum of co-ordinates g G and h H.
H A	"	A to H	...	...	h H = 2556 E Remaining co-ordinate.

The co-ordinates found as above are to be entered in column 14 opposite their corresponding letters, commencing with the first 3995 opposite A, and then the next pair 6163 opposite B, and so on all through the series.

25. Now all that remains is to find the area, which is done by multiplying the entries in column 14 by the opposite and corresponding entry in column 8 if a northing product is required, and column 9 if a southing product is required.

Columns 15 and 16 contain the products which result from this multiplication; and in filling them in, it is necessary to observe very carefully one simple rule, or you may find that (although your work is quite correct) you don't get your area; because the southing is invariably to be deducted from the northing before the area is found; and if by mistake northing products are entered in the southing column, or *vice versa*, confusion must be the result. This will be obviated by attending to the rule given below, which applies to every Polygon figure having portions on each side of a meridian line running through it; and here it is to be noted that the Surveyor should invariably commence his survey from a point through which the meridian line pass-

ing, a portion of the village would be on each side of that meridian, as in the example given; for it must never be lost sight of that we are surveying for *contents* as well as for figure, and the entire boundary line of each village must therefore be separately surveyed, although, of course, boundary lines common to two villages which have been once surveyed need not be gone over again, the corrected results of the first survey being entered in the field-book.

26. It is to be observed that the plan of laying down a *datum* line outside the figure, for calculating the area, is antiquated and quite unnecessary. Every part of the work can be performed from the first station (by observing the following rule) on the single meridian laid down.

RULE.

The *standing* rule is that the total of all South products found by the South multiplier in column 9 and entered in column 16 are to be deducted from the total of North products found by the North multiplier in column 8 and entered in column 15; and this is always done for the products of all figures (*i.e.* "Wuslas") the sides of which run North to the East of the meridian line; but for those figures (*i.e.* "Wuslas") the sides of which run North to the West of the meridian line the process is transposed, and all products of sides running North, to the West of the meridian, are placed in the column of South products, and *vice versâ*; all products of sides running South to the West of the meridian are placed in the column of North products.

For example :

Side A B, column 14, is (westing) 3995 W. by 825 N. (north-
ing) in column 8, and would according
* *Vide Plan.* to its *North* multiplier give a *North*
product equal to 32,95,875, but as the side A B lies West* of the
meridian, it is entered in the column of southings.

It is not at all necessary to see the plot to determine which are North and which are South products, as in column 5 the cardinal direction of every boundary line is indicated.

You have now filled in your North and South products in columns 15 and 16, add up columns North and South, deduct total South product from total North product, and the remainder will be double the area of your figure, in square acres and links.

Some village boundaries are so very tortuous that it may be necessary to take offsets and insets, instead of making stations at every bend. In this case the offsets and insets are to be taken in

the usual manner (and recorded on a rough plan of the boundary), and their product is to be added for offsets and deducted for insets to or from the "remainder" as shown above.

27. Of course all areas found by Traverse Table will be carefully checked in the rains by mechanical process, which will be communicated to the Department hereafter; and in the meantime if any Assistant is desirous of checking his work he can do so by assuming a *datum* meridian through the most westerly station of his Survey and referring each station to it (as explained in page 22 of the introduction of Boileau's Tables), making a new field sheet accordingly; but this "proof sheet" is not to be "recorded" as "official."

SECTION II.

Rules for Survey (by Traverse) of Jungle Villages.

I.

All Surveys will be on the Magnetic Meridian.

II.

No circuit Survey will be attempted till a proper chain line has been cut and stones erected to mark the boundaries.

III.

The Surveyors will survey precisely according to the rules for Traverse laid down by the Superintendent.

IV.

As the field work of each jungle circuit is finished, the Surveyor will send a duplicate of his field sheet to the Assistant, who will fill in the blank columns of the Traverse Table, and find the area according to rules.

V.

A plotter will be attached to each Assistant having charge of a Jungle Survey.

VI.

The plotter will plot off each village on the meridian line, according to the meridian and perpendicular distances given in columns 12 and 13 of the Table.

VII.

As each village is surveyed on the magnetic meridian, the whole series of villages can be plotted on a small scale, as they are respectively completed, on meridian lines parallel with the meridian

of the first village, and thus a complete district map will be formed with scarcely any additional trouble.

VIII.

While the circuit Survey of the village is in progress or after its completion, the "shunkoo" measurer will measure the culturable numbers of the village, and, with the assistance of the Surveyor, will fix the position of his work by measured lines from the boundary already fixed by Theodolite.

IX.

Assistants will be particularly careful in directing their Surveyors not to make any more stations in their circuits than are absolutely necessary. In a new jungle where boundaries have never yet been demarcated, it is a loss of time and money to make useless bends. When small bends which it is really necessary to lay down do exist, they can be laid down by offsets and insets from the boundary lines. But main lines from station to station are to be as long as possible.

X.

The Surveyor will keep in his field-book a rough sketch of each boundary showing the offsets and insets taken on the main line.

XI.

He will calculate the area of these offsets and insets in square chains and links (deducting the latter from the former), and send it in to the Assistant with the field-sheet, so as to enable the Assistant to add the area if from offsets, and to deduct it if from insets, to or from the total area as found by Traverse.

XII.

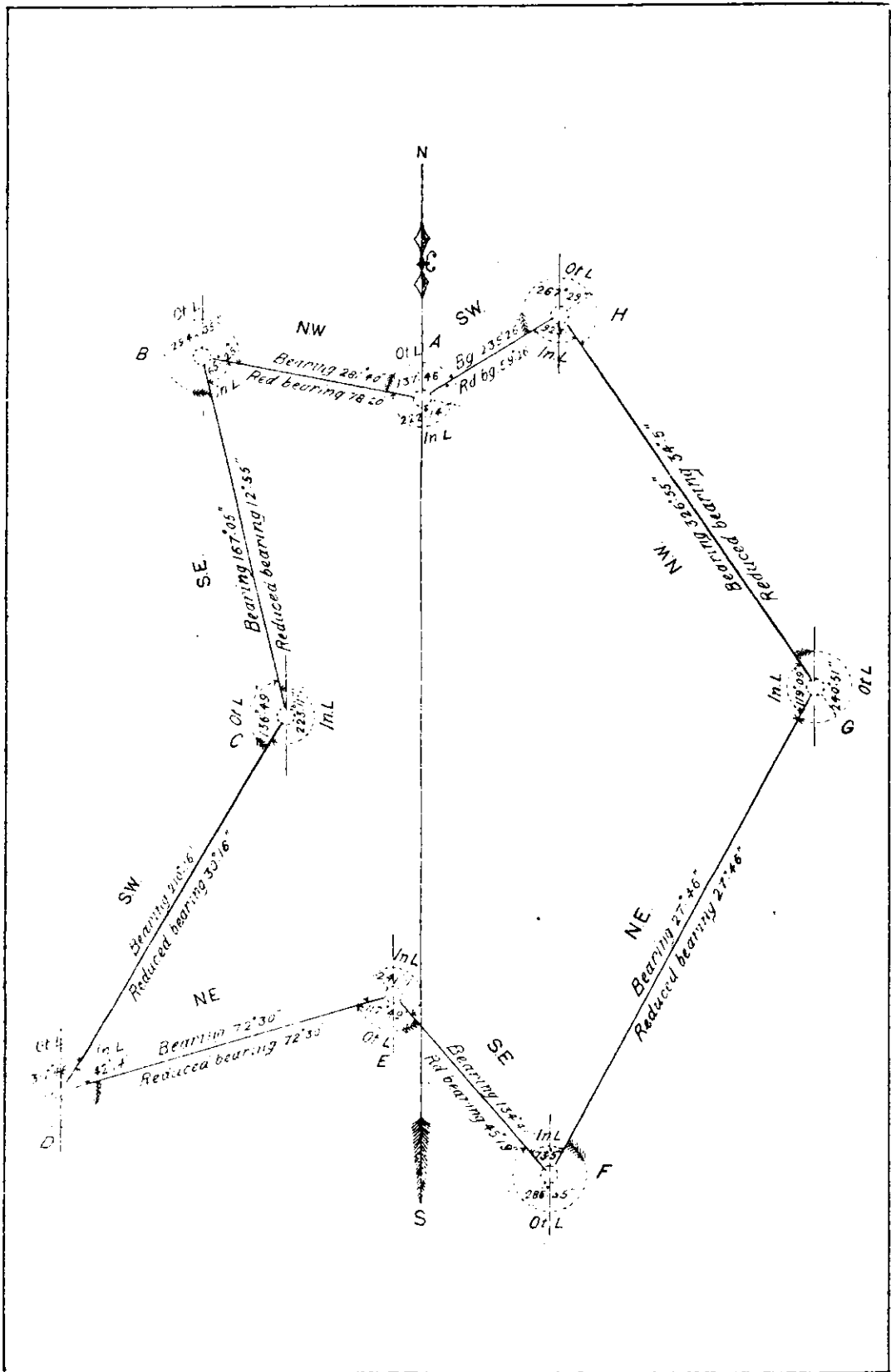
When the circuit map has been completed and the arable portion of the village has been measured by "shunkoo" measurer, he will come to the Assistant's camp, and will, with the assistance of the plotter, plot on the fields in their proper position, which will have been already determined according to Rule VIII.¹

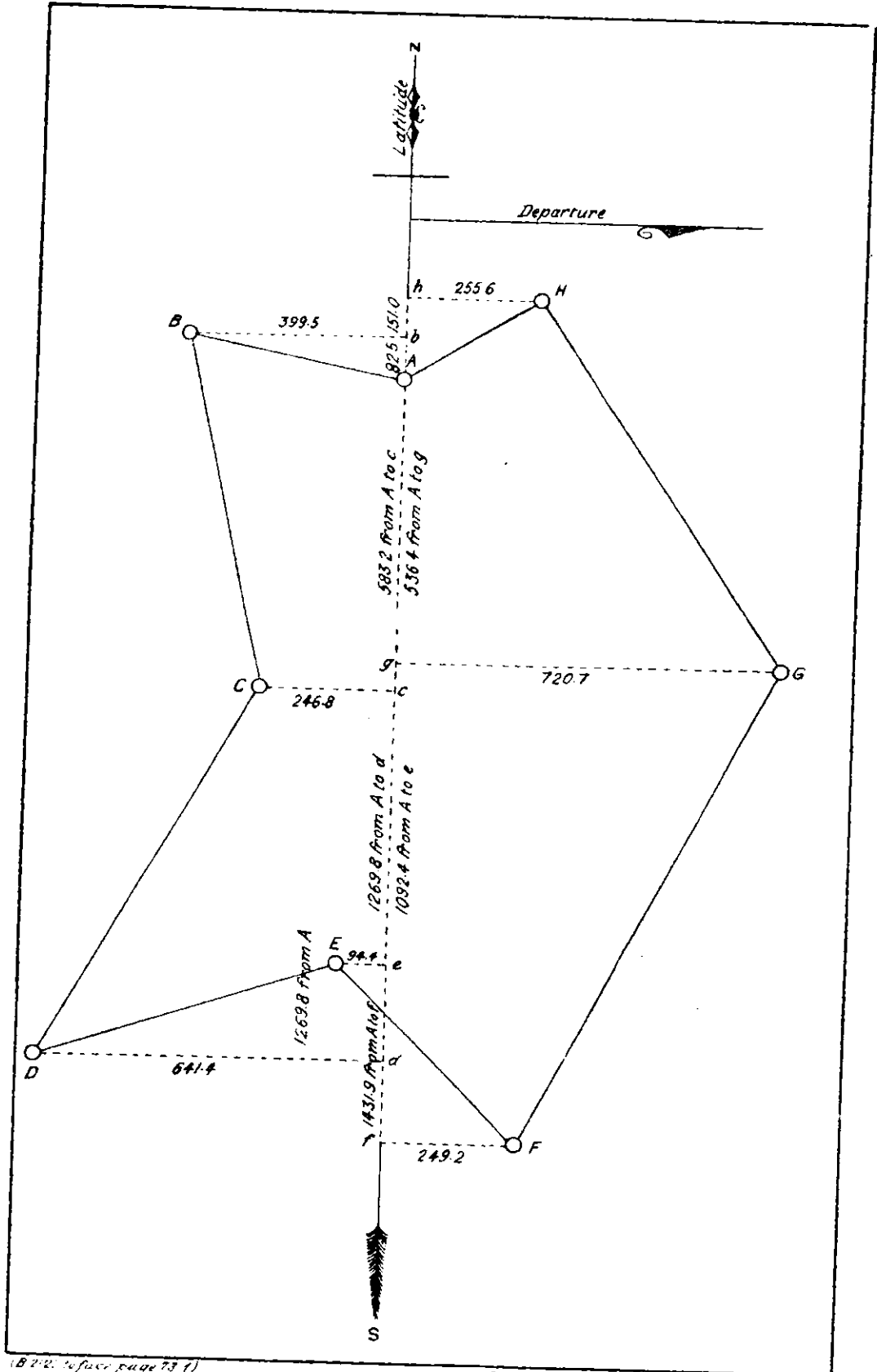
XIII.

In the Survey of most jungles in India, high hills intercept the view, and as in the Traverse, such hills must be chained over, it is necessary to lay down rules for doing it in an uniform manner.

In the Deccan Survey, Captain Nash used a clinometer fixed on the cross-staff for taking angles of elevation, but the plan failed entirely.

¹ It will be understood that the "shunkoo" measurer will do this from the map of cultivated land prepared in the usual manner during the measurement of the cultivated portion of the village.





(B 22. before page 73 7)

Drawn by Gruveyn

Reduced and Like Govt. Photoduplication Office Poona 1900

Tables of reduction are engraved on the vertical arc of Theodolites, which, while they show on one side the angle of elevation or depression, give on the other the number of units per hundred that must be deducted to reduce the hypotenusal line to its corresponding base.

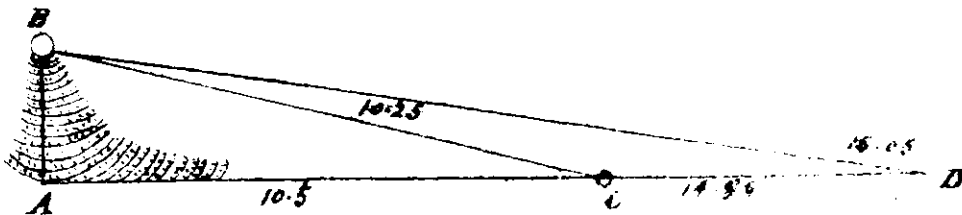
The following Table for reducing links and decimals upon each chain's length, for the following angles of elevation and depression is to be observed when necessary :—

Angle.	Reduction.	Angle.	Reduction.	Angle.	Reduction.	Angle.	Reduction.
	Lks. Decmls.		Lks. Decmls.		Lks. Decmls.		Lks. Decmls.
3°	0.14	9°0	1.24	...	3.18	20°0	6.03
4°	0.25	9°30	1.38	...	3.40	20°30	6.33
5°	0.38	10°0	1.52	...	3.64	...	...
6°	0.55	10°30	1.68	16°0	3.88	...	...
6°30	0.65	11°0	1.84	16°30	4.12	...	...
7°	0.75	11°30	2.01	17°0	4.37	...	...
7°30	0.86	12°0	2.19	17°30	4.63	...	...
8°	0.98	12°30	2.36	18°0	4.90	...	...
8°30	1.10	13°0	2.56	18°30	5.17	...	...
		13°30	2.77	19°0	5.44	...	...
		14°0	2.97	19°30	5.74	...	...

By this it will be observed that only (6.03) six links has to be deducted from each chain's length for an angle of 20°.

In practice it is far better to reduce the discrepancy between a hypotenusal and base line by allowing the angle of elevation from the station to the next at the top of a hill to be as small as can be, which is managed by making the back station at the bottom of the hill as far off as possible from the station at the top of the hill.

For example :



The difference between the hypotenuse C B and base A C, in this figure, is 20 links in 10 chains, whereas the difference between the base A D and the hypotenuse B D is only 15 links in 15 chains; so that, if possible, it would of course be better to make the back station at D instead of C.

However, nothing is more easy than to take angles of elevation and depression and reduce the hypotenuse to the base by the above table.

XIV.

No measure less than a link need ever be recorded in either the field books or Traverse statements.

APPENDIX A TO CHAPTER I.

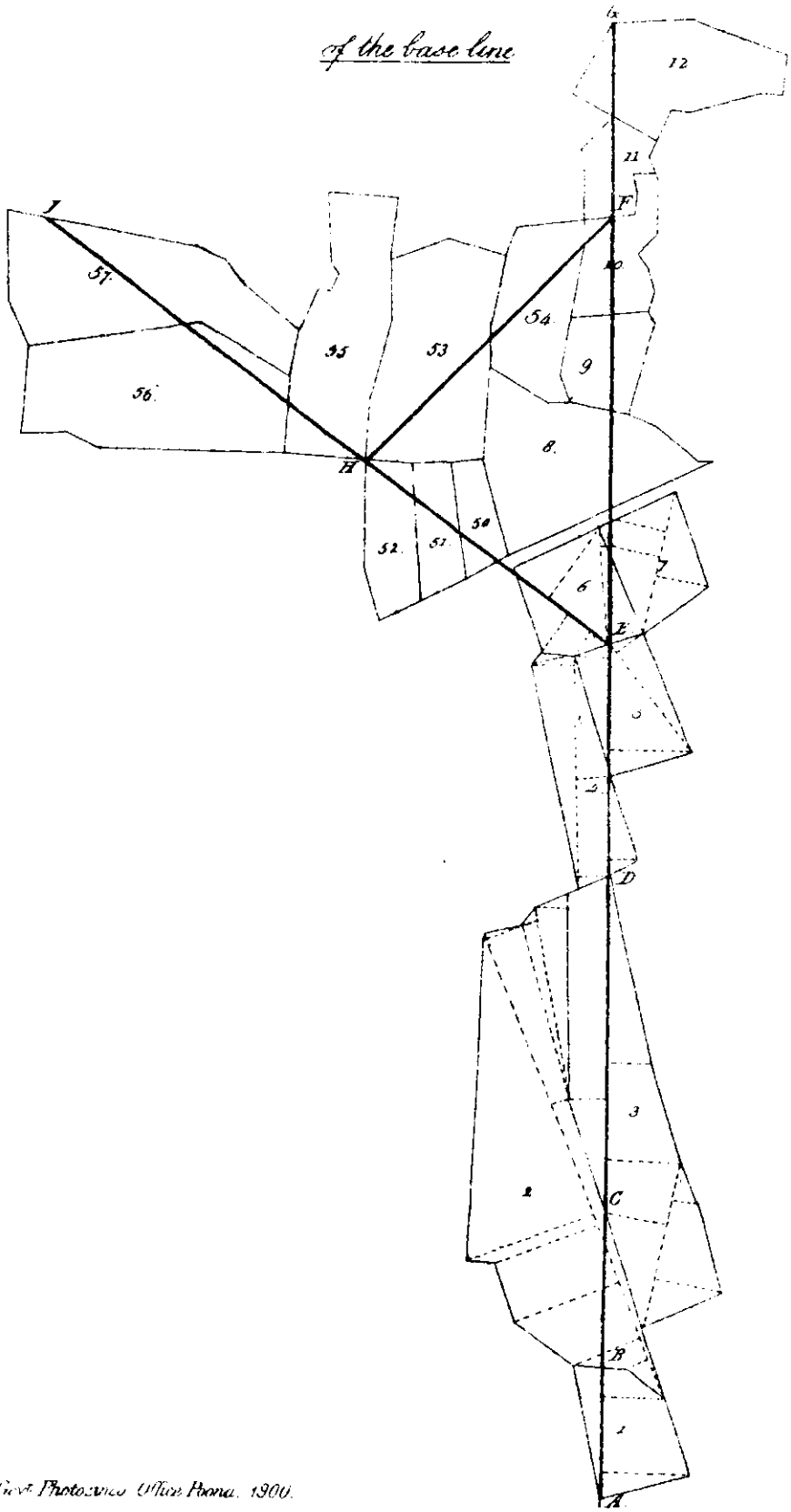
FIXING THE BASE-LINE.

CONTENTS.

- (1) Selection of a line.
- (2) When it should be measured.
- (3) Measurement of "Numbers" along the line.
- (4) Explanatory of example map showing the line.
- (5) Number of lines.
- (6) How to erect a line on one already laid down.
- (7) Ends of lines to be marked by pegs driven into the ground.
- (8) Obstruction occurring in "Numbers" on the line.
- (9) Points of intersection of all boundaries to be marked.

[]
Sketch referred to in Rule IV of App. A.

of the base line



APPENDIX A.

FIXING THE BASE-LINE.

(ORIGINAL SURVEY RULES OF THE S. M. C. SURVEY REGARDING THE BASE-LINE).

RELATIVE TO A BASE-LINE, TO BE MEASURED THROUGH THE VILLAGE LANDS, TO ENSURE CORRECTNESS IN THE MAP.

Rule 1.—However limited the extent of the lands of a Village may be, a Base-line should in the first instance be

In order to ensure correctness in the Village Map, a base-line should first be laid down through that part of the lands in which the fewest obstructions to such a measure exist.

laid down through them, to prevent errors occurring in the Village Map. If the line can be measured from one extremity of the village boundary to the other, so much the better: if not, a portion of the lands which are flat, and most free from jungle and crops, should be selected, and the line measured of as great length as possible. The two ends of the Base-line should be fixed on boundaries, or corners of "Shets," which will afterwards be adopted for the limits of "Numbers," and a signal should be erected at each.

Rule 2.—It is not necessary to measure the whole length of the Base-line at once. Those "Numbers" through

which it passes should be measured consecutively, and as this is being done, the length of the line through each measured at the same time.

Rules are explanatory of the plan to be adopted.

Rule 3.—The first in the series of Village "Numbers" should be measured

at one or other extremity of the Base-line, and in measuring it, the plan of raising perpendiculars from the line to the bends and corners within range should be adopted. After which any portion of the "Number" which may remain should be measured, by adopting any other convenient line on which to raise

perpendiculars. But when it is not possible to measure any portion of the "Number" by raising perpendiculars on the Base-line, then any other line may be taken for the purpose; and after the "Number" is so measured, in order that the whole length of the Base-line may be known, that portion of it which passes through the "Number" should be measured, and noted in the rough Field Book.

Rule 4. That the above two Rules may be properly understood, a sketch is appended, in which A G is the Base-line.

In order to illustrate how the "Number" should be measured along the base-line, a sketch is appended, and explanations given.

After fixing it, No. 1 in the series of Village "Numbers" is shown as being measured by perpendiculars raised to the bends and corners on A B, the portion of the line which passes through the "Number." Next, the measurement of No. 2 is shown. In it, assuming that it is not convenient to carry on the measurements by perpendiculars raised on the Base-line, they are shown as raised on another line. The length, B C, of that portion of the line which passes through the "Number" is then measured, and the measurements of No. 3 commenced. A part of this "Number" is shown as measured by perpendiculars raised on C D, the portion of the line which passes through it, and the "Number" completed by perpendiculars raised on a separate line. The rest of the "Numbers" falling on the line A G are represented as being measured in the same way. It will be necessary, however, to study the whole sketch carefully, to arrive at a thorough knowledge of the method.

Rule 5.—After having settled the direction of the Base-line, and measured

If the village is small, there will be no necessity to have more than one base-line; but if it is larger, as many lines as the size of the village may render necessary to secure correctness in the Map should be measured.

will be necessary to have more lines, their number being regulated by the size of the village; and here it may be necessary to add that no labour should be spared to insure correctness in the Map, by a sufficient number of lines.

Rule 6.—When, according to the preceding Rule, it is necessary to have

The directions of additional lines should be fixed from the first; but it is not necessary to have them perpendicular to it. They should be taken through land free from trees and other obstructions, and their lengths measured and fixed in the Map by intersections with the compasses.

the lines E I and F H are shown in the sketch as Base-lines, drawn from A G, the first line; and in order to fix the directions of these lines, E H and F H are measured, the point H then intersected with the compasses, and E H continued to I. In short, if it is necessary to have a second Base-line, in order to describe it on the Map, a third must be measured; for, without measuring both, it is evident the direction of the second cannot be shown.

Rule 7.—After fixing the new lines, as directed in the last Rule, the signals

After fixing the new lines, the signals should be removed from the extremities of the first and pegs put down.

should be removed from the two extremities of the first line; and in order to mark the places where they stood, pegs should be driven into the ground, and the cultivators of the adjoining fields told to take care that they be not removed.

Rule 8.—The “Numbers” through which each Base-line passes should be

If any difficulty should arise to prevent the measurement of any “Number” through which the base-line passes, it may be passed over; but in this case that part of the line which passes through it must be measured.

measured consecutively, as directed in Rule 2, but if a difficulty should arise to prevent the measurement of any of them, the one in which the difficulty occurs may be passed over, and the next

in order measured; but in this case, that portion of the line which passes through the “Number” passed over must be measured; for if this were not done, it would not be possible to plot the next “Number” in its exact position on the line.

Rule 9.—After having measured the “Numbers” through which the last

The base-lines should be made as long as possible; for small ones will be of little use in plotting the Map. The places at which the boundaries of “Numbers” cross the lines should be marked with chunam.

lines pass, as directed in the preceding Rule, those lands which remain intermediately between the lines should be measured; and then, as may be necessary, other lines should be laid down, and

the lands through which they pass measured. The base-line F H shown in the example, is, however, too short, and therefore when it can be helped, such short lines should not be laid down. They should be as long as possible, for the longer they are the less the labour connected with them. Besides, whether a “Number” is measured by perpendiculars raised from the base-line or otherwise, the extremity to which measurement is taken of that portion of the line which passes through the “Number,” should be well marked with chunam, in order that the line may be taken up exactly in measuring the next “Number”; and if the distance be taken to half an anna, so much the better; for inasmuch as the Map is to be constructed on the base-lines, any error in their measurement will cause an error in the Map.

APPENDIX B. TO CHAPTER I.

KA'NARA MEASURING RULES.

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APPENDIX B.

KA'NARA MEASURING RULES.

[All these Rules except those in Sections II and III are applicable to both above and below Ghats.]

SECTION I.

RULES RELATING TO TENURES.

Rule 1.—The total assessment paid to Government by an individual in one village is called “Warg,” hence it arose that in course of time people called this land a Warg. In other districts such land is called a “Kháta”: Warg and Kháta both mean the same thing; an entry in the village accounts is called a “Kháta,” and hence the origin of the term.

Rule 2.—The man in whose name a Warg has stood in the village accounts from ancient times is called a “Múldár” or “Múli Wargdár.” In Survey work no difference is to be made between Múli Wargs and other Wargs.

Rule 3.—If a Wargdár makes over his land to another person for ever, or for a term of years at a fixed rent, the paper on which the agreement is drawn up is called a “Múlgeni Patra” and the man to whom the land is made over is called a “Múl Genidár.”

Rule 4.—A man who cultivates land by the year without a written agreement is called a “Chál Genidár” and his right to hold the land is termed “Chál Geni.” There is no difference between a “Chál Genidár” and a “Wahiwátdár.”

Rule 5.—All the land belonging to one Warg must be measured separately: on no account may the land of different Wargs be included in the same Revenue Survey number.

Rule 6.—The land held by a Múl Genidár is to be measured separately; on no account is it to be included in the same Survey number with land of another Múl Genidár, although in the same Warg.

Rule 7.—Portions of land adjoining one another and belonging to different Wargs, though held by the same Múl Genidár, must be made into separate Revenue Survey numbers.

Rule 8.—When a number of different Chál Geni holdings are met with in one Warg or Múl Geni holding, there is no objection to including all, or as many of the Chál Geni holdings as may be necessary, to form a number of the size laid down in the rules. But if a Warg or Múl Geni holding, having Chál Geni holdings in it, has to be broken up into two or more numbers, the boundaries of the Chál Geni holdings should be made use of in dividing it into Survey numbers.

Rule 9.—In some cases lands of different Wargs adjoining one another are held by the same Múl Genidár, and it is impossible to lay down the boundaries of the Wargs. In such cases there is no objection to making the whole of the land into one Revenue Survey number, subject to the rules for limiting areas of Survey numbers. But the circumstance must be reported to the Assistant Superintendent, and a remark made in the fair field book stating that officer's sanction to the work.

Rule 10.—*Kreyagar.*—These holdings are to be considered the same as Múl Genidárs and divided according to the same rules.

Rule 11.—If a Wargdár has mortgaged his land, and the mortgagee's name is entered in the accounts, and he also pays the assessments, then the whole of the mortgaged land must be made into separate Revenue Survey number according to its area.

Rule 12.—*Clause 1.*—When a Warg is held by a brotherhood and the Múl Geni rights are entered in the name of one brother, the measurer must measure the number as though it belonged to one man.

Clause 2.—When a part of a Warg is held by a brotherhood in virtue of a stamped and registered deed, and there is separate possession in the field, it should be measured, if the holder thereof wishes, into a separate Survey number, without regard to the unwillingness of the Khátadár; but if such deed is not registered, the land is not to be measured into a separate Survey number unless the Khátadár gives his consent to that effect in writing. In both cases the land is to be measured into a separate Survey number according to occupation in the field, subject to the rules for limiting the areas of Survey numbers; and such measurement is to be made on payment of expenses as provided for in Rules 1 and 2 of Section IX of the Revision Survey Rules.

Rule 13.—When several Wargdárs have sublet a field to one or more Múl Genidárs, and share the whole of the crop, and there is no means of finding out the different shares in the field, then measure according to the Múl Geni boundaries, subject to the rules for limiting areas of Survey numbers; but each case of this kind must have a remark entered in the measurer's books, and be reported to the Assistant Superintendent.

Rule 14.—Whenever small holdings are met with, which under the above rules would require to be made into separate Revenue Survey numbers, but are under one acre in area, they are not to be made into separate Revenue Survey numbers, but are to be measured according to the following rules.

Rule 15.—As many of these holdings as will make a Revenue Survey number up to about one acre are to be measured and included in one Revenue Survey number, each holding being made into a separate Pôt number, the measurement of which will be conducted and recorded exactly as if it was a Revenue Survey number, except that it will not be separately shown on the village map.

Rule 16.—Each Pôt number must be measured separately, and if a rayat holds two or more detached holdings in a Revenue Survey number, each of these holdings must be measured into a separate Pôt number. In entering the acres in the fair field book, the total area of each Pôt number must be shown, the amount of "Pôt Kharáb." if any, must then be deducted, and the area of

each description of land entered. If a Pôt number contains mixed descriptions of soils the area of each kind must be shown.

Rule 17.—If there are wells or houses in Pôt numbers their area and position must be fixed by actual measurements.

Rule 18.—The name of any person entered in the village records as the occupant of a Pôt number, must be entered in the measurer's books as that of the occupant of that Pôt number.

Rule 19.—The following is an example of how the entries for Pôt numbers are to be made:—

Pôt Number.	Total Area.	Dry-crop.	Garden.	Rice.	Pôt Kharab.	Remaining culturable Acres.
	A. g. a.	A. g. a.	A. g. a.	A. g. a.	A. g. a.	A. g. a.
1 ...	0 6 0	0 4 0	.....	...	0 2 0	0 4 0
2 ...	0 5 0	0 5 0	.....	...	.....	0 5 0
3 ...	0 9 0	0 6 0	.....	...	0 3 0	0 6 0
4 ...	0 16 0	0 2 0	0 12 0	...	0 2 0	0 14 0
Total 4	0 36 0	0 17 0	0 12 0	...	0 7 0	0 29 0

Mixed Descriptions of Soils.

Rule 20.—One acre of garden land is to count as 2 acres of rice or Gajni or 4 of dry-crop; and one acre of rice or Gajni to count as 2 acres of dry-crop.

Rule 21.—When measuring mixed description of land, in order that it may be seen at the time of test whether the different kinds of cultivation have been properly separated, small stones daubed with whitewash, or where stones are not at hand clods of earth daubed in the same way, should be placed by the measurers on the lines of boundary between the different measurements.

SECTION II.

RULES FOR THE DIVISION OF LAND BELOW GHATS.

Cultivated Land.

Rule 1.—Cultivated dry-crop land, if belonging to one Warg and one Múl Genidár, to be divided into Revenue Survey numbers up to 20 acres.

Rule 2.—Cultivated rice and Gajni land, if belonging to one Warg and one Múl Genidár, to be divided into Revenue Survey numbers up to 10 acres.

Rule 3.—Cultivated garden land, if it belongs to one Warg or one Múl Genidár, to be divided into Revenue Survey numbers up to 5 acres.

Rule 4.—A Chál Geni, if of or exceeding 6 acres in dry-crop, 3 acres in rice, or one acre in garden land, must be made a separate number.

Rule 5.—Wherever land formerly used for the manufacture of salt is met with it should now be considered Gajni and measured accordingly.

Rule 6.—In some villages the Gajni land is cultivated in long strips from 20 or 30 chains in length and from one *anna* to a chain in width; in such land Revenue Survey numbers must not be made less than 4 chains wide, and in order to obtain a Survey number of this size it does not matter how many holdings are measured into a Survey number, but each holding must be measured as a separate Pôt number. Special attention must be given to seeing that the single corner stones in Gajni land are of the full size ordered in Rule 16, Section VII.

Rule 7.—Land covered with water at high tide, and uncovered at low, if suitable for Gajni cultivation, is to be measured; but if unsuitable for Gajni cultivation, it is not to be measured. Land always covered with water is never to be measured.

Waste Land.

Rule 8.—Government waste arable dry-crop land is to be divided into Revenue Survey numbers up to 10 acres.

Rule 9.—Government waste rice land is to be divided into Revenue Survey numbers up to 3 acres.

Rule 10.—Government waste garden land is to be divided into Revenue Survey numbers up to 3 acres.

Rule 11.—Pulan land, *i.e.* sandy soil on the sea shore, or near the mouths of rivers, capable of being made into rice or garden land, is to be divided into Revenue Survey numbers up to 5 acres.

Rule 12.—Government waste Gajni land is to be measured into Revenue Survey numbers up to 25 acres.

Rule 13.—Open dry-crop land with little or no forest, and fit for, or used for, little but grazing, is to be divided into Revenue Survey numbers up to 60 acres.

Rule 14.—The land on which *kāju* and *undi* trees grow is to be considered dry-crop, and divided according to rules for dry-crop.

Rule 15.—All land below Ghâts is to be measured according to the above rules, even though it belong to a village or Majreh of a *táluka* above Ghâts.

SECTION III.

RULES FOR THE DIVISION OF LAND ABOVE GHATS.

Rule 1.—Cultivated dry-crop land, when all the land is held by one *Wargdár*, or *Múl Genidár*, is to be divided into Revenue Survey numbers up to 15 acres; provided it is all cultivated by one *Wahiwátdár* or *Pôt Karda*. If cultivated by more than one *Wahiwátdár* or *Pôt Karda* as many of their holdings may be included in one Revenue Survey number as will make it up to 10 acres.

Rule 2.—Cultivated rice land, if it is all held by one Wargdár, or by one Múl Genidár, is to be divided into Revenue Survey numbers up to 7 acres; provided it is cultivated by one Wahiwátdár or Pôt Karda. If cultivated by more than one Wahiwátdár or Pôt Karda, as many of their holdings may be included in one Revenue Survey number as will make it up to 5 acres.

Rule 3.—Cultivated garden land is to be divided into Revenue Survey numbers up to 2 acres, provided the land is all cultivated by one Wahiwátdár or Pôt Karda, but if cultivated by more than one Wahiwátdár or Pôt Karda, as many of their holdings may be included in one Revenue Survey number as will make it up to about one acre.

Rule 4.—If a holding, whether dry-crop, rice, or garden, has to be made into two or more Revenue Survey numbers from the acres being in excess of those above fixed as the limit of one Revenue Survey number, boundaries as enjoyed by existing Wahiwátdárs or Pôt Kardas must be carefully respected: a portion of one Wahiwátdár's or Pôt Karda's land must never be cut off and included within that of another in one Revenue Survey number, notwithstanding that it may be necessary to make a Revenue Survey number half an acre smaller or larger than the area above laid down.

Waste Land.

Rule 5.—Dry-crop waste land is to be divided into Revenue Survey numbers from 7 to 15 acres. If there are more than 15 acres of waste land, it must be divided into two or more Revenue Survey numbers, and each number should be about 10 or 12 acres in area.

Rule 6.—Forest land adjoining cultivated land in which there are no large or reserved trees, may be measured as waste land, if there is any likelihood of its producing crops when brought under cultivation. Such land should not be measured till the rest of the village land has been measured, and if the waste numbers of the village equal a tenth part of the cultivated numbers then no more waste numbers are to be made; if the waste numbers are less than a tenth part of the cultivated numbers then sufficient waste numbers must be measured to make them up to a tenth part.

Examples.

1. There are 50 numbers in a village, of these 40 are cultivated and 10 though previously cultivated are now waste; as the waste numbers exceed a tenth of the cultivated ones, there is no necessity for making new waste numbers.
2. A village consists of 31 numbers, of which 30 are cultivated and one waste; then 2 numbers will have to be made out of the jungle land in order to make up the tenth part.

Rule 7.—Waste rice land is to be divided into Revenue Survey numbers of from 3 to 6 acres. If there are more than 6 acres, the land should be divided into two or more Revenue Survey numbers, and these numbers should range from four to five acres each.

Rule 8.—Waste garden land is to be divided into Revenue Survey numbers of from one to three acres. Should there be more than three acres, the lands is to be divided into two or more Revenue Survey numbers, and these numbers should be about two acres each.

Rule 9.—Land in which coffee is grown should be made into separate numbers according to occupancy irrespective of area, and considered garden.

Rule 10.—All land above Gháts is to be measured according to the above rules; even though it belong to a village or Majreh of a táluka below Gháts.

SECTION IV.

RULES FOR THE DIVISION OF LAND.

Rule 1.—Wherever the embankments formerly used for rice cultivation are visible, the land must be measured as rice land, unless the land is covered with large trees, or is quite detached from the cultivated part of the village: in which case this land will be included in the jungle lands.

Rule 2.—In order to straighten the sides of cultivated numbers, pieces of jungle containing large trees must not be included with the cultivated land.

Rule 3.—Wherever land has been cultivated as garden land, but is at present lying waste, it must be measured as garden land.

Rule 4.—When cocoanut or other fruit trees are planted along one or more of the sides of a house, the land with trees on it together with the house should be made into a Revenue Survey number, and the house itself deducted as unculturable land.

Rule 5.—Dry-crop land called “Hakal” is commonly met with. Generally speaking this is not occupied land, but is cultivated one year and left uncultivated for several years, the right of cultivation being either sold by auction or let out on lease; such land should be divided into Revenue Survey numbers up to 10 acres.

Rule 6.—In some villages several Wargdárs will give up small portions of Wargs adjoining one another, so as to make up a field for the use of the temple. In such cases if the Wargdárs have given a written agreement making over their rights to the land in favour of the temple, then the whole of these pieces may be made into one or more Revenue Survey numbers and entered as belonging to the temple. Should the Wargdárs state that they have not agreed in writing to give up their rights to the pieces of land, they must be measured with the Wargs to which they belong as though they had never been made over to the temple.

Rule 7.—Evergreens or “Káns,” whether producing pepper or any other jungle produce, or none, must be made each into one Revenue Survey number, of whatever area they may be, and entered as Kán Parampók.

Rule 8.—When measuring the land of Wargdárs, Hakal or dry-crop land with large trees, is not to be included in the numbers measured with the cross staff, and great care must be taken to see that this is not done: this description of land is always to be included in large jungle or Government waste numbers, and no Hakal numbers are to be made in land with large trees growing on it.

Rule 9.—In some places a man is entered in the village records as holding 10 or 20 gunthas of land ; he has enclosed by a hedge or wall some 20 or 30 acres of the surrounding land and has held it for a number of years. In such cases if he claims all the land enclosed it is to be measured and entered in his name ; but if he refuses to acknowledge as his up to the wall or hedge, the boundaries which he does acknowledge are to be taken up, and then up to the fence made a separate number.

Rule 10.—In cases when cocoanut trees are found scattered about in dry-crop and rice land, such detached trees need not be noticed by measurers except to show on the map that there are such trees. No land will be made garden on account of such detached trees.

Rule 11.—If there are cocoanut trees on rice embankments the land on which the trees are is to be considered rice land unless the strip is over eight annas in width, in which case it is to be considered garden land.

Rule 12.—In some cases it will be found that where one Chál Genidár or more than one cultivates the land of two or more Múl Genidárs or Wargdárs, the boundary between the land of each separate Múl Genidár or Wargdár is not known, but the cultivator pays a certain proportion of the crop to each of the superior holders. In such cases no attempt should be made to divide the land of each Múl Genidár or Wargdár into separate numbers ; but where there is more than one Chál Genidár, whose boundaries are defined, these boundaries should be adhered to and separate numbers made accordingly, subject to the rules for limiting the areas of Survey numbers. If the boundaries of such holdings are not defined, the following rules must be observed :

- (1) If the land in question is under three acres, it must be made into one Survey number.
- (2) If more than three, and less than five acres, into two Survey numbers.
- (3) If more than five, and less than eight acres, into three Survey numbers.
- (4) If more than eight, and less than twelve acres, into four Survey numbers.
- (5) And so on in cases exceeding twelve acres, so as to make Survey numbers of about two to three acres each.
- (6) The above acres apply to rice land and garden only ; double the area may be reckoned for dry-crop land.
- (7) The names of both Múl Genidárs and Wargdárs must be entered to each and every Survey number made under this rule.
- (8) Every case coming under this order must be specially reported to the Assistant Superintendent, who must at once enquire into it, and record below the report his statement, that the land of two or more Wargdárs or Múl Genidárs is really included in the cultivation of one or more men without separation of boundaries, but only with a certain apportionment of produce.

Byán or Grass Lands.

Rule 13.—Byán or grass lands when recorded as occupied in the village accounts, and when the area so occupied is there entered, will be measured into Survey numbers according to such recorded occupied area, with an addition not

exceeding one-tenth. When such occupied areas are small and contiguous to one another, they may be included together so as to make a Survey number of about 10 acres.

Rule 11.—Clause 1st—When no occupied area is recorded in the village accounts, such “Byán” lands, if the holders thereof agree to point out boundaries of division, should be made into separate Survey numbers according to each man's holding, or included in the same No. with his rice, or garden, if adjoining. Should however small holdings be met with removed from the rice cultivation, as many of these holdings as will make a Revenue Survey number of about 5 acres are to be measured and included into one Survey number, each holding being made into a separate Pôt number according to Section I, Rules 16 and 17. The name of each holder of a Survey or Pôt number should be entered in the measurer's books.

Clause 2nd—Should the holders be unwilling to divide the land or unable to point out boundaries, holdings should be included in one Survey number up to (15) acres.

Clause 3rd—The names of both Khátedár and Wahiwátdár must be entered in the Survey books, in the case of all “Byán” holdings of which the boundaries can be definitely pointed out, without dispute, and to such lands alone this rule will apply.

Rule 15.—No land containing timber trees is on any account to be measured as Byán.

Rule 16.—Against all Byán numbers, occupied or unoccupied, the word Byán is to be written in the measuring and classing books, and in the registers.

Rule 17.—One or more huts are often met with situated in small plots of land containing fruit trees or cultivation. Such plots are to be formed into Survey numbers of not less than half an acre, including sufficient waste land to make them up to that area. If no such fruit trees or cultivation adjoin the huts, the Survey numbers should be made up to not less than half an acre from the waste land if adjacent. But land containing large forest trees must never be so included. Such house-site numbers will be entered in the measurer's and classer's books in the names of the persons who own the fruit trees or cultivation, or where these do not exist, in the names of the persons who own the huts.

Pardi Land.

Rule 18.—Pardi land, whether dry-crop, rice or garden, must be measured into Pardi numbers irrespective of area.

SECTION V.

RULES FOR THE DIVISION OF FOREST LANDS.

Rule 1.—The forest lands of every village may be, if convenient, measured in one block or plot, in the first instance; when the map is plotted, these lands may be broken up into numbers of 250 to 500 acres on points fixed on the map, such as corners of cultivated plots of land, cart-roads, rivers, village boundaries, and bends on them, and points where the boundaries of two or more villages meet. The latter are especially good points to take, as they are well known. The areas of these numbers may then be calculated by the computing scale.

Rule 2.—Blocks of forest intersected by a made road should be made into separate numbers on each side of the road.

Rule 3.—In those parts of Kánara where the forests are very extensive and the villages far apart, Forest numbers may be made even up to 600 or 700 acres each.

Rule 4.—Kumri land must not be made into separate Revenue Survey numbers, but must be included in Forest numbers unless orders to the contrary should be given.

SECTION VI.

RULES FOR MEASURING BETTA LAND.

Rule 1.—When there is any Betta land to be measured in a village, the garden land should be first measured, but the measurement of the Betta land should not be postponed till the whole of the garden land has been measured. As soon as a block of garden land has been measured, the Betta land belonging to this block should be measured. In order to get straight boundaries in Betta land, bends of a chain and under need not be taken notice of, but “ Dharsod ” made; and except when the Betta joins on to occupied land bends should be avoided as much as possible.

Rule 2.—In measuring Betta lands, it is not necessary to take offsets to every small bend along the side adjacent to cultivation; the other sides and corners should be laid down by measurement, and the area due to the small bends on the side of cultivation should be taken by scale from the map.

Rule 3.—All the Betta land of a village is to be measured off into Survey numbers of a maximum area of 8 acres and a minimum of 4 acres. The measurer should simply divide into Survey numbers of the above dimensions all lands which are shown to him as Betta lands, provided that these are not “ káns ” or portions of forest containing reserved trees or other timber trees in arge numbers.

Rule 4.—All land covered with trees that are pollarded, whether every year or in rotation, is to be regarded as Betta, and treated in accordance with Rule 3.

Rule 5.—No forest land with trees that have never been pollarded is to be included in Betta numbers except such insignificant areas as may be necessary for straightening the sides of the numbers.

Rule 6.—The total area of the Betta lands of a village should not fall short of 4 acres to each acre of garden. Any case that may be met with where this aggregate is not attained should be reported to the Superintendent for orders.

Rule 7.—In dividing Betta land into Survey numbers those made up to 8 acres each should adjoin the garden lands, the smaller numbers being placed on the side of the forest area.

Rule 8.—In Betta numbers mounds must be erected at the four corners and stones at all the bends.

Rule 9.—The cost of marks erected for Betta numbers must be charged to the Wargdár holding the garden land belonging to the Betta number.

Rule 10.—In testing Betta land, if the difference between original and test area does not exceed 10 per cent, it may pass, but all tests of Betta must be entered in a separate return and not in the usual annual return.

Rule 11.—When there is much difficulty in measuring Betta land with the cross staff, the theodolite may be used instead. In such cases the area will be taken off the map by the computing scale. All land fairly open should however be measured with the cross staff.

SECTION VII.

BOUNDARY MARKS.

Rule 1.—The dimensions for mounds as given below are applicable to all descriptions of soil:—

Length at bottom	...	...	5 annas.
Do. at top	...	...	3½ "
Breadth at bottom	...	...	2½ "
Do. at top	...	...	1 "
Height of mound	...	...	1½ "

Rule 2.—Trap or granite stones are to be one anna long, a quarter of an anna wide, and four fingers thick.

Rule 3.—In rice and garden land mounds are to be erected only at the corners of numbers, and stones at the bends.

Rule 4.—In dry-crop land mounds are to be erected at the four corners of a number and stones at the bends. If the distance from one corner of a dry-crop number to the other is less than 25 chains, no intermediate mound is to be erected: if the distance is above 25 but less than 50 chains, one mound is to be erected about halfway between the corners; if the distance is more than 50 chains, mounds are to be erected at intervals of 20 chains.

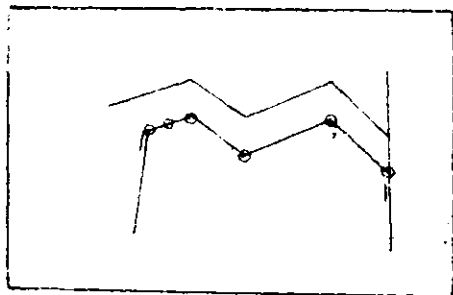
Rule 5.—It is not necessary that the intermediate mound mentioned above should be placed exactly midway between the two corners; it will be sufficient if in taking the "Bánd máp" the mid-distance is approximately taken.

Rule 6.—In Forest numbers mounds must be erected at the four corners and at acute angles: stones must also be placed at the bends. One mound only is to be erected at the corners of these numbers, where they break off from made roads; no mounds are to be erected parallel to the road. No stones are required at bends on the made road in Forest numbers.

Rule 7.—When measuring Forest numbers, if stones can be procured on the spot, they should be at once erected at the bends by the flag-men, and in order to mark the place where mounds will be required, the measurer should make the flag-men erect two stones to show where the ends of the mounds will fall, but these stones should not be purchased ones. If stones are not procurable, heaps of earth should be thrown up and daubed with whitewash.

Rule 8.—Whenever mounds are erected at the corners of a number a stone must be fixed in order to mark the exact spot where the corner of the number was made. This stone is not to be a purchased one, but one picked up out of the field and erected by the flag-holders. If a stone is not procurable, a heap of earth must be made and daubed with whitewash.

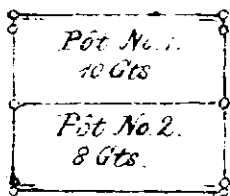
Rule 9.—Whenever a number is bounded by a well-defined mark, such as a water-course, or earthen embankment, or made road, no mounds are to be erected, but stones must be fixed at the corners and bends. When the boundary of a number breaks off from either side of a well-defined



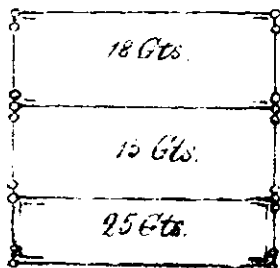
mark, a mound must be erected (as shown in the marginal sketch) showing the direction of the boundary. If the embankment bounding a rice field is one anna wide and one foot three inches high and covered with grass, it is to be considered a permanent mark; but if less than those dimensions it is not to be considered as such. When a number is bounded by a natural stream, no stones are to be erected at the bends along it, but a

stone and a mound showing the direction of the boundary of the number must be erected at the point where it breaks off from the stream.

Rule 10.—Any Revenue Survey number whose area exceeds 20 gunthas is to have mounds erected at the four corners, no matter whether it contains Pôt numbers or not.



Rule 11.—A Revenue Survey number which contains less than 20 gunthas must have one mound and stones as shown in the sketch erected at each corner of the longest sides of the number, no matter whether it contains Pôt numbers or not.



Rule 12.—If two numbers adjoin one another and the area of each is less than 20 gunthas, the marks must be erected according to Rule 11 above; but if a number whose area is less than 20 gunthas adjoins one whose area is less than 20 gunthas, then the marks must be erected according to Rule 10 above.

Rule 13.—Single stones of the size laid down in Rule 2 are to be erected at the corners and bends of Pôt numbers, half the stone being buried and the other half remaining above the ground.

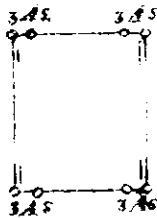
Rule 14.—It was formerly the practice below the ghâts to make use of laterite stones for marks: some stone of this description becomes rotten and crumbles away in few years, and the rayats are put to great expense in renewing the stones: it is therefore necessary that great care should be

taken in selecting a good description of stone. Laterite stones should never be made use of if trap or granite stones can be procured. If laterite stones are used they must be two feet long and six inches square.

Rule 15.—Laterite stones are never to be erected in Gajni land, or in any place where they are liable to be touched by salt-water: in such places trap or granite stones only are to be used; these should be of the size directed in Rule 16.

Rule 16.—In Gajni and Wángan land, and in land near the sea side, where owing to there being nothing but loose sand mounds will not stand, large stones $1\frac{1}{2}$ annas long should be erected at the corners of Revenue Survey numbers, and ordinary sized stones at the bends. Stones must be erected at all bends in Gajni land, no matter if it is bounded by a creek or a river.

Rule 17.—There will be a single large stone placed to show the corners of Survey numbers in Gajni, Wángan, and sea-shore lands: this one large stone is to be at the corner point, and stones of the ordinary size adjacent to it at the interval of the length of a mound.



Rule 18.—Sometimes at places a little removed from the sea-shore, owing to there being a great deal of loose sand, it is doubtful whether mounds will stand. In such places mounds are not to be entirely discarded, but one mound must be erected at each corner on the longest sides of the number, and stones on the other sides at 3 annas distance from the corner stones as shown in this sketch.

Rule 19.—The above rule only applies to land near the sea which consists of nearly pure sand, and the Assistant Superintendent must carefully guard against it being applied where it is not intended to apply, always remembering that in all doubtful situations it is better to put mounds according to the usual rule than to apply the exceptional rule above. The rule does not apply to land in which there is a certain amount of soil mixed with the sand, where mounds may be expected to stand: in such land mounds must be erected according to the rules.

Rule 20.—The measurers are not to decide for themselves where mounds and where stones are to be erected, but must report to the Assistant Superintendent and obtain his orders, and after the Assistant has satisfied himself he will give the orders called for by the above rules.

Rule 21.—Measurers are in the habit of making no difference in the bottom and top widths of mounds but build them up like a wall: they must not do this, but must erect them according to rule, which will lessen the amount of labour.

Rule 22.—It is a common practice to excavate the earth for making a mound from close to the foot of the mound; this must not be allowed, but a clear space of one anna all round, the mound must be left untouched. If any measurer neglects to carry out this order, no excuse of his is to be listened to, the mound must be thrown down, and the cost of doing this and erecting a fresh one recovered from the measurer.

Rule 23.—The space to be left between the sides of a made road and the edge of a number should be as under :

In dry-crop land including Betta, Byán, and Kán	...	...	...	5 annas from the gutter.
In rice land	...	...	...	2 " "
In garden land	...	...	...	1 " "

Where there is no gutter the above distances are to be taken from the side of the road.

SECTION VIII.

THE MAP.

Rule 1.—When the holdings in a village are very small the map must be plotted double the usual scale. As a rule this will be the case in villages below the Gháts ; but should a measurer find the holdings in the village to which he is sent are large, he must report the circumstance to the Assistant, who will decide on what scale the map should be plotted.

Rule 2.—In measuring any village which has lands of other villages included and mixed up with its own lands, those included lands should be measured and numbered at the same time with the lands of the including village in the ordinary course of measurement, an explanatory note being written in the measurer's book opposite the numbers in question. No separate books need be kept for such numbers.

Rule 3.—A note should be written on every copy of the map stating that numbers so and so belong to such and such a village.

Rule 4.—And a similar note should be written at the end of the Súd. For after-convenience sake it will be expedient that these included numbers have their detail shown separately at the end of the Súd.

Rule 5.—No separate maps need be made of included numbers ; they can be easily found on the map of the village in which they are included.

Rule 6.—Majrehs or hamlets in jungle districts need not, if they aljoin their Moujeh or superior village, have their boundaries separately defined : one line of boundary may include both Majreh and Moujeh.

Rule 7.—If, however, in jungle districts a Majreh, as is sometimes the case, is detached from its superior village, and does not in any part adjoin it, then the boundary of the Majreh must be separately defined, since a Majreh of one village (Moujeh) may not be included in the boundary of another village (Moujeh).

Rule 8.—But in some parts, especially below the Gháts, it will be inconvenient to include Majrehs in one map with their superior villages, as the map will be of an awkward size, and it will be more convenient in many ways there to measure Majrehs as separate villages : in such cases this should accordingly be done. When, however, it is not in any way inconvenient to include a Majreh within the same line of boundary as the superior village, it should be so included as both work and boundary marks will be saved.

Rule 9.—It is not necessary that every Majreh should be made into a separate map. Two or more adjacent Majrehs of one village may be included into one map, so long as the orders regarding size and number of numbers are observed.

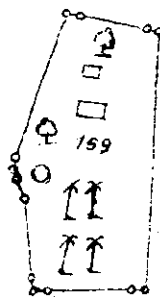
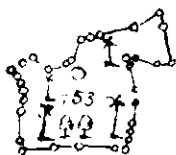
Rule 10—No map is to exceed four feet by three feet in size, or to contain more than 300 numbers; and if a village and its Majrehs, or if two or more Majrehs of a village have to be made into one map, then $2\frac{1}{2}$ to 3 feet by 2 or $2\frac{1}{4}$ feet, with 180 to 230 numbers is the most desirable size. But however few numbers a map may contain it should be within about 3 feet by 2 feet in size, and it should not contain above 300 numbers, however small the map may be. This applies to portions of one large village, as well as to maps including a village and its Majrehs.

Rule 11.—When one or more Majrehs are, with or without the Moujeh, made into a separate village, the names of all the Majrehs are to be written on the village map, Súd, Paháni súd, and Classer's register; and shown in the annual return of work below the Moujeh in which they are included. When a Majreh is made into a separate village, or when two or more Majrehs are together made into a separate village, the names of the Majrehs and the Moujeh to which they belong must also be shown on the maps, and in the annual return of work. The object of this is to afford information as to what Majrehs have been measured and what not.

Rule 12.—Many numbers in Kánara are covered with cocoanut and other trees, and the measurers are in the habit of showing a great number of trees on the map, in consequence of which it is difficult to distinguish the figures denoting the number.

(1) In order to prevent an unnecessary number of trees being shown on the map in future, it is laid down that if a number is one acre or less in area, no matter how many trees there may be on the ground, not more than (4) four are to be shown on the map. If a number is more than an acre in area, no matter what size the number may be, or how many trees there may be on the ground, it will suffice to show from 5 to 7 trees on the map according to the size of the number.

(2) The figures denoting a number must not be made smaller than shown in the examples below.



Rule 13.—In order to ensure the boundaries of villages being correctly laid down, it is necessary that measurers should carefully compare the boundary line shown on the map of the village in which they are at work with the boundaries shown on the maps of the adjoining villages, and if the boundaries do not coincide, they must at once report the fact to the Assistant Superintendent for orders.

Rule 14.—On a measurer being appointed to a village, he must at once ascertain whether any of the adjoining villages have been measured, and in case they have, whether he can obtain copies of the maps from the village

officers. If the maps are not obtainable, the measurer must within two days after commencing work report the circumstance to the Assistant Superintendent, who will arrange for obtaining copies of the maps; and as soon as the measurer receives the maps he must be careful to see that he measures according to the mounds and stones shown on the maps of the adjoining villages.

SECTION IX.

THE MEASURER'S SÚD.

Rule 1.—As the Survey numbers and Pôt numbers in Survey numbers in the Kánara district are often very small, the following rules are laid down for making the give-and-take (Dhar Sod) of annas in fixing the areas :—

Clause 1st.—Areas under 8 annas must be entered correct to the nearest anna.

Clause 2nd.—Areas from and over 8 annas and of less than 5 gunthas are to be entered in the Súd correct to the nearest even anna. If the area should contain exactly an odd number of annas the next even anna above the original area should be entered.

Clause 3rd.—Areas of from 5 to 10 gunthas are to be entered correct to the nearest half guntha.

Clause 4th.—Areas of more than 10 gunthas are to be entered to the nearest guntha.

Clause 5th.—The sum of the Pôt numbers entered is to be taken as the area of the Survey number.

Clause 6th.—The above adjustments are to be made both in the unculturable and total areas, the rule applicable to the total area of the Survey number or Pôt number being used to fix the detail area (drycrop, rice, garden and unculturable) of that number.

Example.

Chalta No.	Pôt No.	Total Area as in Fair Field Book.	Unculturable Area as in Fair Field Book.	Total Area as confirmed and entered in the Súd by 'Dhar Sod.'	Unculturable Area as confirmed by 'Dhar Sod.'	Remaining Area.
		A. g. a. p.	A. g. a. p.	A. g. s. p.	A. g. a. p.	A. g. a. p.
41	1	0 17 3 0	0 3 9 0	0 17 0 0	0 4 0 0	0 13 0 0
	2	0 2 0 34	0 0 9 0	0 2 0 0	0 0 10 0	0 1 6 0
	3	0 5 13 6	0 2 11 0	0 6 0 0	0 3 0 0	0 3 0 0
	4	0 10 12 9	0 5 14 0	0 11 0 0	0 6 0 0	0 5 0 0
	5	0 8 10 0	0 4 7 0	0 8 8 0	0 4 8 0	0 4 0 0
		Total ...		1 4 8 0	0 18 2 0	0 26 6 0
39	1	0 8 13 11	0 4 13 0	0 9 0 0	0 5 0 0	0 4 0 0
	2	0 9 2 4	0 2 4 0	0 9 0 0	0 2 0 0	0 7 0 0
	3	0 3 4 0	0 1 7 0	0 3 4 0	0 1 8 0	0 1 12 0
	4	0 8 2 2	0 5 2 0	0 8 0 0	0 5 0 0	0 3 0 0
	5	0 2 7 3	0 1 3 0	0 2 8 0	0 1 4 0	0 1 4 0
	6	0 2 7 14	0 1 0 0	0 2 8 0	0 1 0 0	0 1 8 0
	7	0 5 3 6	0 2 4 0	0 5 0 0	0 2 0 0	0 3 0 0
	8	0 0 7 4	.....	0 0 7 0	.....	0 0 7 0
		Total ...		0 39 11 0	0 17 12 0	0 21 15 0

SECTION X.

RULES FOR THEODOLITE MEASURERS.

CHAPTER I.

Village Measurement.

Rule 1.—When a measurer is appointed to do the theodolite work of a village or group of villages, the first thing is to mark out the boundary, and to find the marks that have been erected on the boundaries of villages already measured.

Rule 2.—If a flag can be erected at a point which is visible from a distance, it should be fixed in by three intersections from theodolite stations in the cultivated land or on made roads.

Rule 3.—If the points to be fixed are situated in a flat forest so that flags visible at a distance cannot be erected, they may be fixed in by working up to them through the clearest part of the forest in the same way as a traverse survey is done.

Rule 4.—In this case the greatest care must be taken to make the stations as far apart as possible; and as a constant check on the work, the bearing of the north point must be observed at every station as well as the backward angle.

Rule 5.—When a point on the boundary is fixed in this manner, it must be confirmed by an independent line, to at least one other known point; or back again by a different route to the original station. This rule must be strictly observed in every case; or errors will be sure to occur.

Rule 6.—Measurers should always fix in a point by intersections from a distance if it is possible to do so in preference to measuring up to it from station to station; this latter method being especially liable to error and taking much time.

Rule 7.—If the cultivated lands of the village have been previously measured with cross staff, the measurer should make his first station at one or other end of the base line; or at some convenient intermediate spot on the base line; so as to be able to take its direction and fix in the boundaries, &c., with reference to the cultivated lands already measured. In this case the cross staff measurer must plot his work first upon a separate piece of mapping paper and afterwards transfer it to the map when his base line has been fixed in.

Rule 8.—If the cultivated lands have to be measured after theodolite work is finished, the measurer should choose for his first station a convenient spot from which he can fix a base line passing through the cultivated lands, and which the cross staff measurer will afterwards take up as the base line for the cross staff measurements. In this case he must put up flag-staffs or marks of a permanent nature, which he must warn the villagers not to remove, and which the cross staff measurer will have no difficulty in finding.

Rule 9.—At every place where the boundary of another village meets the boundary of the village under measurement, the measurer should put up a

permanent mark (Ráj Dagad). These stones should be 2 feet long and 4 inches square, with a cross cut on the top, as shown below :



Rule 10.—When, as is commonly the case in Kánara, the villagers of two adjacent villages show a small stream passing in a zigzag course through thick forest, as forming the boundary between two villages, there is no necessity to take every bend made by the stream, but when measuring along that boundary, the measurer must make his stations pretty near the stream through the clearest part of the forest, and fix its course by offsets taken at every 20 chains. But rivers and large streams must be laid down according to their course.

Rule 11.—When the measurer is fixing the boundaries of a village, he must send for the village officers of the adjacent villages also, so that they may know where the boundary marks are when their village is being surveyed, and that no boundary disputes may afterwards occur.

Rule 12.—Should there be a boundary dispute in the forest between two villages, the measurer must measure it off at once and enter it in dotted lines in the maps of both villages, and send a copy of the boundary dispute map to the Assistant Superintendent, who will give further orders regarding the disputed land, when the dispute has been settled; and the necessary alterations can then easily be made in the maps of both villages.

Rule 13.—When the boundary has been laid down in this way, the theodolite measurer must proceed to fix in a “base line” for any cultivated land for which he has not already laid one down. He must then lay down the roads and any streams passing through the jungle which are large enough to be shown on the map.

Rule 14.—The theodolite measurer will always fix in the north point on the village map and will write a memorandum as follows: “North fixed by theodolite.”

CHAPTER II.

Road Measurement.

Rule 1.—When a measurer is ordered to measure roads, with a view to ascertaining the area and demarcating forest and boundaries of villages included between them, he should in starting at one place, as directed, make his first and second stations on one side of the road, where there will be no difficulty or hindrance to putting up permanent marks.

Rule 2.—In measuring along the road, there is no necessity to take offsets to the side of the road; but the measurer need only ascertain the breadth of it at starting and at long intervals, except where he observes any considerable increase or decrease in it. He should, however, note in his book opposite each theodolite station whether his station is on the right hand side, left hand side, or centre of the road.

Rule 3.—Should any important road cross or branch off from the road along which the measurer is working, he should make a station at that place, take angles showing the directions in which the road branches off on one or both sides, and make two permanent marks; writing in his book where the road comes from, to which village it goes, also at which stations the permanent marks were made; so that should it be necessary hereafter to measure along any one of these roads, the work can be taken up at the place where he has made the permanent marks, and angles and measurements taken in continuation of the work already done.

Rule 4.—The measurer should endeavour to ascertain where the boundaries of different villages, through the lands of which he is measuring, cross the road along which he is working, and he should note this in his book. He should note also the places where streams and rivers cross the road, and show their breadth; he should also enter in his book the names of these streams or rivers, if they have any. Whenever the road passes through a village, the measurer should show in his book where the village begins and where it ends, and enter the name of the village. When the road goes through cultivated lands, he should show where the cultivation begins and where it ends, entering also the name of the village to which it belongs.

Rule 5.—If the measurements are carried on along a made road, the measurer should take every opportunity of making a theodolite station, when convenient to do so, over the mile-stones, entering in his book which mile-stone it is. Also when he has to make permanent marks at certain intervals along the road, as ordered below, the mile-stone can be taken as one of the permanent marks, as it is not likely to be removed and may be depended upon as a permanent mark, at any rate for three or four years.

Rule 6.—The measurer should make marks of a permanent nature (Rāj Dagad) that are likely to remain for three or four years, and which there will be no difficulty in finding:

1st.—At the place where he begins work.

2nd.—At all places where important roads branch off from or cross the one under measurement.

3rd.—At all places where important rivers cross the road.

4th.—At all places where the boundaries of villages cross the road.

5th.—At all places where the road crosses cultivated land.

Should there be no such places along a road passing through extensive forests, he should make permanent marks at every two miles distance along the road; but should there be permanent marks erected as in the above enumerated cases, there is no necessity to put up any further permanent marks at every two miles distance in the intervals.

Rule 7.—When the measurer puts up permanent marks, he should always put up two, that is “a Rāj Dagad” at the station where it is required, and a smaller flat-headed stone marked with a cross, and buried to within half an inch of the head, at the theodolite station next to it, either way as most convenient; because, on account of the difference in the north point as shown by different compasses, the correctness of the work would not be ensured when further angles and measurements are taken starting from one of the stations already fixed, unless two permanent marks are put up.

Rule 8.—At places where the measurer has to make permanent marks, should he be passing through cultivated and measured lands, the boundary marks, that is the corners of numbers, would be very good permanent marks to choose; but he should then, if possible, state in his book which corners and of what numbers he has fixed as permanent marks.

Rule 9.—Where permanent marks have to be erected, they must be put in such places that they may not be liable to disturbance by carts or animals. They should be buried so that the surface be level with the ground. The surface of the stone should be squared and a cross cut upon it, and clear directions for finding the stone must be made in the measurer's book, giving the distance and bearing of the stone from some recognisable mark, such as a building, bridge, or large tree.

Rule 10.—If a mile-stone or boundary-mark stone be used as a Ráj Dagad, a cross must be cut upon it as usual.

Rule 11.—The theodolite measurer employed on road survey must plot the portion of the road passing through each village on separate pieces of mapping paper, on the scale usual for village maps in that part of the country. These plots must be sent, as soon as each is completed, to the Assistant, so that when the village is appointed, the work need not be done over again. Every "Ráj Dagad" must be shown on these plots.

CHAPTER III.

Of other Roads.

Rule 1.—When roads of the descriptions given below go along the boundaries of "Shets," and are adopted as the common boundary of two "Numbers," they should not be included in the measurements of those "Numbers," but should be left separate, and have boundary marks erected on each side of them:—

1st.—Those along which traders convey their goods to a distance, either on pack bullocks or carts.

2nd.—Those to a neighbouring market, by which goods are constantly conveyed, on horses or bullocks.

3rd.—Those along which the cattle of the village under measurement, or those of another village, are constantly in the habit of going.

Rule 2.—When roads of the three descriptions given in the last rule are enclosed by garden or rice cultivation, or by permanent marks, such as hedges, old earthen ridges, or nullas, the distance between these enclosures should be adopted for their breadth; but in case they are not enclosed by garden, or rice cultivation, or by permanent marks, they should be made one chain broad.

Rule 3.—Roads not so much used by carts and bullocks as those mentioned in the first rule, but which go along the boundaries of "Shets," and are adopted as the common boundary of two "Numbers," are, like those roads, to be excluded from the adjoining "Numbers" and to have boundary marks on each side of them. Their breadth, when bounded by garden or rice cultivation, or by permanent marks, should be regulated by the distance between these enclosures; but in other cases they should be made 10 annas broad.

Rule 4.—With one exception (to which allusion will be made hereafter), roads not included in the above rules should not have boundary marks on each

side, but should be included in adjoining "Numbers," and their areas should be recorded as unculturable. The following rules show how broad they should be made.

Rule 5.—Those which are enclosed by garden or rice cultivation, or by other permanent marks, should correspond in breadth with the distance between those marks.

Rule 6.—It frequently happens that the roads near villages, in consequence of being much used by cattle, have no permanent marks on each side, and are more than a chain in breadth. These roads should not have their breadth changed.

Rule 7.—When roads of the four descriptions alluded to in Rules 1st and 3rd do not form the boundaries of "Shets," and are not enclosed by garden or rice cultivation, or by permanent marks, then the breadths laid down in those rules respectively should be adopted for them; but in case these roads are enclosed by garden or rice cultivation, or by other permanent marks, then the distance between those marks should be adopted as their breadth.

Rule 8.—When small roads which are not used by the carts or bullocks of traders, or by the village carts, but are used merely as foot-paths, or by a single horse or bullock occasionally, are well defined by permanent marks on each side, they should be made as broad as the distance between these marks; but if they are not enclosed by permanent marks, four annas should be the breadth allowed for them.

Rule 9.—Neither earthen ridges nor stones should be put up as boundary marks on roads which, according to the preceding Rules, are to be deducted from the contents of the "Numbers" through which they pass; and therefore, in making marks for the erection of earthen ridges and stones, care should be taken not to make them where these roads and the lines of boundary intersect each other, but at least eight annas from the points of intersection, so as to leave the roadway free of obstruction.

Rule 10.—If the present roads by which the village cattle go out to graze, and for water, have permanent marks on each side, their breadth should be made equal to the distance between those marks, otherwise they should be made a chain broad. But if, in consequence of the land being uncultivated, there are no fixed roads for the cattle to go to graze and for water, such roads should be laid down; and for this purpose the opinion of the villagers should be taken as to where they should be. When the villagers wish to have the roads through Government waste land, they should be made a chain broad; but if they propose to have them through Enam, or cultivated land, the "Enamdar" or "Kurda" of the land should be consulted, and a report, as to whether he agrees to the proposal, made to the Assistant Superintendent for his decision. When these roads go through "Numbers" their areas should be deducted from the contents of the "Numbers," but when they lie along the boundaries of "Numbers," they should not be included in them, but should have boundary marks erected on each side, in the same way as the roads alluded to in Rules 1 and 3.

Rule 11.—The breadths of the roads should, in general, be made according to the directions given in the preceding Rules, but in fixing on the breadth for each road, the Measurer should consult the villagers, and not act entirely on his own judgment. Should their opinion at any time differ from his own, or should their wishes be in opposition to any of the above Rules, the Measurer

should refer the point in dispute for the decision of the Assistant Superintendent.

Rule 12.—The above rules are not applicable to made roads, which are never to be included in the “Numbers” adjoining them. In common with other roads so excluded, these also should have boundary-marks erected on each side, and these marks should be erected at the distance of five annas from the side trenches. Should, however, a made road pass through “Shets” of rice or garden cultivation, so that the enforcement of this rule would subject the “Kurda” to a great loss, then a report of the case should be made to the Assistant Superintendent, and directions obtained from him on the subject.

SECTION XI.

RULES UNDER WHICH “HADI” OR “KUMKI” LANDS MAY BE ACQUIRED.

Rule 1.—All “Hadi” or “Kumki” lands must be applied for in writing by the person who claims the usufruct.

Rule 2.—The applicant must show beyond doubt that he has hitherto been in the enjoyment of the “Hádi” to which he lays claim, and point out undoubted “Wahiwat” (usage) in the Forest.

Rule 3.—He must agree to pay a rent, which will be fixed hereafter, but which in no case will exceed the maximum dry crop rate of the district.

Rule 4.—He must agree not to cut down any trees, or boughs of the same, and to pollard only to the extent of the small lateral twigs thrown out in the rains. A right to gather fruit, fallen leaves, collect deadwood, cut undergrowth, thorns, and graze cattle, will be conceded.

Rule 5.—“Hádi” lands will not be entered in the applicant’s Kháta; these will be shown separately in the village registers as Government property, and the name of the person who enjoys the usufruct as “Wahiwátdár,” and such “Wahiwátdár” must agree to give up the whole or a portion of any “Hádi,” should it be hereafter required by Government for public purposes; or on parting by resignation, sale or otherwise with the garden land in respect of which such “Hádi” land is enjoyed. In the first case compensation would only be given for any building or wall, &c., which may have been erected at the “Wahiwátdár’s” expense.

Rule 6.—The applicant must agree to provide at his own expense, flag-holders, coolies, &c., at the time of measurement and classification, and to erect all necessary boundary marks.

Rule 7.—In short, all privileges in “Hádi” lands formerly enjoyed will be respected, but the trees, as before, must be kept intact and uninjured.

Rule 8.—The village officers must corroborate each application for “Hádi” land, and write and sign a “Shera” to the effect that the applicant thoroughly understands and agrees to the terms on which “Hádi” lands may be held. The applicant must also sign the village officer’s Shera.

SECTION XII.

GENERAL SUBJECT.

Rule 1.—Each measurer will be allowed two chain-men and six flag-holders when working in Kánara. When a measurer goes to a village, he should explain to the rayats that unless they choose to supply the requisite number of men for carrying on the work, they will be supplied and paid for by Government, the cost being recovered from the rayats.

Rule 2.—The Mámlatdárs in Kánara not being able to supply peons for carrying the post, Assistants are allowed to take on a peon for this purpose when in Kánara; but he must be discharged as soon as the establishment leaves the Kánara district.

Rule 3.—For the future all expenses incurred on account of measuring Forest numbers must be entered in a separate account. When the village accounts are being prepared, an account according to a form given in these rules must be made out and sent in with the rest of the accounts, in order that the amount may be recovered from the Forest Department.

Rule 4.—Owing to there being often no record left by the measurers, when giving over unfinished villages to another establishment, the establishment to which they are given over has great difficulty in finding out what work has to be done. In order to put a stop to this, Assistants must make each measurer make out a return of exactly what work is finished and what unfinished, in any unfinished village, before giving the papers over to another establishment. If there are more measurers than one employed in the village, each measurer must make a separate return of the state of his work. Each measurer must state how many numbers have been plotted on the map, how many numbers remain unplotted; and if they cannot be correctly plotted, he must show their position on the map in pencil as accurately as he can, so that it may be seen at a glance what numbers adjoin one another. The return must show in how many numbers the boundary-mark inspection has been completed and in how many it remains to be done; what entries remain to be made in the hand book and fair field book. This return must be stuck in by each measurer at the beginning of his last fair field book; and Assistants will be held responsible that the information is complete and correct. Assistants, at the time of giving over the village papers, must make a report to the Superintendent that a return, fully explaining the state of the work in each village, has been sent with them.

Rule 5.—It is a common practice for measurers when appointed to a village to measure all the rice land, leaving the garden land unmeasured. In future, the measurers must measure continuously, taking in hand the land adjacent to numbers previously measured, without skipping any intermediate land, unless for sufficient reason, such as standing water in Wangan. Such cases should be reported to the Assistant Superintendent for orders.

Rule 6.—All previous orders are cancelled, and the work in Kánara is to be carried on according to these rules. Should any measurer be in doubt about how to carry out the rules he must report to the Assistant Superintendent for orders.

Form referred to in Rule 8, Sec. XII.








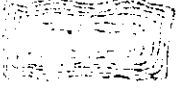
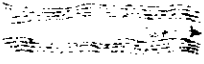
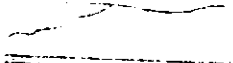
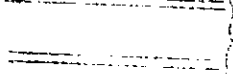
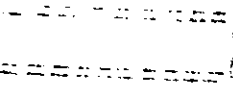
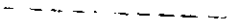
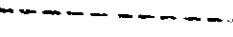

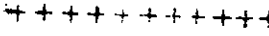

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






KANARA MEASURING RULES.

XXXI

Name of District.	Name of Taluka.	Numbers in order.	Name of Village.	Total Forest Numbers.	Details.						Amount to be recovered on account of Flag-holders and Bādli Peon.			Total of Columns 12 and 15.	Amount recovered.	Amount to be recovered.		
					Cost of Mounds.			Cost of Stones.			Total of Columns 6 and 11.	Flag-holders.	Peon.				Total.	
					Number of Mounds.	Cost of each Mound.	Total Cost.	Total number of Stones.	Cost of each Stone.	Total Cost of Stones.								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
							As. p.							Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	
Kanara		1	...	2	13	...	...	5	...	...	...	...	...	4 0 0	4 0 0	4 0 0	4 0 0	...
		2	...	3	8	...	...	8	...	...	...	...	...	6 10 7	6 10 7	6 10 7	6 10 7	...
				5	21	...	...	13	...	...	...	...	...	10 10 7	10 10 7	10 10 7	10 10 7	...
Do			...	3	29	...	...	17	...	...	...	...	...	6 3 1	6 3 1	6 3 1	6 3 1	...
			...	3	25	4 as.	5 12	10	...	...	5 12	...	...	9 7 3	9 7 3	15 3 3	15 3 3	...
				6	62	4 as.	5 12	27	...	...	5 12	...	...	15 10 4	15 10 4	21 6 4	21 6 4	...
			Total	11	73	4	5 12	40	...	...	5 12	...	...	26 4 11	26 4 11	32 0 11	32 0 11	...

SYMBOLS USED IN THE REVENUE SURVEY DEPARTMENT.

	A well with one môt.
	A well with two môt.
	A well without a môt, but in repair and formerly used for irrigation.
	A well with steps.
	A well without môt and steps, and never used for the purpose of irrigation.
	A dry well, but in good repair.
	An old dry well out of repair.
	A tank.
	A large Nulla with budki.
	A small Nulla.
	Roads which form the boundaries of "Numbers" and are one chain and ten annas in breadth.
	Roads which pass through "Numbers" of one chain and ten annas in breadth.
	A foot-path.
	Boundary ridges, or mounds.
	Boundary stones.
	A hedge.
	Temples and houses.

		Cocoanut trees.
		Betelnut trees.
		Toddy trees.
		Tamarind, mango, and jack trees.
		A Wad tree.
		Other kinds of large trees.
		A station in Theodolite measurement.
		A tower.
		

APPENDIX C. TO CHAPTER I.

DECCAN AND S. M. COUNTRY SURVEY REVISION MEASUREMENT RULES.

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Rule 7.—If a small share does not adjoin another small share, it must not be included in an adjoining full-sized share, but however small must be made into a separate number.

Rule 8.—All shares under one acre are to be considered small shares.

Rule 9.—In some cases owing to the shares being divided into very narrow strips there would be a difficulty in turning the plough if each strip were made a separate survey number: such strips should therefore be lumped together, up to a total breadth of 3 chains for the survey number, and measured and shown in the measurer's books in the manner laid down in the latter part of Rule 6. but no share of 2 or more than 2 chains breadth is to be included with any other share.

Rule 10.—Pôt numbers should be demarcated by a stone at each corner and at every bend over 2 annas. These stones should be shown on the Pôt number maps.

Rule 11.—In some existing "Revenue Survey Numbers" though there are separate Khâtadárs there is no separate occupation of the land, but they either share the crop or in some other way exercise a joint occupation of the land. In such cases if all the Khâtadárs agree to divide the land, and point out boundaries of division, "New Survey Numbers" should be made accordingly. But if they are not all willing to divide the land and show boundaries, then a separate "New Survey Number" for each Khâta cannot be made.

Rule 12.—The Kulkarnis of villages have a Register (Village Form No. 1) in which every "Revenue Survey Number" is shown, whether it is "Inám" or Government, and who is the Inámdár, Khâtadár, or Vahivátlár, and the work must be carried on according to the entries in the Register. The name of the Inámdár or Khâtadár who held the "Revenue Survey Number" at the time the Register was prepared is entered in column 6. If any changes have taken place since then, the information is given in columns 18 and 19; and as those columns show the present state of the holdings, the work must be carried on according to entries in those columns.

Rule 13.—If any portion of a "Revenue Survey Number" has been made over to any person by a decree of the Civil Court, it must be made into a separate "New Survey Number" even if it has not been made into a separate Khâta, but if the decree of the Civil Court gives the right of holding the land for only a term of years, it is not to be made into a separate "New Survey Number."

Rule 14.—In making "New Survey Numbers," the following Rules are to be observed, and it does not matter whether the old "Revenue Survey Number" is all Inám, or whether it is all Government land, and all held by one or more than one Khâtadár, still if the area of the "Revenue Survey Number" is greater than the limits laid down in the following rules, it must be broken up into "New Survey Numbers" according to those rules.

Rule 15.—Old "Revenue Survey Numbers" of dry-crop land consisting of all Government or all Inám land, and held by one Khâtadár or one Inámdár, and under 30 acres, will be confirmed. If the total area of a number is entered in the village accounts as 30 acres 1 guntha, then this number is to be broken up; another number is entered in the village accounts as 29 acres 30 gunthas:

there is no necessity to break up this number. But if the area of a number obtained by the present Survey exceeds 30 acres a report must be made to the Assistant.

Rule 16.—If the area of a dry-crop “Revenue Survey Number” is between 30 and 50 acres, it must be made into two (2) “New Survey Numbers.”

Rule 17.—If the area of a “Revenue Survey Number” is between 50 and 70 acres, it must be divided into three (3) “New Survey Numbers.”

Rule 18.—If a “Revenue Survey Number” contains more than (70) seventy acres, it must be divided into “New Survey Numbers” ranging from (18) eighteen to (25) twenty-five acres each.

Rule 19.—In breaking up “Revenue Survey Numbers” into “New Survey Numbers,” the measurer must not be guided solely by the area of the new numbers: he must also take into consideration the existing boundaries of *Vahivát* according to which the number is cultivated.

Example.

A “Revenue Survey Number” contains (40) forty acres, then according to Rule 16 above it ought to be divided into (2) two numbers. In this number there are (3) three “*Pôt Lávniárs*”; one has 12 acres, another 13, and the third 15 acres; then the 15 acres cultivated by No. 3 “*Pôt Lávniár*” must be made into one “New Survey Number” and the 12 and 13 acres cultivated by the other two “*Pôt Lávniárs*” must be together made into one “New Survey Number.”

Rule 20.—If the area of a number exceeds 30 acres and is all cultivated by one *Karda* without any *Pôt Lávniárs*, it must be divided into two or more about equal numbers, and the new boundaries of these numbers must be carried across the shortest line available through the old number, so that the fewest number of mounds will be required. In breaking up oversized numbers care must be taken to place the new line of boundary so as not to inconvenience the cultivator, and not to require an unnecessary number of marks by adopting a longitudinal line through the old number, unless the occupant desires it. The new numbers must not be made of very unequal size except it is necessary to do so according to the *Pôt Lávniárs’ Vahivát*; for instance, in dividing an old number of 32 acres some measurers cut off 2 or 3 acres and make that one number, instead of making two numbers of from 10 to 20 acres each. But if a number is of more than 30 acres and is cultivated by *Pôt Lávniárs*, it must be divided into numbers according to Rule 19 above.

Rule 21.—In future in all cases of a Revenue Survey Number being broken up by a young or doubtful measurer, the Assistant Superintendent must require him to append to his daily report a rough sketch showing the particulars of the division.

Rule 22.—In no case in breaking up a Revenue Survey Number must the new line of boundary be run through *Bágáit*, which, if it is in one block, must be included in one or other of the new Survey Numbers: unless it is held by two *Khátadárs*, when of course it must be divided according to existing occupation.

Rule 23.—Similarly *Tari* land must never be subdivided across the embankments.

Rule 24.—Assistants will be furnished with a copy of the Revenue Survey map of every village measured by their E-stablishment, on which the measurers should show in red ink from day to day the line of boundary adopted in breaking up Revenue Survey Numbers: an inspection of this map by the Assistant and a comparison of it with the new map will help Assistants in keeping the men in check.

Rule 25.—Whenever Garden, Rice, or Dry-crop are met with in a "Number," the different descriptions of soil must be measured separately, and the area and position of each shown in the measurer's books as laid down in the Revenue Survey printed rules. Each piece of rice or garden land must be measured on a separate base line and be shown separately below the sketch of the Survey Number in the rough field book.

Rule 26.—In mixed descriptions of soil, one (1) acre of rice is to be considered equal to three (3) acres of dry-crop, and one (1) acre of garden to five (5) acres of dry-crop.

Rule 27.—If a garden "Revenue Survey Number" contains (10) ten acres of garden land and is all held by one person, it is to be made into (1) one "New Survey Number;" if it contains more than (10) ten acres it must be divided into two or more "New Survey Numbers." In like manner if a rice "Revenue Survey Number" contains (15) fifteen acres of rice land and is all held by one person, it is to be made into (1) one "New Survey Number;" if it contains more than (15) fifteen acres it must be divided into two or more "New Survey Numbers."

Rule 28.—Rules for division of waste rice Numbers:

1. If less than 4 acres to be made one number.
2. From 4 to 6 acres, two numbers.
3. From 6 to 8 acres, three do.
4. From 8 to 10 acres, four do.
5. From 10 to 12 acres, five do.

Above 12 acres to be divided into numbers according to the same scale.

6. In mixed dry-crop and rice numbers, 3 acres dry to count as one acre rice.
7. The boundaries of the new numbers are always to be made along the rice embankments never across them.

Rule 29.—To determine whether a "Revenue Survey Number" of mixed description of land requires to be broken up or not, the following method should be adopted. Reduce the whole area to the equivalent of dry-crop land by the proportions given in Rule 26, that is, multiply the rice and garden areas by 3 and 5 respectively, then adopt the kind of land giving the largest area as the description of the number. Should the areas thus arrived at be equal, then the most valuable land should be taken as the description of the number. For example:—

Example 1st.—A number contains 2 acres of garden and 6 acres of dry-crop land. According to the above Rule the garden becomes 10 acres. This area being more than the actual dry-crop area, the number should be considered a garden one. And as the 6 acres of dry-crop by being reduced

to the equivalent of garden land becomes acres 1—8, this added to the actual garden area 2 acres, gives acres 3—8 as the size of the number, which therefore, according to the standard for garden numbers, does not require to be broken up.

Example 2nd.—A number contains 2 acres of garden and 10 acres of dry-crop land. According to the above rule the garden becomes 10 acres. This area is equal to the actual dry-crop area, but as the garden is the most valuable description of land the number should be considered a garden one. And as the 10 acres of dry-crop by being reduced to the equivalent of garden land becomes 2 acres, this added to the actual garden area, 2 acres, gives acres 4 as the size of the number, which therefore, by the standard for garden numbers, does not require to be broken up.

Example 3rd.—A number contains 2 acres of garden and 25 acres of dry-crop land: according to the above Rule the garden becomes 10 acres. This area being less than the actual dry-crop area the number should be considered a dry-crop one. And as the two acres of garden land are equivalent to 10 acres of dry-crop, this added to the actual dry-crop, 25 acres, gives acres 35 as the size of the number, which therefore, by the standard for dry-crop numbers, requires to be broken up into two numbers.

Example 4th.—A number contains 5 acres of garden and 10 acres of rice land, according to the above Rule the garden becomes 25 acres and the rice 30 acres. The rice area being more than the garden area the number should be considered a rice one. And as, by the proportions given in Rule 26, the 5 acres of garden land are equivalent to acres 8—13 of rice land, these acres added to the actual rice area, 10 acres, gives acres 18—13 as the size of the number, which, therefore, by the standard for rice numbers, requires to be broken up into two numbers.

Rule 30.—If it is necessary to break up mixed numbers, if possible two mixed numbers should not be made, but one or more entirely dry-crop number and the others entirely rice or garden.

Rule 31.—It frequently happens that deposits of soil are thrown up by streams. If the land so formed has been assessed, and the permanent right of separate occupancy granted to any person by the Collector and so recorded in the village accounts, the land must be made into a separate number, and the name of the occupant entered. If the right of cultivating the land is put up to annual auction, a remark should be entered to that effect in the measurer's books, but no name is to be entered, and the land so sold by auction will be made into a separate new number.

Rule 32.—If such alluvial land, whether waste or cultivated, adjoins a Government number and is not of the nature provided for by Rule 31, it is not to be made into a separate number, but is to be included in that adjoining Government number.

Rule 33.—When the area of an Inám number bounded by a river or stream is found by Revision measurement to exceed, owing to alluvial deposit, the recorded area of the Inámdár's holding, a new number is to be made of such deposit when the increase exceeds 20 gunthas, and also exceeds one-tenth of such recorded area, but not unless both these conditions are fulfilled. To any new number thus made the cultivating Inámdár's name is to be entered as occupant of the new number. But if the new number is not cultivated it should be entered as Government waste.

Rule 34.—It may often happen, however, that an increase in area is due not to a deposit of soil from the stream, but to differences here and there between the old and new measurements. In all such cases, therefore, the calculations of both old and new area should be at once examined by the measurer and the sketches of the old and new numbers compared. If after this examination the increase of area should be proved to be the result of stream deposit, the Assistant will give the necessary order for a separate number to be made; but not otherwise. In any case the measurer will report the matter for orders.

Rule 35.—Clause 1.—In the Chikodi Taluka and those north of the Krishna River both in Belgaum, Kaládgí, and Sátára, “Mál” lands not considered to be so bad as to come under the head of “Parampok” were made into Survey numbers of from 40 up to 60 acres in the original or “Revenue Survey.” Many of these numbers still remain unoccupied. All such unoccupied assessed numbers of “Mál” land of area under 45 acres may be confirmed in Revision Survey. If over 45 acres and less than 75 acres they will be divided into two numbers: over 75 acres and under 120 acres into three numbers, and so on.

Clause 2.—The above does not apply to undoubted “Parampok” or unculturable “Mál” lands which will not be broken up at all.

Clause 3.—Neither does it apply to occupied “Mál” lands which will be broken up under Rules 15 to 18 above.

CHAPTER II.

Inám Lands.

Rule 1.—When Inám and Government land are included in one existing “Revenue Survey Number,” and the two descriptions of land are divided by a boundary according to which different holders cultivate, one holding the Government land and another the Inám, then separate “New Survey Numbers” should be made according to the existing occupation.

Rule 2.—However small a “Revenue Survey Number” may be, if it contains Government and Inám land, it must be made into at least two “New Survey Numbers” of about equal areas or as many more as may be required according to Rule 14 of Chapter I.

Rule 3.—If any Inám is found to be divided among sharers (Pôt Hissedárs) and each sharer’s name is separately recorded in the accounts to his specific share of land, and has separate “Valivát” with definite boundaries, then each such sharer will be considered the same as a Government Khátadár, and existing Revenue Survey Numbers will be broken up in the manner directed in Rule 5, Chapter I, according to the Valivát of sharers.

Rule 4.—In some cases it will be found that sharers in Ináms have no share of land recorded to their names in the accounts, but merely the proportion of Júdí due from each: in such cases if the parties are present and agree to joint out lines of boundary, numbers may be measured according to those lines: but if they are not present or do not agree, the Mámlatdár must be written to by the Assistant to arrange to have the boundaries defined.

Rule 5.—The above applies to all kinds of Ináms in which there are sharers recorded in the accounts, but for the most part the Ináms of Patels, Kulkarnis, Desais, and Deshpandes will be found divided in the accounts, among separate sharers.

Rule 6.—In some cases Inám land is held by one person whose name alone is entered in the village papers. Under him are shareholders with separate boundaries to their shares in the field, without any separate record of their names in the village accounts either for a definite area of land, or for a separate payment of Jádi; these persons frequently petition to have their shares measured separately, but this is not to be done without the consent of the Inámdár in whose name the Inám is entered in the village papers, unless the old number is required to be made into two or more numbers under Rule 14, Chapter I.

Rule 7.—In case any shareholder in an Inám has his share of the Inám separately defined by an order of a Civil Court, and pays the assessment cross due from him directly to the village authorities, this share is to be made into a separate new Survey Number.

Rule 8.—In the Sátára Collectorate, Revenue Survey Numbers containing both Government and Inám land are to be divided in the following manner: each bigha of the recorded Inám area is now to be considered as equal to an acre, and Inám numbers formed accordingly of the best soil. The remaining area of the poorer soils is to be formed into Government Numbers.

CHAPTER III.

Pardi Numbers and Village and other sites set apart for public utility.

Rule 1.—All Pardi land is to be measured according to section 3, para. 60,¹ of the printed Revenue Survey Rules.

Rule 2.—Any dry-crop Pardi land on which assessment is paid, and is more than 10 gunthas in area, must be measured as a Pardi number. If less than 10 gunthas in area, it is not to be noticed, no matter whether it pays assessment or not.

Rule 3.—If Pardi land is met with on which rice or garden crops are grown, and it is above 5 gunthas in area, it must be measured as a Pardi number, whether the land pays assessment or not.

Rule 4.—In large villages there are frequently separate burying grounds, and it is not usual for a right of cultivating to exist in them, such burying grounds should be made into separate numbers according to their limits. But in the Karnátik it is common to bury in the cultivated fields, and cultivation is carried on in the same ground: these burying places it is not possible to make into separate numbers. In short, spots specially and exclusively devoted to the

¹ The site of an inhabited village, according to the old records, should not be measured as a whole; but after the village lands are all measured, such of the culturable "Pardias" (enclosures) within the site of the village as are more than half an acre in extent, are to be measured separately, and to have stones placed at their corners and bends and they should be shown in the village map by dotted lines. These "Pardias" should form a separate series of "numbers" and their measurement should be entered at the end of the field book, in order that the question of assessing them may be afterwards considered.

purpose of burial grounds are to be made into separate numbers, and separate numbers are not to be made of cultivated lands in which burials may occur.

Rule 5.—Land included by the Revenue Survey in the village site (gaonthán) is not to be made into new Survey numbers, but will continue to be included in the village site. This does not apply to Pardi numbers, which will be measured according to the orders relating to the measurement of these numbers.

Rule 6.—All entire numbers which at the last settlement were set apart as Turmundi, Masaawat, &c., or given for any common purpose, such numbers being adjacent to the village site, should be in the present survey measured into the village site and not made into separate Survey numbers, which would entail expenditure on boundary marks to no purpose. Tanks of 2 acres or less area, adjoining the village site, are to be treated in the same way.

Rule 7.—The above does not apply to large Parampok numbers which may have been given for free grazing. Notwithstanding that such numbers may adjoin the village site, they should be measured separately from it. But Parampok numbers of 5 acres or less area adjoining the village site are to be included in it.

Rule 8.—Any burying ground, place whence potters take clay, or other place of public utility or convenience, should be made into a separate Revenue Survey number or Pôt number, if such land has been hitherto included as Pôt Kharab in an occupied number, the new number or Pôt number shall be entered in the name of the Khátadar of that number with a Shera describing the public purpose for which the land is set apart, and stating that it cannot be put to any private use by the cultivator without the Collector's permission.

CHAPTER IV.

Parampok and Waste Lands.

Rule 1.—In the previous survey "Anadi Banjar" or immemorial waste and was considered unfit for cultivation and was measured into large "Numbers;" such land is not now to be considered unfit for cultivation, because in some cases if labour were applied to this land it could be cultivated, and if they are allowed the opportunity people will take it up for cultivation. Whenever this land is found capable of being brought under cultivation, the old "Revenue Survey Numbers" must be broken up into new "Survey Numbers" of about 20 acres in area. But any "Revenue Survey Numbers" which have been given to the villagers as free grazing, and shown as such in Village Form No. 1, must be left as they are, and not be broken up.

Rule 2.—Parampok land, that is land which cannot be turned up by the plough and is only of use for grazing purposes, is to be left in large 300 acre "Numbers" according to the present rules.

Rule 3.—Small detached pieces of land fit for cultivation are occasionally met with in Parampok "Numbers." If these pieces are (5) five acres in area they should be made into separate "Numbers." In doing this as much of the adjoining Parampok as is required to make straight boundaries should be included in the "Numbers," but land out of "Numbers" which have been given as free grazing must not be included in these or in any other "Numbers."

Rule 4.—In jungle lands “Revenue Survey Numbers” over 500 acres should be so far subdivided that no number should exceed 400 acres; numbers under that area being kept untouched in Revision Survey.

Rule 5.—In bare hill lands like those in Dambal a larger limit may be taken, and Revenue Survey Numbers which are found to be in excess of 500 acres should alone be subdivided into 2 numbers.

Rule 6.—In some villages there are large Kharáb numbers, only a portion of which is given to the villagers for free grazing. For some numbers a remark is entered in the village papers that one-fourth or a larger portion is given for free grazing, in others that a certain number of acres are given, but it is not stated that the area given for free grazing is situated in any particular part of the number. In such cases a “Revenue Survey Number” of about the area laid down must be made on the side of the number nearest the village.

Rule 7.—In some villages of the Dhárwár Collectorate where indifferent soil is met with, the land has been made into “Numbers” of from three to five hundred acres. Such numbers are not to be broken up into 20-acre numbers according to Rule 1, Chapter 4, but only such land as is fit for cultivation and likely to be taken by the villagers is to be made into 20-acre numbers. On this subject orders should be asked for on commencing work in a new táluka.

Rule 8.—The information as to how many persons are likely to take up land can be obtained from the Village Officers, but as a rule the proportion of such numbers should not exceed 5 per cent of the total new numbers of the village. It is better for the Assistants in charge of measuring establishments to under-estimate the number, for if more numbers are required they can be made at the time of classification, and thus prevent a useless expenditure for boundary marks.

Rule 9.—When large numbers containing inferior soil are met with, the Measurers must report to the Assistant for orders.

Rule 10.—The above rules and Rule 1 of this chapter are not applicable to Parampok stony numbers, or to jungle numbers: these are to be broken up as directed in Rules 2, 3, 4, 5, of this chapter.

Rule 11.—If the remains of rice embankments are met with in jungle numbers not in Forest Reserves, the land should be measured into numbers of about 3 acres: but isolated pieces of 20 gunthas or less should not be noticed.

Rule 12.—All contiguous Forest Reserve numbers are to be made into one “Survey Number,” no matter into how many “Revenue Survey Numbers” they were divided into in the former survey.

Rule 13.—All tanks watering separate Survey numbers, and tanks of public utility, unless situated in Parampok numbers, should be made into separate Survey numbers, no matter how small their area.

Rule 14.—In measuring tanks into separate Survey numbers, the dam is to be included in the tank, and not in any adjacent number: and the boundary marks placed at the foot of the dam. This rule is to be observed whether at the original survey the dam has been measured into the tank or not.

CHAPTER V.

Rules for Measuring Roads.

Rule 1.—The breadth of all roads is to be made the same as in the printed Revenue Survey Rules.¹

Rule 2.—Made-roads are to be measured as follows.

Rule 3. Where the road has been already measured as the boundary of Survey Numbers, the old boundary marks are to be strictly followed.

Rule 4.—Where, though not yet measured by the Survey Department, the boundaries of the land taken up for the road are clearly ascertainable from the Mámilat-lár, these boundaries are to be adopted.

Rule 5.—In other cases the boundary marks should be placed at 5 annas' distance from a single gutter, or at 2 annas' distance from a double gutter.

Clause 1.—If the rice land extends up to the made-road, the boundary of the number must be made (2) two annas from the side of the single ditch.

Rice land.

Clause 2.—If garden land is bounded by a hedge, the hedge must be made the boundary. If there is no hedge then make the boundary 2 annas from the gutter; if there is no gutter, then make the boundary 4 annas from the roadside.

Garden land.

Clause 3.—In case there is a house or a wall at a distance of less than (5) five annas from the road, the boundary mark stone must be erected at the foot of the wall or house.

Clause 4.—In case there is no ditch at the side of a road in dry-crop "mál" or kharáb land, the boundary of the "Number" is to be made at the distance of (5) five annas from the side of the road.

Clause 5.—Road-side trees planted by Government authority must be included in the road area.

Rule 6.—It frequently happens in black soil that the road which was measured as a road in the previous survey has fallen into disuse, the present road going on one side of the old road, and the old road is not made use of either during the rains or fair weather; in such cases the measurements must be made according to the road now in use, but should the traffic still go along the old road, and the new road is only made use of during the fine weather, then the measurements must be made according to the old road.

Rule 7.—When a made-road passes through a jungle number, the jungle on either side should be made into separate numbers, but no boundary marks should be raised along the road. Where the road enters the jungle a mound should be erected at right angles to the road, and where the road leaves the jungle a mound should be erected at right angles, provided no marks have been erected by the Forest Department at that spot; thus where a made-road goes into the jungle there will be two numbers one on each side of the road, and mounds at right angles where the road enters and leaves the jungle.

¹ These rules are printed as Chapter III, Section X, Kanara Measuring Rules, Appendix B, pages xxvii—xxix.

Rule 8.—If the present width of a road is 4 annas less or more than that laid down in the printed Revenue Survey Rules,¹ no alteration in its width is necessary, and the numbers on either side are to be measured according to the old boundary marks which are to remain intact. But when a road of only one chain in width is required by the Rules, and the present road is two or three chains in width, then a road only one chain in width is to be made, and the land in excess is to be included in the adjoining numbers. If the adjoining number is Inám, the area so included must be separately recorded in the Measurer's and Classer's books, and Pahní Súd, and a note must be made of any trees standing on the land so included.

Rule 9.—No road except those already shown in the old Revenue Survey maps is in the Revision Survey to be confirmed without the sanction of the Assistant Superintendent. This does not apply to made-roads.

Rule 10.—Numbers bounded by a made-road which was constructed before the original survey are to be demarcated by a corner stone at the proper distance from the road, and one mound showing the direction of the boundary of the number.

CHAPTER VI.

Boundary Marks.

Rule 1.—Whatever fresh mounds and stones are required must be erected according to the following Rules.

Rule 2.—When the length of boundary between the corners of a "Number" is less than 25 chains, no mound should be raised in the interval, but in case there are bends a stone should be fixed at each bend.

Rule 3—Clause 1.—When the line of boundary between the corners of a "Number" is more than 25 and within 50 chains in length, one mound should be raised midway between the corners, and stones fixed at all intermediate bends. It is not necessary however to place the intermediate mound exactly halfway between the corners; when measuring the line of boundary, half the distance should be estimated by the Measurer, and marks made there for the erection of the mound.

Clause 2.—When the line of boundary between the corners of a Survey Number is more than 50 chains in length, an intermediate mound should be raised at every 20 chains' interval.

Rule 4.—The number of mounds and stones which will have to be erected for a "Number" according to Rules 2 and 3 above, must be shown in the boundary mark sketch of the "Number" in the Measurer's book. As many as possible of existing old boundary marks should be made use of in the present survey. In some cases the old boundary marks being of no use will have to be cancelled, and such marks are not to be shown in the boundary mark sketch of the number.

Rule 5, Clause 1.—As many of the old mounds as are made use of in the present survey are to be marked with chunam. All mounds in excess of

¹ These rules are printed as Chapter III. Section X. Kánara Measuring Rules Appendix B, pages xxvii—xxix.

the number required by the present orders should be entirely removed. In order to mark such mounds for removal they should have a piece cut out of the centre on the top of the mound.

Clause 2.—On the commencement of Revision work in any táluka, a general notice should be issued through the Mámílatdár to the effect that occupants of fields where superfluous boundary marks are found to exist will be required to remove such marks within a specified time, and that if they neglect to do so, the charges incurred in the removal of such marks will be recovered from them. The time specified in the notice should ordinarily be not less than 5 days.

Clause 3.—In case of failure on the part of any occupant to remove his superfluous boundary marks within the allotted time, hired labour must be employed for their removal, and the rate of hire to be paid should be referred to the Superintendent for his sanction.

Clause 4.—As a general rule, measurers should be required to certify to the removal of superfluous marks as a part of their boundary mark inspection. It is foreseen, however, that delays in the obliteration of the marks will frequently occur, necessitating a second visit of inspection by a survey subordinate. In such cases experienced learners may be usefully employed in the completion of this work.

Clause 5.—Where cost is incurred in the performance of this duty, statements for its recovery should be prepared in exactly the same manner as is now done when hired labour is employed in the erection of new boundary marks.

Rule 6.—The Assistants must fix the rates for erecting new mounds, and the boundary mark accounts must be made out in the usual way. If a new mound has to be erected, the usual mark for it must be made in the bándh book, but if one has only to be repaired a dot must be placed over the mark thus (·).

Rule 7.—Remarks as below are to be entered below the boundary mark sketch :—

Mounds Nos. 1, 3, 5, are in good repair, stones Nos. 7, 2, are in good repair. These have been made use of (or have to be repaired). If the mounds and stones are not in good repair, then the remark that they are in good repair cannot be used : in such cases the remark above in brackets must be used.

Mounds Nos. 2, 4, 6, and stone No. 8 are new ones which have to be erected for this "Number."

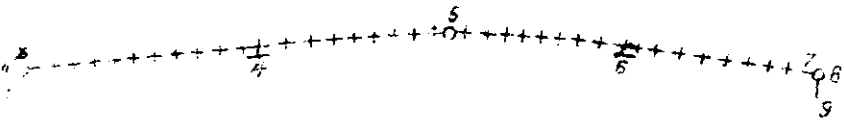
Rule 8.—When it is necessary to erect intermediate mounds along the boundary of a number, it is not necessary that they should be erected at exactly equi-distant intervals. If the old mounds are not exactly equi-distant it does not matter as many of them as are required should be utilized. Example :—If 6 intermediate mounds are required along the boundary of a number, and there are 10 old ones in existence, then cancelling and confirming alternately, 4 of them should be cancelled and 6 retained, but no new mounds are to be erected. If 4 mounds are required and there are only 2 old ones in existence, then 2 new mounds should be erected and the 2 old ones be confirmed : on no account are

Rule 15. - In the former survey, stones were erected instead of mounds in places where the latter were liable to be swept away, owing to streams having changed their courses; when it happens that mounds can be erected in such places, this should be done. In a similar way, in places where in the old survey mounds were erected, they are now liable to be washed away, in such cases stones should be substituted for mounds. Stones must not be unnecessarily substituted for mounds, but only where it is certain that a mound will be washed away.

Rule 16.—The Measurer must make a note near the sketch of the number in the fair field book in every case in which stones have been substituted for mounds, or *vice versa*, clearly stating the reasons for doing so. He will also make a separate list of all such numbers which he will keep on the last two pages of his rough field book. To this the Assistant Superintendent can refer when testing.

Rule 17. - In the old, that is Revenue Survey Numbers, it frequently happens that when the number was formerly measured there was no hedge or other well defined boundary marking the boundary of the number; in consequence of which the boundary marks were erected according to the rules: but since then a hedge or other well defined boundary has sprung up, and in consequence a doubt has been raised as to whether the old mounds should be retained, and the following orders are issued to remove this doubt.

Rule 18.—If there is at present a hedge on the boundary of an old Survey Number, there is no necessity either to erect new mounds or confirm the old ones, but stones must be erected at the bends; and at the corner a new mound must be erected or an old one confirmed at right angles to the hedge. The following example will show how this is to be done:



When the Revenue Survey increments of this number was no hedge on the boundary of this number and mounds numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, and stone numbers 2, 5, 8, were erected on the boundary. Afterwards a hedge was placed along the line of mounds; therefore, according to the rule above mentioned, mounds numbers 1, 9, at right angles to the hedge are to be retained, and stones numbers 2, 5, 8, at the corners and bends are to be confirmed, and mounds numbers 3, 4, 6, 7, are to be cancelled. If there be a hedge or other permanent boundary on two continuous sides of a Survey Number, 3 stones only are to be erected at that corner.

Rule 19.—The first clause of this rule is also applicable to Sar bhándhs, but if the height of a Sar bhándh is less than 1 anna, and the bottom breadth less than 2 annas, the rule does not apply. If a Sar bhándh is less than the size given above, it is not to be considered a permanent mark, and boundary marks must be erected according to the rules.

Rule 20.—Measurers must show on the back of their daily reports the number of old mounds confirmed and new ones erected, so that the Assistant may have a check on their work.

Rule 21.—For the future in Revision Survey work if an old mound is a clear full one anna in height, it must be confirmed as full size not requiring repair; and no old mounds requiring repair are to be repaired by this Department. In case any old mounds require repairing, a list of them must be made out, and given to the Patel of the village, according to instructions given below.

Rule 22.—When appointing a Measurer to a village he will be supplied with two blank forms¹ Nos. 1 and 2. In Form No. 1 the measurer will enter daily the old mounds requiring repair, and will have a large chunam mark made on them. On Form No. 2 he will copy the entries made in columns 1 to 7 of Form No. 1, which he will give to the Patel, and will obtain his signature in column 8 of Form No. 1, acknowledging the receipt of this copy.

Rule 23.—When* inspecting the marks, the Measurers will notewhether the confirmed undersized mounds are correct or not, and enter a remark to this effect in column 10 of Form 1, and also in the fai field book. If the mounds which are to be repaired are not all ready at the time of inspection, the Measurer need not inspect the marks again; but when the work of the village is completed he will send in a return showing what marks have not been completed.

Rule 24.—The leaves used for Form No. 1 must be stitched together and sent in to the Assistant with the rest of the papers, on the completion of the village.

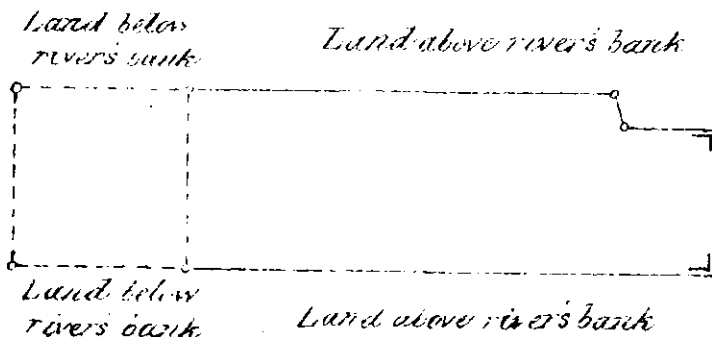
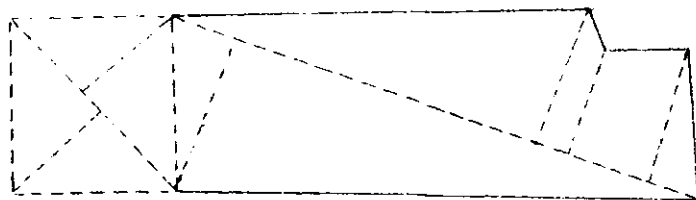
Rule 25.—In districts where the village officers do not understand Maráthi, the entries in Forms Nos. 1 and 2 mentioned above must be made in Kánarese.

Rule 26.—Below the banks of large rivers there is land which is covered with water during the rains, but it is customary to grow a rabi crop of túr, gram, &c., on this land. When such land is found, the land up to the bank must be first measured, and a separate series of waslas taken to measure the land below the bank.

Rule 27.—Boundary marks must be erected according to the rules on the land above the bank, and stones only erected for the land below the bank, and

¹ The forms being in Vernacular are not printed.

the boundaries of the land below the bank are to be shown by dotted lines as in the sketch below :



Rule 28.—The above is only applicable to land which is held permanently by the Khátalár of the adjacent Survey number, and where the land is composed of earth, not sand. It does not apply to land in the beds of rivers called "Kharbuz Wádi" which is sold by auction annually : such land is not to be measured.

Rule 29.—When built-up marks erected by the Forest Department are met with, their position should be shown on the maps and field books by a square mark thus \square .

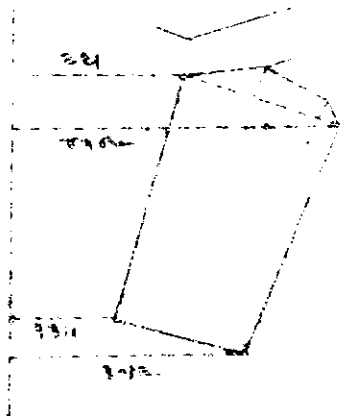
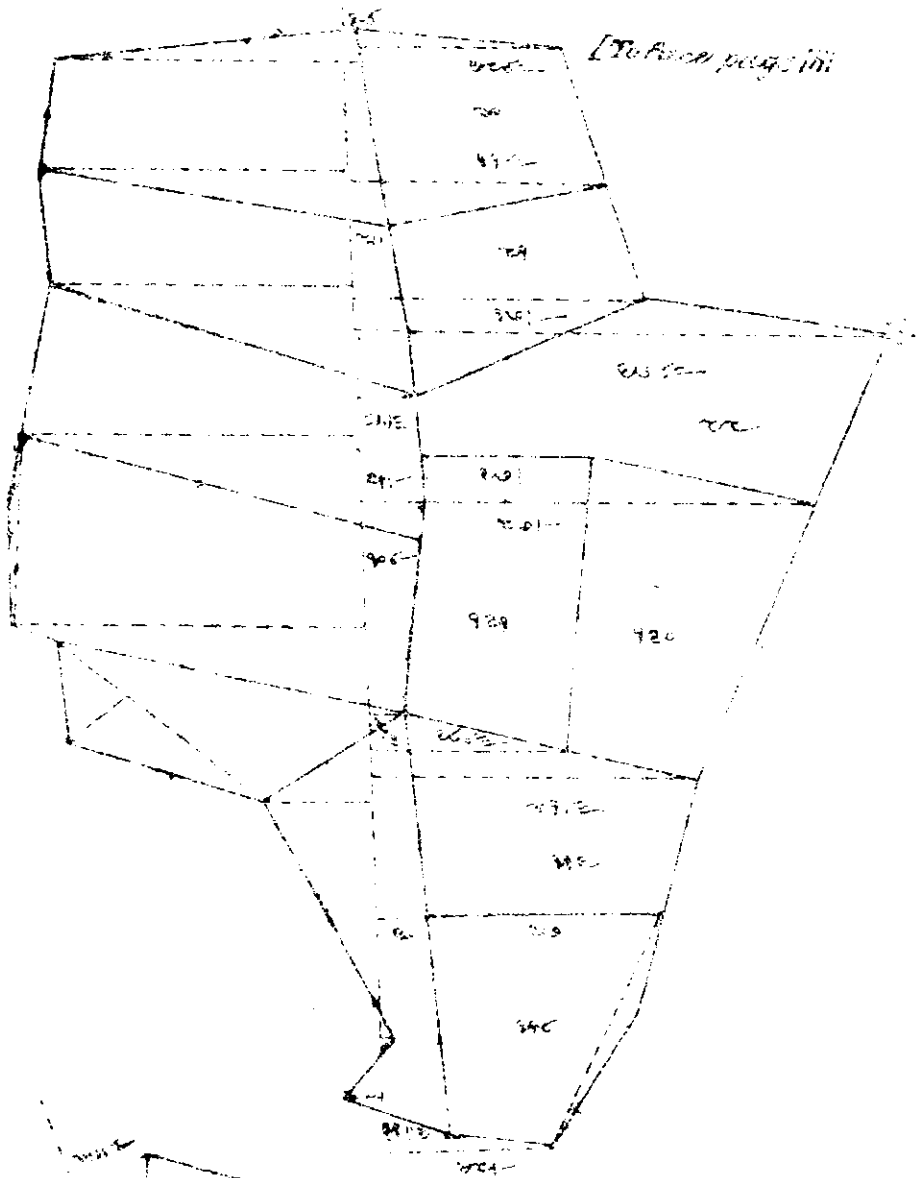
Rule 30.—The position of traverse stones should be shown on the maps and field books by a circle crossed thus \oplus .

Rule 31.—Boundary marks are to be of two kinds, earthen mounds and stones, and their dimensions should be as follows :—

	Length.	Breadth at bottom.	Breadth at top.	Height.
Mounds ...	5 annas.	$2\frac{1}{2}$ annas.	$\frac{1}{2}$ of an anna.	$1\frac{1}{2}$ anna.
Stones ...	From $1\frac{1}{2}$ to 2 cubits ("háths") in length, and not less than (3) three fingers thick ; two-thirds of their length must be buried in the ground. Assistants when testing will dig up some stones to see that they are of proper length, and are properly buried.			

Rule 32, Clause 1.—A Measurer, before making his periodical inspection of boundary marks while measurement is in progress in the village, should give a clear written notice of his intention to do so at least two days beforehand, and should state in the notice the serial numbers of the fields he intends to inspect, and the names of the occupants. A form* of notice accompanies,

* The form being in Vernacular is not printed.



1. 2. 3.

for information and adoption; the notice should be prepared in duplicate, one copy being kept by the measurer for record, and the other made over to the Patel and Kulkarni for publication in the village.

Clause 2.—On the day fixed for the inspection of the fields specified in the notice, the measurer should carefully go over all the numbers and point out each earthen mound and stone separately to the village officers, and to the Khátadár if present. He will fill in a paper showing the result of the inspection in the form appended. The form will be signed by the Patel and Kulkarni, one copy of it being kept in the village records and another in the Measurer's daftar.

CHAPTER VII.

Rules for Traverse Survey.

Rule 1.—With reference to the traverse survey, it is not at all necessary that every bend on a village boundary should be laid down: all that is wanted is such a number of accurately fixed points to serve as a skeleton within which the field map may be plotted. To effect this it will only be necessary, supposing that one point can be seen from the other, to fix the four corners of the village, and if they are very far apart (say more than a mile), it may be necessary to fix one or more intermediate points. The traverse measurer should always measure with an accurately tested 66-foot or 100-foot chain: on this map he should number the points fixed and give a description of the site of each point.

Rule 2.—The points fixed should always be, if possible, the corners (kátis) of numbers. Measurers should take up these points as those from which to run the base line. Stones 18 inches long and flat at the top, buried up to within four inches of the top, with a cross cut on them to fix the exact point, should be erected where the boundaries of two or more villages meet together, with two stones, to indicate the back and forward stations.

Rule 3.—The cross staff measurer should be supplied with the skeleton map drawn by the traverse measurer, from which to lay down on his map the points fixed by the traverse measurer.

Rule 4.—A very few days should suffice for two or three traverse measurers to fix the points round villages enough to supply the cross staff measurers.

Rule 5.—When a village is so large that it requires to be divided into two traverses, and it is difficult to plot both traverses on one sheet of paper, the map can be made on two sheets, plotting one traverse on one sheet and the other on another sheet.

CHAPTER VIII.

Miscellaneous Orders.

Rule 1.—In the appended sheet are given examples of how numbers should *not* be measured.

Rule 2.—It is not permitted to measure two numbers on one and the same base. If it is necessary on account of high crops to measure on Bándh Máp, a special report must be made to the Assistant Superintendent, and on no account must two adjacent numbers be measured on the same Bándh Máp.

Rule 3.—In these examples, at the end of certain measurements a red mark has been made: if these measurements have been taken from the base line for the purpose of fixing the corners of numbers there is no objection to this, but on no account must they be made use of in calculating the area of numbers. It should be borne in mind that the cross staff is not accurate enough to be trusted when measuring distances of 50 or 60 chains; there will in all probability be an error in the direction of line taken from the cross staff.

Rule 4.—If a map is 4 feet long and more than 2 feet wide, the Classers' maps are to be made on two or more sheets.

Rule 5.—If the villagers will not supply flag-holders and chain-men they will be supplied and paid for by Government, but whether supplied by Government or the villagers, no Measurer will be entitled to engage more than 10 men.

Rule 6.—When a Measurer is appointed to a village, he will be supplied with printed vernacular forms with heading as shown below: this form must be filled in daily as the work proceeds.

Measurer.	Revenue Survey Number.	Chalta New Survey Number.	Old area.	New area.	Difference.	Percentage.	Remarks.

At the end of this statement an abstract is to be made out in the following form:—

Total Number of Survey Nos.	NUMBER OF NOS. WHOSE DIFFERENCE FALLS WITHIN						Total of columns 2 to 7.	
	0.	5 per cent.	6 to 10 per cent.	11 to 15 per cent.	16 to 20 per cent.	Over 20 per cent.		
1	2	3	4	5	6	7	8	9

Rule 7.—On a village being unavoidably left incomplete, a memo. showing exactly what work remains to be done in each Measurer's Shez is to be immediately made out, and pasted into the last fair field book of each Measurer's Shez and a copy forwarded to the Assistant Superintendent, who should make a point of seeing to this personally.

CHAPTER IX.

Rules for breaking up land into numbers below the minimum size laid down in the Rules.

Rule 1.—Certain limits are laid down in these rules defining the minimum area into which the holdings of Inámdárs and Khátadárs contained in a Revenue Survey Number may be broken up into new Survey Numbers, but if any Inámdár or Khátadár wishes to have his holding broken up into smaller numbers and is willing to pay for having it done, it can be done on the following terms.

Rule 2.—In the first place he must petition the Assistant Superintendent on stamped paper of the value of 8 annas: the Assistant will then inform him what the cost of breaking up the number will come to according to the rates given below. If the petitioner then brings another stamped paper valued according to the amount it will cost to break up the number, and enters the number, date, and a summary of his petition on it, the Assistant Superintendent will give orders to the Measurer to break up the number according to the wish of the petitioner.

Clause 1.—A form is given how the petition on stamped paper is to be made and how the cost of carrying out the wish of the petitioner is to be shown.

The amount to be charged for breaking up numbers is as follows:

Clause 2.—Eight annas is to be charged for breaking up a number: in addition to this, 4 annas is to be charged for every acre or portion of an acre the number may contain.

Examples.

1. A number contains 10 gunthas, then 8 annas will be charged for breaking up the number, and being under an acre another 4 annas will be charged, making a total of 12 annas.

2. A number contains 1 acre 15 gunthas, then 8 annas will be charged for breaking up the number, and being under 2 acres, 8 annas more will be charged, making a total of one rupee.

3. A number contains 5 acres 2 gunthas, then 8 annas will be charged for breaking up the number, and being under six acres, 4 annas will be charged for each acre, amounting to Rs. 1-8-0. making a total for the number of Rs. 2-0-0.

Clause 3.—When a Khátadár or Inámdár has brought stamped paper for the full amount it will cost to break up his number, the Assistant Superintendent must send him to the Measurer with a written order to break up the number in whatever way the Khátadár or Inámdár may wish to have this done, and report having done so.

Clause 4.—In all cases of new numbers being made under these special provisions, the necessary boundary marks must either be erected by the petitioner within such time as the Assistant Superintendent may direct, or he must agree to pay the cost of their erection by Government.

Form for drawing up the petition on stamped paper alluded to in Rule 2 above:

Petition in the name of _____ resident of Mowjeh _____, Táluka _____, petitions as follows:—In the above-mentioned village Revenue Survey No. _____ containing 15 acres 20 gunthas, is entered in my Kháta. I wish this to be broken up into three (3) numbers as follows:—4 acres and 20 gunthas are garden; this I want made into one (1) number, and the remaining (11) eleven acres into (2) two numbers. It is understood that I will either, as you may direct, erect such boundary marks in such time as you may order for these numbers, or that the cost of their erection by Government shall be levied from me.

I beg to request that the number may be broken up in the above-mentioned manner.

Date _____ month _____ year.

Signature of Inámdár or Khátadár.

Order by the Assistant Superintendent.

The cost of breaking up the number will be as follows :

0-3-0 charge for breaking up the number.

4-0-0 { charge for 15 acres 20 gunthas at the rate of 4 annas per acre or por-
tion of an acre Rupees (4) four.

4-8-0

If you will bring stamped paper of the value of Rs. 4-8-0, the charge for breaking up the number, the order to break it up will be given.

Date _____ month _____ year.

Signature of Assistant Superintendent.

Petitioner to the Assistant.

In accordance with the above order I have brought the stamped paper and attached the original petition to it.

Signature of Inámdár or Khátadár.

Order by the Assistant Superintendent.

I have this day entered this petition on my records and given orders to the Measurer to break up the number.

Date _____ month _____ year.

Signature of Assistant Superintendent.

Form of remark to be written on the stamped paper brought by the person agreeing to pay the cost of breaking up a number.

I have according to the Assistant Superintendent's order given below my petition No. _____ date _____ month _____ year _____ brought the stamped paper required for cost of breaking up Revenue Survey No. 30 in Mowjeh, _____, Táluka _____.

Signature of Inámdár or Khátadár.

CHAPTER X.

Rules regarding entries in Books and Papers.

Rules as to how the numbers are to be entered in the Measurers' books and other Survey papers, and how the old and new Survey Numbers are to be designated.

Clause 1.—The numbers entered in Mr. Pringle's Survey made between 1825—1830 are to be designated "Máji Paimásh Number."

Clause 2.—The present "Revenue Survey Numbers," that is, the numbers measured since the year 1842 up to the present time, are to be called "Revenue Survey Numbers."

Clause 3.—The "Numbers" which are being measured, when they have been entered in consecutive order, are to be called "New Survey Numbers;" and when entered according to the order measured in the field, they are to be designated "Chálta New Survey Numbers."

Clause 4.—A form is given below of how the entries are to be made in the Measurers' and Classers' Field Books. In the present Survey there is no necessity to enter the "Máji Paimáshi Number" in the Field Books.

Form of entries in fair Field Book.

Mowjeh _____ Táluka _____ Talah.

Date 1st November 18.

Names of persons present when measuring in the field:

1 Mallan Gowda bin Ráman Gowda	|	1 Ranaji Anant Kulkarni.
Mulki Patil.		1 Hasma bin Govind Sadalga.
1 Báchapa bin Mallapa Padlibál.		

"Chálta New Survey Number."—"New Survey Number."

North.

To the _____ of the preceding "Number" Government dry-crop soil Ari Nuril Shet "Revenue Survey Number" as follows:

"Revenue Survey Number" 10 entire Karda. Harri bin Govind Ramapur present. The above "Number" was measured according to the following Waslas.

CHAPTER XI.

Orders for Assistants only.

Rule 1.—Officers in charge of measuring establishments are held strictly responsible for preventing any violation of orders, or annoyance to the rayats, in connection with breaking up of Revenue Survey Numbers, and any failure in this respect will most certainly meet with the severest notice.

Rule 2.—In all cases the Assistant Superintendent should in commencing work in a Táluka communicate with the Mámldár, and induce him to interest himself in getting the required stones supplied, and moulds erected at the cheapest possible rate: as far as is practicable any reasonable suggestions of the Mámldár should be attended to.

Rule 3.—In some villages the villagers will not supply chain-men and flag-holders: when this occurs the Assistant must send for the village officers when he is about to commence work in the village, and explain to them that if they will not supply chain-men and flag-holders, they will be supplied and paid for by Government, and their cost recovered from the villagers. He should also communicate with the Mámílatdár, and induce him to use his influence and persuade the villagers to supply flag and chain-men. In all such cases a report detailing what has passed is to be made to the Superintendent. On such occasions each measurer will be allowed 10 men and no more for every purpose.

Rule 4.—There are three courses available for erecting Boundary Marks:

1st.—The people of the village putting them up themselves without payment.

2nd.—The people of the village finding a contractor, an inhabitant of the village.

3rd.—The employment of a contractor, an inhabitant of another part of the country.

The first of the above plans is the best, and where the people will do the work in time, should be adopted. The last plan is the worst, and must never be resorted to except where the 1st and 2nd plans have been found impracticable. A report on the subject must be made to the Officer in charge of the Survey, whenever it is necessary to resort to the 3rd course.

Every Assistant Superintendent is responsible for using his best endeavours to keep down the cost of Boundary Marks, and where unnecessary expense is caused by his neglect, he has been and may again be required to make it good.

Rule 5.—Assistants will, after receiving the return of unrepaired marks directed to be sent in by the latter part of Rule 23, Chapter VI, forward it to the Mámílatdár, and request him to see that the necessary repairs are made.

Rule 6.—In case the number of mounds requiring repair is very great, the Assistant must inspect the marks, and report to the Superintendent whether he considers the bad state of the marks is owing to the villagers not having made the necessary annual repairs.

Rule 7.—In making out the lists of percentage differences referred to in Rule 6, Chapter VIII, all numbers in which the difference is over 5 per cent must be examined: in many cases by examining the old and new maps it will be found that the difference is owing to streams changing their course or to new roads being made. When this is the case, a remark to that effect should be made in the column of remarks.

Rule 8.—When testing, numbers in which there is a large difference should be looked at, and when the difference is large and cannot be accounted for it should be placed beyond all doubt that the new measurements are correct, and a report made to the Superintendent. All numbers tested in which difference between old and new is over 5 per cent should have the test area shown opposite them, and after the forms have been examined they should be sent to the Superintendent.

SECTION II.

CHAPTER I.

Rules regarding the partial re-measurement of villages.

Rule 1.—All numbers coming under the following conditions must be re-measured :—

Clause 1.—All old Survey Numbers requiring to be subdivided in consequence of size, or being held by different Khátadárs or Inámdárs, or containing Government and Inám land, must be subdivided according to the existing rules.

Clause 2.—All old Survey Numbers which have been intersected by a made-road since the first survey.

Clause 3.—All old Survey Numbers of black soil of which a stream or river forms the boundary must be re-measured. In red and rocky soils the courses of streams may be assumed not to have changed: should however any change be apparent re-measurement as far as necessary must be made.

Clause 4.—All old Survey Numbers which adjoin the village site, if the corners next to the village are defined by stones, must be re-measured; if by mounds which still exist, re-measurement is not necessary, unless some alteration in boundary is apparent.

Clause 5.—All old Survey Numbers in which the boundary of actual occupation, as defined by boundary marks, differs from the line of boundary shown in the original measurer's books and maps.

Clause 6.—All old Survey Numbers from which land has been taken for public purposes.

Rule 2.—Any other cases not provided for above where re-measurement appears necessary must be reported to the Assistant Superintendent for orders.

Rule 3.—In the case of an old Survey Number not requiring to be broken up, but containing mixed descriptions of land, the rice and garden land only need be re-measured, and the area deducted from the original area. If the dry-crop land be the smaller area the operation should be reversed. All numbers containing rice and garden land must be re-measured in accordance with this rule.

Rule 4.—Old Survey Numbers not requiring re-measurement under any of the above provisions may be confirmed and the map plotted on the measurements in the old measurer's books.

Rule 5.—A full and complete inspection of all boundary marks, of all numbers, whether re-measured or not, must be made and duly recorded in the measurer's book.

Rule 6.—In the present measurer's books all numbers will be entered in their proper places and order, daily, with the usual entries regarding occupants, &c. But as regards unmeasured numbers a remark also is necessary stating that the original measurements are confirmed. The boundary mark sketches and remarks of the numbers will be filled in with the usual detail.

Rule 7.—All Kharáb deductions for roads, streams, &c., must be looked to and entered for non-measured, or confirmed, numbers in exactly the same way as for those that are re-measured, and shown in the map as well as in the field books. Measuring officers are requested to give this point their special attention, in order to avoid loss of time at classification.

Rule 8.—In partial re-measurement the record produced must in every point be as perfect as that resulting from original measurement; no point, therefore, of topographical detail or area is to be omitted from any number.

Rule 9.—The area of all confirmed numbers containing more than five waslas must be taken out by the area scale in the raius, and when the result for any number differs more than five per cent from the original area the calculation must be done from the original measurements, and the correct area recorded. The areas of those numbers containing five or fewer waslas must be calculated in the usual manner.

Rule 10.—The amount of work in unmeasured numbers which a measurer is expected to do in a day may be approximately taken to be—

Clause 1.—Inspection of boundary marks, determining Kharáb and all book and map work; 10 numbers a day.

Clause 2.—Re-inspection of numbers in which at first inspection mounds or stones were found missing and had to be replaced; 25 numbers a day.

Clause 3.—Some time must be allowed the measurer for the base line, which is a most important part of this system; 350 chains should be the minimum accepted for one day's work.

Rule 11.—The unmeasured numbers must be shown separately in the measurer's Wardi reports and Maháiwárs, and similarly in the Maháiwárs and Progress report of the Establishments.

Rule 12.—So far as possible numbers should be re-measured and entered in the books in the order of the old shez; this will save much inconvenience and time in the classing office.

Rule 13.—In the form showing the difference between old and new areas (termed the Shekda Patrak), measurers must enter in the column for remarks the reason for measuring all numbers which have been re-measured. As it would take time and space to write a remark for each number in full, it will be sufficient if the number of the clause of Rule 1 which applies, be entered.

CHAPTER II.

Rules regarding Pôt Kharáb to be applied in revising all villages settled since December 31st, 1854.

Rule 1.—The same area that has been deducted as Kharáb from a Revenue Survey Number at Original Survey shall now be deducted from the new Survey Number or numbers now made of that old Number.

Exception No. 1.—Except when the total area of such new Survey Number or numbers shall be less than the Original Survey area by

upwards of 5 per cent and 10 per cent, respectively, on areas of above and below 10 acres, in which case the Kharáb area shall be reduced in proportion as the total area has been reduced. In numbers which under the partial re-measurement system are not re-measured, the old Pôt Kharáb area is confirmed with the total area.

Example.—A Survey Number recorded at Original Survey as 50 acres is now found to measure 45 acres, *i.e.* 10 per cent less: if the area of Pôt Kharáb originally given was 10 acres, it should be reduced at Revision Survey to 9 acres.

Exception No. 2.—Except when an area specifically recorded in the Original Survey books as deduction on account of Roads and Pathsaris, a road, or a pathsari, is now found to be no longer so occupied but to be available for cultivation, then such area shall be included in the arable area of the Number at Revision Survey.

Rule 2.—When a Revenue Survey Number containing Pôt Kharáb has to be split up into two or more Survey Numbers at the Revision Survey, and the position of the Old “Kharáb” is discernible on the spot, a deduction shall be made for each new Survey Number according to the amount of “Kharáb” it appears to contain. When, however, the entire number has been cultivated, or where very little Kharáb remains, and it appears to be pretty fairly distributed, the area of “Kharáb” shall be distributed among all the new Survey Numbers in proportion to the area of each.

Example.—At the Original Survey a Number was 50 acres in area with 10 acres of “Pôt Kharáb.” It is now split up into 3 numbers, one of 25 acres, another of 20 acres, and another of 5 acres. The “Pôt Kharáb” in the case of these new Numbers will be 5, 4, and 1 acre respectively, if there is no means of differentiating the “Pôt Kharáb” on the spot.

Rule 3.—To avoid labour in calculating the difference in area (Rule 1, Exception 1) and the proportionate deduction to be made, a Dharsod of 20 guthas is to be allowed, and thus all fractions of acres avoided.

Rule 4.—The above rules are to be applied to all Numbers by the Measuring Establishment at Revision Survey, and the Classing Establishment will also be responsible to see that they have been followed in the case of all re-classed Numbers.

Rule 5.—In case it shall appear that in any number the area now unculturable exceeds the area which would be deducted as such under these rules, the matter should be referred to the Assistant Superintendent, and by him if necessary to the Superintendent. In the same way any obvious error, clerical or other, in the old record of the Pôt Kharáb area should be noticed and corrected.

Rule 6.—When a Pôt Kharáb area formerly recorded as a specific deduction on account of a building, well, &c., is found to be now clear for cultivation or actually cultivated, the orders of Government do not stand in the way of its being treated as culturable and assessed, provided that no expense and labour have been devoted by the holder or occupant to make it fit for cultivation. It was not deducted as “Kharáb” because the soil was unculturable, but because in its then existing condition it could not be cultivated. Considering, however, the danger of taxing improvements which would arise if all such areas

found culturable now were to be treated as assessable, and considering also the small area of such Kharáb, it will be better to give the benefit of the doubt to the cultivator and assume that he has brought it into a fit state for cultivation with some appreciable labour and expense. The only exception should be made in the case of roads and paths for which "Kharáb" was deducted, and which are now found to be disused and available for cultivation. Such lands need no labour to fit them for cultivation, and should now be brought under the head of culturable and assessed.

Rule 7.—All Survey Numbers found available for occupation but unoccupied at the time of revision classification are to be exempt from the operation of the new Pôt Kharáb rules.

Rule 8.—In villages to which the new Pôt Kharáb rules are applied it will be necessary to class in each re-classed number that area only which has been hitherto assessed: for instance, on entering a new Number in which by the rules the Kharáb deduction will be 10 acres, the classer will determine which those 10 acres are to be, placing them in the absence of other evidence in the poorest part of the field, and excluding them from his classification.

Rule 9.—In talukas which now come under the operation of the new Pôt Kharáb rules, and in which large Kharáb deductions continue to be given after the year 1854, the classers should inspect all numbers which have been broken up by the measurers, and in which the Kharáb deduction is large, in order to ensure the proper apportionment of such Kharáb deduction amongst the new numbers.

CHAPTER III.

Rules for dealing with Survey Numbers intersected by made-Roads, Canals, or Railways.

Rule 1.—In the case of a made-road which has not yet been taken as the boundary of the portions, on each side of it, of the occupied Survey Numbers that are intersected by it, the area occupied by the road having been only deducted as Pôt Kharáb from the original total area of each Number, the said portions must be measured now as separate Survey or Pôt Numbers if the old Survey Number requires for any reason set forth in the Revision Survey Rules to be subdivided, and their boundaries diverging from the line of the road must be demarcated in the usual manner, but their boundaries formed by the line of the road must not be demarcated except by the agency that constructed the road. Otherwise, each intersected old number must have only the area occupied by the made-road deducted from it as Pôt Kharáb, and no demarcation of any boundary diverging from the line of the road on either side is necessary.

Rule 2.—Where such a made-road intersects Government Survey Numbers of large area unoccupied at the old survey, and still unoccupied and doubtfully culturable or worth breaking up into new Survey Numbers of moderate size for future occupation, it is not necessary to treat each portion of an intersected number as a separate new Survey Number and re-measure and demarcate it accordingly, but it will suffice to ascertain by measurement the area actually occupied by the road and deduct it from the original total area as Pôt Kharáb, and at the same time indicate by dotted lines on the village map the position

and line of the road, where it intersects the number, by means of measurements taken along each boundary up to the side of the road. The area of each portion of the old number left on each side of the road can be ascertained by scale, the aggregate areas being made to agree with the total old area *minus* the area to be now deducted as Pôt Kharáb.

Rule 3.—In the case of a made-road which has already been taken as the boundary of the portions of old Survey Numbers intersected by it, these portions having been measured by a sufficiently capable agency as separate Survey Numbers, and recorded as such in the village map and other Survey papers, their boundaries which diverge from the line of the road must now be demarcated according to rule if this has not already been done, while those along the line of the road must be demarcated by the agency that constructed the road. If it is found that these latter boundaries are already demarcated under some previous system the Survey Department will not interfere with such demarcation either in the way of causing any of the marks to be removed as actually superfluous under the Revision Survey Rules, or requiring the occupants of the numbers to repair any that are seen to be out of repair.

Rule 4.—In the case of old Survey Numbers, occupied or not occupied, intersected by canals or railways, separate Survey or Pôt Numbers must be formed on each side of them where this has not already been done. Each boundary of such numbers diverging from the line of the canal or railway must be demarcated by one stone at the point up to which the right of occupation extends and by one mound showing the direction of the boundary. The boundaries formed by the line of the canals or railways will be demarcated by the agency that constructed these works.

Rule 5.—When a made-road, tank, or canal cuts off from a Survey Number or Pôt Number, a portion so small or so irregularly shaped as to render its cultivation unprofitable to the occupant, such portion should be thrown at the time of Revision Survey into the road, tank, or canal, as the case may be: provided that every instance of this kind must be supported by a written statement, to be obtained from the occupant, to the effect that he declines to retain the land, such statement being signed by the occupant and by the village officers and transmitted by the measurer to his Assistant Superintendent together with his report on the matter, in order that, in accordance with the authority noted in the margin, steps may be taken for the acquisition by the responsible department of the portion of land thus rendered useless to the cultivator.

Rule 6.—When a railway has had the effect stated in Rule 5 in the case of occupied Survey Numbers, such small portions shall be acquired by Government in the Revenue Department, and be either made over to the occupants of the adjacent numbers most convenient for their amalgamation, or where this arrangement is not feasible, be retained by Government for its own use. All measurement and demarcation operations that shall be necessary in either case shall subsequently be carried out in due course by the Revision Survey Department.

SUPPLEMENT.

*Rules circulated under Survey Commissioner's No. S.—860,
dated 2nd June 1897.*

RULES FOR DEALING WITH LANDS IN POSSESSION OF THE RAILWAY COMPANY.

I. Whenever the boundaries of A land are being laid down at Revision Survey, the Measurer shall apply for, and be furnished with, the demarcation plan, and in fixing the boundary shall take it into consideration.

II. Special notice shall be given to the Railway Company to point out the boundaries of their lands and explain any apparent acquiescence in encroachments on the original boundaries.

III. Special notice shall also be given to the occupants of Survey Numbers adjacent to the Railway, the boundaries of which have to be fixed.

*Rules circulated under Survey Commissioner's No. S.—1387,
dated 26th August 1897.*

I. When at any survey the boundaries are to be laid down or settled of lands belonging to any Government Department, at least one month's notice shall be given to the Chief Executive Officer in charge of the Department concerned within the limits of the district in which the measure is taking place. If there be no Executive Officer in the district, the notice shall be submitted to the Head of the Department. If not inconvenient, this notice shall be given early in the recess season in order to allow time for full information to be furnished (not later than 15th October) by the authorities concerned, to avoid the chance of delay, and to enable Survey Officer to foresee and arrange dates on which to meet the delegates from the Department concerned.

II. The notice shall call upon the Department to supply the Survey Officer with all maps or documents showing the correct location of the boundaries, and to depute an officer or subordinate to attend on the ground, on such date as may be arranged with the Survey Officer. It will state that failing attention to the notice the Survey Officer will proceed to determine the boundaries on such date as may be convenient upon such evidence and information as may be available to him.

III. Special notice should also be given to the occupant of the numbers adjoining the lands belonging to the Department concerned.

NOTE.—As regards Railway lands the rules circulated under Survey Commissioner's No. S.—1387, dated 26th August 1897, are to be read with those circulated under his No. S.—860, dated 2nd June 1897, and printed above. Both sets of rules apply to B. class as well as A. class lands.

APPENDIX D. TO CHAPTER I.

GUZERAT SURVEY REVISION MEASUREMENT RULES.

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(These rules, revised and corrected, to be brought into force from the 1st November 1833.)

APPENDIX D.

GUZERAT SURVEY REVISION MEASUREMENT RULES.

CHAPTER I.—INTRODUCTION.

1. Scope of revision measurement. Remeasurement shall be confined to—

- (1) The breaking up of over-sized numbers.
- (2) The separation of clubbed occupancies.
- (3) Correction of the field record by recording all changes which have occurred since the original survey and which have not been duly recorded by the Huzúr Surveyor.
- (4) Correction of errors which have been detected.

2. Prior to the arrival of the Measurers, a statement shall be obtained from the village officers through the Mámulatlár giving the following details :—

- (1) List of survey numbers which have been wholly or partially washed away by the flooding of a river or nála.
- (2) The formation of new cultivable land along the boundary of a river or nála.
- (3) The diversion from one survey number into another of a road or water-course which was originally included in the former as *petha kharábo*.
- (4) Numbers in which land has been set apart for public or special purposes.
- (5) Changes in the boundaries of village sites made by order of the Collector.
- (6) List of numbers in which tanks exist, the water of which is used for irrigation of adjoining numbers.
- (7) List of tanks included in occupied numbers over which a common right exists to water cattle.
- (8) List of survey numbers in which dry-crop has been converted into rice land, or in which rice land has become dry-crop.
- (9) List of numbers or parts of numbers which have since the old survey become alienated or having been alienated have become *khálsa*.
- (10) List of survey numbers containing both Government and alienated land.

(11) List of numbers in which there are more occupancies than one separately recognised in the village accounts.

NOTE.—The words “Head Surveyor” shall be taken to include any officer in immediate charge of a Party.

CHAPTER II.—BREAKING UP OF OVER-SIZED NUMBERS.

Rule 1.—Unoccupied cultivable survey numbers not set apart for public purposes, such as *gaocharan*, shall be broken up as follows, care being taken to make the new survey numbers as regular in shape as possible, and to avoid making three-sided numbers :—

Black soil land.—Numbers over 9 acres and up to 15 acres shall be divided into 2 survey numbers of about equal size; up to 21 acres into 3 survey numbers, and so on.

Gora'du land.—Numbers over 6 and up to 10 acres shall be divided into 2 survey numbers of about equal size; up to 14 acres into 3 numbers, and so on.

Rice land.—Numbers over 3 and up to 5 acres shall be divided into 2 survey numbers of about equal size; over 5 and up to 7 acres into 3 survey numbers, and so on.

Rule 2.—In the case of old waste rice numbers where the old embankments still remain, the boundaries of the new numbers shall be made along the embankments and not across them, and in the case of other waste numbers the subdivision should be guided by the lie of the land and convenience of occupation, consistently with the provisions of Rule 1.

Rule 3.—Unoccupied numbers of 100 acres or more in area or of less area, where owing to poorness of the soil or increase of surface salts (*khár*) occupation is not probable, shall not be broken up without the special sanction of the Assistant Superintendent.

Rule 4.—In villages where at the original survey, owing to the then sparse population, the lands were measured into large numbers, and where now population and cultivation have so increased that it is reasonable to make a more minute division into numbers, the Assistant Superintendent may, under the directions of the Deputy Superintendent, order the breaking up of unoccupied over-sized numbers according to the rules of this chapter, and the separation of clubbed occupancies under the rules of Chapter 3, at the cost of Government, provided all boundary mark expenditure is met by occupants in case of occupied land. If occupied numbers are not broken up according to the rules for the separation of clubbed occupancies, and are still too large for convenient occupation, they may be subdivided with the special sanction of the Survey Commissioner. at the cost of the occupants, but not otherwise.

Where the lands of such a village are all in the occupancy of one man, his application in writing should be made a pre-requisite to action under this rule, and he should be called on to pass an agreement that he will put up all necessary marks in a reasonable time (to be specified in the agreement), or in default pay all charges incurred.

Rule 5.—If an occupant desires to have a number or numbers in his occupancy broken up into smaller numbers, which will not be broken up under the above rules, and agrees to pay all the expenses necessarily incurred for

remeasurement, boundary marks, and paper correction, the number or numbers may be broken up under the general or special order of the Survey Commissioner, in accordance with the procedure prescribed by standing orders, or special orders if issued.

NOTE.—At present such subdivision is not permitted by the Survey Commissioner, except in very special circumstances, both in order to secure an early completion of revision operations, and because the Circle Inspector staff, to succeed the survey, will at a reasonable interval more properly deal with such cases which are not requisite for revenue purposes, but only affect the convenience of the occupant.

CHAPTER III.—SEPARATION OF CLUBBED OCCUPANCIES.

Rule 1.—In existing survey numbers if there are found to be more occupancies than one separately recognized in the village accounts, each separate occupancy shall be made into a survey number if not less than one acre in dry-crop land or half an acre in rice land. If below these areas, the occupancy shall be made into a pôt number and included as such with other similar adjoining pôt numbers to make up a new number of not less than one acre in dry-crop and half an acre in rice. If this is not possible, it shall be included in the most convenient new survey number adjoining.

NOTE 1.—Such separation of clubbed occupancies shall not be made in numbers which are wholly dry-crop land unless the separation is applied for in writing by the majority of the co-occupants.

N.B.—The note to this Rule shall be applied to all kinds of land; and not to dry-crop land only from the 1st February 1896 in all tálukas of the Surat District except Mándvi, in which táluka it shall apply to dry-crop land only.

Rule 2.—In numbers subdivided under the last rule, the boundaries of the new survey numbers or pôt numbers shall be fixed according to present occupation (bends up to one aana being neglected). But if it is found that a holder of an alienated number has encroached on an adjoining Government number which is being broken up, the original boundary of the alienated number shall be confirmed by the measurer, who shall report to the Assistant Superintendent.

Rule 3.—If in a survey number containing more occupancies than one separately recognised in the village accounts, but not separately delimited in the field, all the occupants agree in writing to divide the land and point out the limits of each occupancy, the subdivision of occupancies shall be made at the cost of the occupants.

Rule 4.—If any specified portion of a survey number or pôt number has by decree of a Civil Court come into the possession of an occupant, it shall be made into a separate survey number or pôt number even though not recognised in the village accounts; but if the decree of the Court has awarded possession for a term of years only, no separation shall be made.

Rule 5.—If in a survey number alienated land is found together with Government land, the alienated land according to the area shown in the “Kaim Kharda” shall be measured into a separate number, however small in area and whether held by the same holder as the Government land or not. The position of the alienated land shall be ascertained by inquiry and examination of the village records. If both kinds of land are held by the same person and if he refuses to point out the position of the alienated portion, the measurer

CHAPTER IV.—MISCELLANEOUS MEASUREMENTS.

VILLAGE SITES.

Rule 1.—Where a village site has been enlarged by order of the Collector, the measurer shall duly record the alteration unless it has already been fully recorded by the Huzár Surveyor or as directed by the Collector.

Rule 2.—*Wáda Lands.*—Where wádas of 10 gunthas or more have not been separately measured, they shall be made into wáda survey numbers, whether paying assessment or not. Existing wáda survey numbers of less than 10 gunthas in area, whether paying assessment or not, shall not be cancelled, except at the request of the occupant.

G. R. No. 3181, dated 23rd April 1883, and G. R. No. 8293, dated 12th Nov. 1883.

ALLUVION AND DILUVION. ✓

Rule 3.—Survey numbers which have been wholly washed away, and riverside numbers which have been rendered wholly unproductive by deposits of sand, shall be struck off the map, provided they have been relinquished by the occupant. If a number is wholly washed away and the occupant or holder refuses to relinquish it, the circumstances should be reported to the Survey Commissioner for orders.

Rule 4.—If a portion of a survey number has been washed away and if the portion so lost is half an acre or more and also amounts to one-tenth or more of the area of the survey number, the remaining area shall be re-measured and its area recorded as the area of the number. If the area lost does not come up to both the limits specified above, the number shall not be re-measured, but in numbers less than half an acre, the number shall be re-measured if the loss amounts to one-tenth the area.

Rule 47, L. R. Code, and G. R. No. 733, dated 13th Feb. 1880, and G. R. No. 2771, dated 12th April 1886.

Rule 5.—If by alluvial accretion the area of a survey number has been increased by not more than half an acre, the increase also being not more than one-tenth of the survey number, no notice need be taken of it, and no change in the recorded area of that number be made; but if the accretion exceeds in area half an acre and also exceeds one-tenth of the area of the survey number, it shall be made into a separate survey number. If this accretion has already been assessed and its permanent right of occupancy granted by the Collector to any person, that person's name shall be entered as the occupant. If it has not been so assessed and granted in occupancy, and if it is a permanent alluvial accretion and not liable to change by further action of the river or nála, the report shall be made to the Assistant Superintendent for orders from the Collector as to disposal of occupancy right. If the accretion is liable to change or if orders have already been passed that the right to cultivate should be put up to annual auction, no occupant's name shall be entered.

Sections 63 and 64, L. R. Code. See last clause section 64 for definition of "Holding" (Land Revenue Code).

Rule 6.—Should the survey number against which an alluvial accretion has formed or from which loss by diluvion has occurred contain clubbed occupancies which must be separately measured according to Chapter 3, the

alluvion or diluvion shall be dealt with under the rules above, when the separation of clubbed occupancies has been made.

Rule 7.—In the above cases if the accretion adjoins an alienated number, it shall be included in that number, provided it does not exceed half an acre and also one-tenth of the area of such number. But if it exceeds either of these limits and is permanent, it shall be made into a separate number, a report also being made to the Assistant Superintendent and by him to the Collector to determine the tenure and ownership. If it is not permanent, it shall be left as kachha bháta, and thrown into adjoining similar kachha bháta, if any.

Rule 8.—All cases of diluvion affecting alienated numbers shall be neglected by the measurers, the holders of such land being left to take such steps as they may think fit.

PETHA KHARÁBO.

Rule 9.—Where under the rules of foregoing chapters existing survey numbers are subdivided, which contained petha kharábo, the same area shall be still deducted as petha kharábo, as before, even though it has wholly or in part become cultivable. If it can now be ascertained exactly where the old petha kharábo was, for which the deduction was made, it shall be deducted from each new survey number according to the area of petha kharábo, which that survey number contains; but if its position cannot be ascertained, the deduction on account of petha kharábo shall be made proportionately from each new survey number according to its area, a dharsod of 20 gunthas being allowed to avoid fractions of acre.

NOTE.—Rule 9 does not apply to tracts settled before 1855, or to survey numbers found unoccupied by the revision measurers. In such cases the deduction of petha kharábo will not be made by the measurers.

Rule 10.—The petha kharábo area formerly recorded as a specific deduction on account of a building, well, &c., even if found to be now clear for cultivation or actually cultivated shall be confirmed, but if it was deducted on account of a road or water-course which no longer exists in any survey number, the area deducted shall be treated as cultivable and the petha kharábo cancelled.

Rule 11.—If however by such diversion the road or water-course affects other survey numbers where land is rendered uncultivable, which was before cultivable, the petha kharábo should be measured and deducted from those numbers.

Rule 12.—If any obvious error in the record of old petha kharábo come to notice, it should be corrected, the orders of the Head Surveyor being asked if the measurer is in doubt.

ROADS.

Rule 13.—Made roads, railways, and canals which have been constructed since the original survey, but which have not been made the boundaries of survey numbers on either side, should now be so made excepting such portions as pass through large numbers of unoccupied waste, not broken up under these rules in which cases they should be shown by dotted lines the survey numbers, whether occupied or not, being divided accordingly.

And if such numbers contain clubbed occupancies, the separation of occupancies shall be made according to Chapter 3, even in the case of dry-crop land, and that without any application from the co-occupants.

Rule 14.—Roads which were made the boundaries of survey numbers at the old survey shall in no case be included in new survey numbers.

Rule 15.—The area of important cart roads used throughout the year, such as those which connect villages or distant fields with the village site, shall be deducted as petha kharábo from all Government numbers through which they pass, and shown in the map by dotted lines, but no petha kharábo deduction shall be made in alienated numbers.

Rule 16.—Where encroachments on a road forming the boundary of a survey number are found in numbers, Government or alienated, which have to be re-measured under these rules the boundary shall be set back to its original position.

CHAPTER V.—BOUNDARY MARKS.

Rule 1.—When new boundary marks are required by the following rules they shall be of the description and dimensions as below :—

Bándhs.—Length 6 annas, breadth at bottom $2\frac{1}{2}$ annas, at top $\frac{1}{2}$ anna, height $1\frac{1}{2}$ annas.

NOTE.—Earth shall not be dug within 3 feet of a bándh for material to make it or repair it.

Khunts.—Height 20 inches, of which 15 inches must be buried in the ground. The top of a khunt shall be one foot wide and one foot broad ; and the khunt shall be made of 25 bricks and 80 seers of chunam at least.

Stones.—Length not less than $2\frac{1}{2}$ feet and width not less than 8 inches. Half the stone shall be buried in the ground.

Rule 2.—All the boundary marks of all survey numbers which under these rules are subdivided or re-measured, and these only, shall be fully inspected and shown and numbered in the rough and fair field book below the sketch or plot of the number.

Rule 3.—Detail as to the condition of confirmed marks, cancellation of unnecessary marks, and erection of new marks shall be entered below the plot of the number in the fair field book as follows :—

	Bándhs.	Khunts.	Stones.
Old marks confirmed and in repair ...	Nos. 1 & 4	2	5
Old marks confirmed but in disrepair ...	3, 8	...	6
Old mounds cancelled and cut in two ...	7	...	...
Old marks cancelled and removed ...	13	14	9
New marks erected ...	10	11	12

NOTE.—Bándhs below one anna in height shall be entered as out of repair and stones or khunts under the size fixed by Rule 1.

Rule 4.—New stones shall not be purchased where superfluous stones of proper dimensions in the number can be utilized.

Rule 5.—Boundary marks in numbers dealt with at revision which are wrongly placed shall be entirely removed, and those which need repair shall be daubed with whitewash. New marks, superfluous marks, and old marks out of repair in unoccupied numbers shall be erected, removed, or repaired, as the case may be, at the expense of Government, but in occupied numbers, at the expense of the occupant, to whom due notice shall be issued. In his default, the work shall be done by the measurer.

EXPLANATION.—Mounds which are merely redundant but not misplaced and thus showing a wrong boundary need not be entirely removed, but should be cut in two for after-removal by the occupant or village officers as the case may be. Khunts and stones erected by the original survey or subsequently by Government agency, which are redundant, should be entirely removed.

Rule 6.—If the measurer is obliged to leave a village before marks found out of repair by him have been all repaired, and before marks to be newly erected have been all put up, he shall draw up, sign and date a statement in the following form:—

Survey Number and Pôt Number.	New Marks still to be erected.	Old Marks still to be repaired.	In what part of the Survey Number.	Remarks.
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This statement will be sent to the Mâmlatdâr by the Assistant, with a request that it should be returned when the work has been completed.

Rule 7.—New survey numbers made at revision shall be demarcated as follows:—

Main corners, 2 bândhs.

Bends, one khunt, one bândh or one stone.

EXCEPTIONS—(1) Where, owing to the lie of the land or wash of water a bândh will not remain at a main corner, the corner may be demarcated by one khunt or three stones as the occupant may choose. This exception shall also apply to rice numbers below one acre in area.

(2) Where the boundary, whether it be a village boundary or not, or the boundary of the village site or not, is defined by a good hedge, the bends need not be demarcated, but the main corners must be, a portion of the hedge being removed if necessary to make room for the marks. If a number be bounded by a road, the bends shall be demarcated, even though the boundary be covered by a hedge. This exception shall not be acted upon without special orders of the Head Surveyor to be obtained generally at test if it affects all the marks of a number or the marks of several numbers together.

(3) In rice land where the embankments sufficiently define the boundary, bends shall not be demarcated. In dry-crop land bends of 1 anna and under are not to be demarcated.

¹ **NOTE.**—Marks on bends or along the boundary which are not required by the rules need not be removed unless misplaced.

¹ The following special Rules are issued to meet the case of villages of the Broach District, the boundaries in which are subject to destruction by floods.

(1) The Deputy Superintendent will obtain from the Collector lists of the villages in each Tâluca which suffer annually from floods.

(2) The Deputy Superintendent will then issue a notice in such villages that all occu-

EXPLANATION.—Nothing in this rule shall debar an occupant from claiming to erect a permanent mark of stone and mortar in lieu of a *bándh*. (Government Resolution No. 8767, dated 13th December 1886.)

Rule 8.—New *pôt* numbers in dry-crop land shall be demarcated, the main corners by one *khunt* or three stones at the main corners, but in rice land one *khunt* or one stone only shall be placed at each end of the main base line, unless at those points marks already are in existence. This rule is to be applied only at the requisition of occupants or holders.

Rule 9.—*Roads.*—At the main corners of survey numbers which touch made roads, railways or canals, one mound only shall be erected and so placed as to indicate the line of boundary of the number. For the mound a *khunt* may be substituted under the conditions specified in Exception 1 of Rule 7.

Rule 10.—Bends in the boundary line of roads which have been observed as the boundary of survey numbers shall be demarcated by one stone or *khunt* even though there be a hedge; but no demarcation will be necessary if the boundary is demarcated by a rice embankment.

Rule 11.—When a road forms the boundary between two villages the bends along the roadside shall be examined and the boundary marks laid down at original survey replaced in their former position if found misplaced. If the bends were not demarcated they shall be demarcated at revision survey.

Rule 12.—In villages where the bend demarcation was not done at the original survey the measurer shall make this demarcation, fixing the boundaries in accordance with the provisions of section 119 of the L. R. Code.

NOTE.—*Rules 9 to 12 inclusive.*—These rules only apply to Numbers dealt with under the Revision Survey Rules.

Rule 13.—If such bend demarcation was done not by the regular measurers but by the village officers or a temporary staff employed after the original survey, then in any number dealt with under the revision rules, if it is found that errors have been made they shall be corrected with the written sanction of the Head Surveyor.

Rule 14.—Under the rules if a new mark has to be put up in place of an old one which has disappeared, the provisions of Rule 7 should be applied.

CHAPTER VI.—MEASURER'S RECORD.

Rule 1.—In the field books the revision survey numbers are to be entered in the same sequence (*Shej*) as that of the old survey map.

pants who wish to substitute "*khunts*" for "*bándhs*" are to have the necessary *khunts* ready ordinarily by the 1st of November following the notice, or such other date as may be convenient.

(3) The officer in charge of parties working in *Broach* in the ensuing field-season will arrange to have the substitution carried out under proper supervision for all *khatedárs* in those villages who have *khunts* ready by the date fixed and for no others.

(4) Prior to the opening of the season the *Mamlátdárs* will submit to the Deputy Superintendent list of the villages in which *khunts* have been got ready.

Rule 2.—When an old survey number has been subdivided into two or more new survey numbers or pôt numbers, one of these new survey numbers shall retain the original number of the survey number and the rest shall be shown as will be seen from the following example :—

If survey number 10 is broken up into three numbers, the new numbers shall be shown thus, $10 \frac{10}{1} \frac{10}{2}$.

Rule 3.—Numbers which are not dealt with at revision survey shall be shown in proper order in the new field books with the serial number and the sketch taken from the old field book, but the usual details shall be taken from the latest Pâhani Patrak of the village; but if the old field books have been lost, the number and acreage of the survey number shall be shown as shown in the Kâim Kharda.

Rule 4.—No new village map shall be drawn and in the old map corrections and subdivisions shall be shown in red ink. From the map thus corrected two copies shall be pricked off in the recess and drawn with black ink throughout, one showing boundary marks and the other not; pôt numbers shall be shown in the margin of the map as near the survey number to which they belong as possible. They shall be drawn on a sufficiently large scale to show them clearly.

Rule 5.—If the changes and corrections in a map are numerous the survey numbers shall be re-numbered entirely in the recess under the orders of the Head Surveyor.

Rule 6.—If a measurer is obliged to leave a village partially completed at the end of the field season, a statement shall be filed under the countersignature of the Head Surveyor by the measurer or measurers, if more than one, showing exactly what work in his allotted portion of the village remains to be done.

Rule 7.—Where a whole number has been converted from dry-crop to rice or has deteriorated from rice into dry-crop, the change shall be carefully noted in the rough field book; if only a portion has been converted or deteriorated, a sketch of the number showing its present condition shall be entered in the revision field book and a list of such numbers shall be shown at the beginning or end of the field book.

Rule 8.—Where a portion of a number has thus undergone change the rice area shall be carefully measured and a sketch plan showing the measurements and area shall be shown in the field book; but if such a number has to be subdivided into new survey numbers or pôt numbers, both the dry-crop and rice land shall be measured and shown separately.

Rule 9.—Measurers and classers shall report, shortly before the completion of the village in hand, the probable date on which new work will be required. No papers of another village shall be issued by the Huzâr Office before the receipt of all records of the village previously completed.

CHAPTER VII.—SPECIAL RULES FOR MEASUREMENT IN VILLAGES WHERE OWING TO THE LOSS OF THE RECORDS OR OTHER CAUSES MEASUREMENT *DE NOVO* IS NECESSARY WHOLLY OR IN PART.

Rule 1.—The map shall be re-drawn.

Rule 2.—The serial order of survey numbers shall be retained in the field books in accordance with the provisions of the last chapter.

Rule 3.—In no case shall old survey numbers be clubbed together and made into a new survey number; and the old marks shall be utilized to the fullest extent possible.

Rule 4.—The provisions of the previous chapters of these rules shall apply, except where they cannot be applied.

Rule 5.—Where to obtain a correct new map it is necessary to take a base line (*adhar liti*), survey numbers through which that line passes shall be measured from it, but not other survey numbers, though off-sets from the base line to their main corners and bends may be taken.

The position of all survey numbers which at revision survey require to be plotted on the old or on new field maps, must be accurately fixed by means of base lines taken from trijunction stones or traverse stations on the village boundary.

Rule 6.—Where the old map is available, new survey numbers and pôt numbers shall be shown according to the provisions of the last chapter.

Rule 7.—The lines of boundary of adjoining villages as measured and mapped at the old survey must be followed as far as possible in measuring a village *de novo*, either wholly or in part. In places where for sufficient reasons existing deviations from the old survey lines have to be confirmed the necessary alterations in the maps of the adjoining villages concerned must be carefully made.

Rule 8.—If in measuring alienated numbers it is found that the areas according to the new measurements differ considerably from those of the old survey, and these alienated numbers include the separate holdings of new subordinate alienees, who pay assessment separately, then the land of each such holding must be measured, but it must not be made a pôt number (as would be done in the case of Government land) nor must it be demarcated.

APPENDIX E. TO CHAPTER I.

KONKAN SURVEY REVISION MEASUREMENT RULES.

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APPENDIX E.

KONKAN SURVEY DIVISION MEASUREMENT RULES.

CHAPTER I.

Rice Land.

1. By rice land must be understood land which produces rice, is level, or situated low and embanked so as to retain sufficient moisture for rice crops to be grown usually on it. Land in which rice is sown occasionally with a sloping surface situated on high lands with no embankments and which produces rice only occasionally must not be considered rice land.

2. The boundaries of all old rice, garden, or rabi Survey numbers must be examined and new boundary marks erected only where required by the rules under Chapter VI.

3. If from inspection of the field sketch of any such number it is seen that there are one or more pieces of Pôt Varkas of 5 gunthas or more in area, compact and in one block, each such piece of Pôt Varkas must be examined. If it is evident that any such piece has been converted into rice or garden to the extent of 5 gunthas or more the Navkird must be measured and dealt with according to the rules (Rule 6). But if the difference (over 5 gunthas) between the recorded area and that found now existent is due to mistake in the old work and not to conversion, it must be corrected by re-measurement of the Pôt Varkas only, if possible, or of that part of the survey number which it is absolutely necessary to re-measure.

All small pieces of Pôt Varkas which are under 5 gunthas each in area, although the aggregate sum of them may be over 5 gunthas, need not be examined.

4. If in examining old survey numbers as above or in plotting the examined numbers, it is found that the old measurement is incorrect, the number should be re-measured wholly or in part, but only, so far, that it may be correctly plotted.

5. It is not necessary to examine or demarcate Pôt numbers if confirmed Survey numbers, but if any survey number is re-measured under the last rule, the position and area of the pôt numbers must be verified, so that they may be correctly plotted, old boundaries being kept intact as far as possible. If, however, the occupant of any Pôt number claims to have his pôt number demarcated by boundary marks, the demarcation shall be made according to the boundary laid down at the original survey.

If that boundary be found incorrect, or disputed, the Assistant's orders should be taken. All charges for hired labour and stones to be charged to the occupant or occupants claiming demarcation.

6. All newly made rice or garden land measured under Rule 3 if under 10 guntas in area should be, together with the intervening varkas, if any, added to the old rice or garden pôt numbers to which it may be adjoining if belonging to the same Khâtedâr, but should be made into separate Pôt numbers when the intervening Varkas is more than one chain wide or two guntas or more in area or when belonging to a separate Khâtedâr or to two or more Khâtedârs in common or if 10 guntas or more in area. Rice and garden land also must not be included in the same pôt number.

7. New rice or new garden cultivation in an old Varkas number adjoining a rice or garden number or near it with only a small strip of varkas not wider than one chain on the average between the two if its area is 5 and under 10 guntas should, together with the intervening varkas, be measured off so as to be included in the old rice or garden number, and dealt with as laid down in Rule 5, provided the limits prescribed in Rule 14 are not infringed.

8. New rice or garden cultivation other than that described in the last rule in Varkas numbers should be made into separate Survey numbers subject to the limit given in Rule 9, and subject to the proviso that adjacent pieces of new rice or garden cultivation should, with the Varkas between, be cubbed together into one Survey number, the size of which should be regulated by the limits prescribed in Rule 14.

9. No notice of new rice or garden cultivation in Varkas numbers need be taken if found in isolated patches under 5 guntas each which cannot be included in an old number under Rule 7, or made into new number under Rule 8, but a remark should be entered in the field book indicating the existence of such neglected patches.

10. When two old rice or garden Survey numbers are adjoining, and the lands on each side of the old boundary line are Pôt Varkas and the bands defining the old boundary are not demarcated in the field by stones, it will not be necessary to fix in carefully from the old measurements the old bands, but the boundaries of the two old Survey numbers should now be measured in accordance with present occupancy.

11. When, however, in the cases referred to in the above rule, a stream, hedge, earthen embankment, or any clearly defined division of occupancy has been taken in the old measurements as denoting the boundary between the old Survey numbers, the boundary thus fixed of the old Survey numbers should not be altered in any way.

12. A "dharsod" of 2 annas is allowable when rice or garden adjoins rice or garden, and a "dharsod" of 4 annas when it adjoins varkas or when varkas adjoins varkas.

13. No new Pôt Varkas should be included in the rice or garden numbers except where small bends of under 4 annas would make it difficult to plot the bends on the map.

14. In measuring all new rice or garden land, the following limits shall be observed:—(1) No number above $1\frac{1}{2}$ acres shall include more than 5 Khâtedârs. (2) No number shall exceed 5 acres, *i.e.* 5 acres of rice, 2 acres of varkas or rabi being counted as 1 acre of rice unless it is one in the occupancy of one Khâtedâr, when it may be as large as 8 acres. (3) When a number is wholly or partially re-measured under Rule 4, it should be broken up if containing more than 5 Khâtedârs and if above $1\frac{1}{2}$ acres in area.

15. Embankments in rice fields re-measured under Rule 3, or in new rice fields formed under Rule 8, should be dealt with as follows:—Embankments in rice land of and under 4 annas in breadth and under two guntas in area should not be measured separately, but included in the rice, unless deducted as unculturable in the old record; but embankments over 4 annas in breadth and two guntas or more in area should be measured as usual and shown as Pôt Varkas unless clearly deducted as Pôt Kharab in the existing record.

In tracts of Thána similar to Karjat, 6 annas may be substituted for the 4 annas entered in para 1 of this rule; but for this special sanction should be obtained when work is first begun in each new taluka in which Revision Survey is ordered.

16. It will not be necessary for the measurer to measure rabi found in Pôt Varkas or Varkas numbers which is not already recorded as rabi in the old survey; but if the measurer thinks that any land is rabi, he should note the fact and position approximately in the field book for the information of the classifiers.

17. When new rice, garden, or rabi is found in old Survey numbers appropriated for forests or grazing or any other public purpose or recorded as Government unoccupied land, such pieces of new rice, garden, or rabi should not be measured either separately or included in the adjacent occupied survey numbers, for all such encroachments are unauthorized, and it is a matter for the Collector's decision whether such appropriation of land without permission is to be allowed and given over to the cultivators thereof or not. In all such cases the original boundary of the occupied survey numbers should be confirmed, new boundary marks erected along that boundary, and the encroachment reported to the Superintendent for communication to, and disposal by, the Collector of the district.

18. If village site boundaries are altered in any way since the original survey, the original boundary should be confirmed and the encroachment, whether it be of cultivation on the village site or of the village site on cultivation, should be reported for enquiry and decision by the Collector.

19. All old Survey Pôt numbers containing mixed descriptions of lands, such as rice, garden, rabi, should be re-measured only as far as may be absolutely necessary to divide off and make into separate Pôt numbers lands of the different descriptions; whichever description of land is the smallest in area should be measured, and the area deducted from the original area, and where the line of division is easily fixed from point to point of the old sketch, no re-measurement will be necessary and the respective areas of each description of land should be ascertained with the area-comb, to tally with the area of the original whole Pôt number.

20. For all Survey or Pôt numbers re-measured, corrected, or altered, a remark should be written in his field book by the measurer, giving the number of the rules under which it has been thought necessary to measure; and for all Survey numbers examined and not altered a remark should be written stating that the original measurements have been confirmed.

21. In Survey numbers in which, owing to a large amount of Pôt Varkas having been included at original survey, the rice Pôt numbers are scattered and have not been fixed in position in the Survey number by proper check measure-

ments at both ends of the base lines on which they may be measured, their position must be verified and all mistakes corrected, whether due to incorrect plotting or measurement. This verification may be done by the classers, as it can be done without expenditure of time, whilst inspection for "dusota" is being carried out measurements in every instance should not be done as minute differences which are not at once apparent at sight need not be noticed, but all large and obvious differences must be checked by measurements and corrected where necessary. All errors detected by the measurers must, however, be corrected by them.

Regarding land occupied by Railways.

22. Land occupied by railways has been divided by Government orders into four classes—A, B, C, and D—each of which has been granted on different conditions and for different purposes, and therefore lands of each class must be divided off and recorded separately in the Survey records.

Class A comprises the land occupied by the permanent works of a Railway, including the road, bridges, stations, workshops, &c., and is provided by Government free of cost to the Railway Company. The occupation of this land is so far permanent that it only ceases when the contract of the Railway Company is terminated or surrendered. This land will be shown as an ordinary road is shown on the map, and its area taken out by area-comb.

Class B is also provided free, and comprises land necessary for the execution of the permanent works of a Railway, but not required after the completion of the line, such as land for spoil banks, for extra excavations, for temporary diversions over rivers and for storage of materials pending construction of the line. The occupation of this class of land will be temporary, and some of it has already been returned to Government by the Railway Company. Where this is the case, the land so returned must be divided off from the "B" Class land still in possession of the Railway Company, and be made into separate Survey number and recorded as Government waste, the land in possession of the Railway being recorded as "B" Class land in possession of the Railway. "B" Class land must be made into separate Survey numbers to the size of which there is no limit, and it must be measured by the cross-staff and chain.

Class C comprises lands which a Railway Company provides at its own cost. Land of this class has in the first instance been taken possession of by Government and handed over to the Railway Company at a fair rental. The Railway Company is, therefore, the Khâtedâr of land of this description, and it must be treated in the same manner as lands belonging to ordinary Khâtedârs, *i.e.* made into separate Survey or Pôt numbers. "C" Class land must be measured by cross-staff and chain and made into Survey or Pôt numbers, to the size of which there is no limit.

Class D comprises lands which, being required in consequence of the existence of the Railway, still does not come directly into the occupation of the Company, such as for new roads leading to stations &c., or diversions or changes of old roads &c. Such land will be treated under the ordinary rules in force for other lands of the same description.

23. The classification, measurement, and demarcation of lands coming under A, B, and C classes has already been carried out by this Department, and

consequently the different descriptions of land only require being shown on the village map and recorded in the Survey papers, each in its own particular class. The plans and former measurements are to be taken as the authority for this work, and no deviation from them is to be allowed.

24. No boundary marks are required for "A" Class land which was divided off from "B" Class by iron marks erected by the Railway Demarcation Survey.

25. In "B" Class land, which always lies where it exists at all between "A" Class land and the line of cultivation or occupancy as laid down by the demarcation survey, boundary marks must be erected in accordance with the rules at the corners of Survey numbers.

26. The Railway Company have erected or are erecting large stones, coloured red and marked with the letter "B" cut on them, on the boundary of "B" Class land. The position of these stones must be verified from the Railway plans and former measurements, and all encroachments by the Railway on Government land, or by the villagers on Railway lands, must be reported for orders.

27. Land belonging to "C" Class when made into a Survey number must have boundary marks erected according to the rules in force: if made into a Pôt number, it should be demarcated by a stone at each corner and at each bend in the boundary.

I.—Whenever the boundaries of "A" land are being laid down at revision Survey, the measurer shall apply for, and be furnished with, the demarcation plan, and in fixing the boundary shall take it into consideration.

II.—Special notice shall be given to the Railway Company to point out the boundaries of their lands and explain any apparent acquiescence in apparent encroachments on the original boundaries.

III.—Special notice shall also be given to the occupants of Survey numbers adjacent to the Railway, the boundaries of which have to be fixed.

(I)—When at any survey the boundaries are to be laid down or settled of lands belonging to any Government Department, at least one month's notice shall be given to the chief executive officer in charge of the Department concerned within the limits of the district in which the measure is taking place. If there be no executive officer in the district, the notice shall be submitted to the Head of the Department. If not inconvenient, this notice shall be given early in the recess season, in order to allow time for full information to be furnished (not later than 15th October) by the authorities concerned, to avoid the chance of delay, and to enable Survey officers to foresee and arrange dates on which to meet the delegates from the Department concerned.

(II)—The notice shall call upon the Department to supply the Survey officer with all maps or documents showing the correct location of the boundaries, and to depute an officer or subordinate to attend on the ground, on such date as may be arranged with the Survey officer. It will state that failing attention to the notice, the Survey officer will proceed to determine the

¹ These rules were issued in 1897 under the Survey Commissioner's No. S—860. dated 2nd June 1897. and are of general application.

boundaries on such date as may be convenient upon such evidence and information as may be available to him.

(III)—Special notice should also be given to the occupant of the numbers adjoining the lands belonging to the Department concerned.

28. Khanjan Lands—

(1) Unreclaimed Khanjan land when found in one place should be made into one Survey number, however large its area.

(2) Khanjan land which has been given out on special agreement for reclamation, and of which the assessment has been remitted for a certain period which has not elapsed at time of Revision measurement, need not be broken up into Survey numbers, but measured as a single block and made into one number.

(3) If there are more lessees than one, the land of each should be made into separate Survey numbers.

(4) If the period for which the assessment of the land has been remitted has elapsed, and the terms of the lease provide for the land coming under Survey rates, it should be broken up into numbers of about 8 acres each.

(5) When breaking up such land into Survey numbers, the existing embankments and lines of cultivation should be adopted as the boundaries of the Survey numbers, and all the land in one place of any cultivators should be included into one number and not parcelled out and included in two or more Survey numbers.

CHAPTER II.

Varkas Lands.

1. Varkas Survey numbers must be measured by the cross-staff in open country upon base lines fixed between points either confirmed by the theodolite measurer or by points from rice land, of which the position has been verified by the cross-staff measurer himself, but they need not be re-measured throughout, so that their areas can be calculated by trapezia; it will be sufficient that they be measured so that their correct area can be taken off by the area-comb.

2. In country where it is difficult or impossible to measure by the cross-staff, the boundaries of Varkas numbers should be fixed by the theodolite.

3. The old boundaries of Varkas Survey numbers, as far as they can be identified, must be strictly adhered to.

4. Varkas numbers surrounded by rice land need not be re-measured as their boundaries will be accurately defined by those of the rice land.

5. Similarly, where entire Varkas numbers in part adjoin rice, re-measurement should be confined to verification of that part of the boundary only which does not adjoin the rice land.

6. In measuring any *new* Varkas numbers they must be broken up into Survey numbers of the following sizes:—

Flat land near the village sites	...	From 10 to 20 acres.
Flat land away from the village or cultivated land on the slopes of hills.	}	From 20 to 30 acres.
Other lands			...	From 30 to 40 acres.

7. In all Varkas lands, when fixing the boundaries of new Survey numbers of Phalni Tukras, a "dharsod" of 8 annas is allowable.

8. All land taken up for forest should be measured off separately according to the boundaries laid down by the Forest Settlement Officer. It should be made into one Survey number, whatever its area, when it is found in one block.

9. Rabi land found by the measurers in Varkas numbers should be treated as described in Rule 16 of Chapter I.

CHAPTER III.

Rules for the Phalni of Varkas Land.

1. Culturable Pôt Varkas of 1 guntha or more in area is to be measured off separately and phalned according to Vahivat, and treated as may be necessary under the rules given in Chapter I. as regards inclusion in adjacent Pôt numbers, or being made into a separate Pôt number; if under 1 guntha no notice need be taken of it.

2. The Phalni measurement of entire Varkas numbers is to be done by the measuring establishments according to the following rule.

3. An application in writing signed by all the registered occupants of the Survey number which is to be phalned must be made to the officer in charge of the measuring establishment. This application must be in the form annexed to these rules.

On receiving the application the officer in charge of the establishment should satisfy himself that the above two conditions have been complied with; if they have been, he should cause the application to be stamped with a court-fee stamp of the value of one rupee for every Phalni Tukra which is entered in the village papers as below 3 acres. After this has been done, an order should be passed to the measurer to do the Phalni.

4. The measurer on receiving such orders must give notice in writing three clear days beforehand, through the village officers, to all the registered occupants, of the day on which he intends to do the measurements. This notice, after having been signed by or on behalf of all the registered occupants, should be returned to the measurer and by him forwarded to the officer in charge of the establishment.

5. On the appointed day the measurer will do the Phalni according to the boundaries pointed out by the registered occupants unless they fail to appear.

6. It is not absolutely necessary that all the occupants should appear, but a proportion of two-thirds of them may be considered sufficient to afford evidence of the boundaries, and if two out of three are present, the work of Phalni should proceed. Should it appear, however, that the Khâtedârs present are not unanimous as to the boundaries, or if being unanimous they do not indicate the boundaries of all the sharers, those of absentees included, the measurer should refuse to make any Phalni.

7. In all cases the measurer should, on the evening of the appointed day, send in a report to the Assistant Superintendent, stating whether the Phalni has been made, and if not, for what reasons it could not be carried out.

8. In cases in which, for any reasons other than through fault of the applicants, it is not possible for the measuring establishment to do the work of Phalni, it must be done in accordance with the above rules by the classing establishments.

—

Form for drawing up the application referred to in Rule 3.

Petition in the names of _____, residents of Mauze _____, Taluka _____, who petition as follows :—

In the above-mentioned village, Revenue Survey number _____

containing _____ acres _____ gunthas, is entered in our khátas (but* no division according to our separate shares and usufruct has been made in the field, and therefore), we wish this Number should be broken up and that the share of each occupant recognized in the village papers should be separately measured, demarcated, and recorded.

We all agree to be present in the field when due notice to this effect shall be given us to point out the boundaries of our respective portions, and to consider such notice given through the village officers in every respect the same as if it had been served directly on ourselves.

We all agree that if in showing our boundaries we cannot agree amongst ourselves as regards our respective shares, or if a sufficient number of us are not present on the appointed date to point out our boundaries satisfactorily, no grounds for complaint for not dividing this number according to our application shall be considered to remain to us. It is understood that we will, as may be directed, either erect all boundary marks necessary for the numbers which may be newly made, or that the cost of their erection by Government shall be levied from us. Dated this _____ day of _____ of the year _____.

(Signature.)

—

Order by the Assistant Superintendent.

Only required when any recorded shares are below 3 acres each. The cost of making the division in the number _____ will be as follows :—

Charge for making separate Phalni Tukdas or numbers of shares of Khátedárs which are entered in the village papers as below 3 acres each, at Rupee 1 each share—Rs. _____. If you will bring stamped paper of the value of Rs. _____, the order for dividing the number will be given.

—

Petitioners to Assistant.

In accordance with the above orders we have brought the stamped paper and attached the original petition to it.

—

Order by the Assistant Superintendent on petition and separately to applicants.

I have this day entered this petition on my records and given orders to the measurer to make the division of the number according to the boundaries you may all agree to point out as those of your respective shares :

written notice of the date on which the measurer will require you to be present in the field will be given by him to you all, through the village officers, with whom you must arrange means to receive such notice, as no complaint of any notice not having been given you will be afterwards entertained.

CHAPTER IV.

Inám Lands.

1. When inám and Government lands are included in one revenue Survey number, and the two descriptions of land have a defined boundary, then the inám and the Government land must be divided into two separate Survey numbers, Pôt numbers, or Phalni Tukras, in accordance with Rule 48¹ of the Vernacular Compilation of Orders.

2. If the two descriptions of land, inám and Government, have no defined boundary, the Mámlatdár should be called upon to define the inám in the field, and measurements made accordingly.

3. If any inám land is found to be divided among sharers whose names are separately recorded in the village accounts, with their share in the inám specified, and they have separate vahivat in the field and can show definite boundaries, then each sharer's land should be made into a separate Survey number, Pôt number, or Phalni Tukra according to the vahivat of the sharers.

4. In some cases inám lands exist which have never been measured off separately, and are recorded in the village accounts only in cash deducted from the total assessment of the kháta of which the Inámádár is the khátedár, land equivalent to the amount thus entered as inám having never been defined or demarcated in the field; in such cases the Mámlatdár must be desired to have the boundaries defined, and measurers should be instructed to measure off separately the land thus set aside as inám.

5. In measuring inám lands, if the sketch, when plotted, corresponds with the sketch of the old Survey number, Pôt number, or Phalni Tukra, and the area obtained by the new measurement is within 3 per cent. of the old area, the new area should be confirmed. If, however, the new and old areas vary more than 3 per cent., or the sketch of the inám land as now measured does not tally with the old sketch, it will be necessary to verify the old sketch by re-plotting it from the old measurements; and should there be no error in the old sketch, then the matter should be reported for the orders of the Assistant, who will, if necessary, refer it to the Superintendent.

6. If the area of the inám land, as obtained by the new measurement, is less than the area formerly recorded according to the old measurement, or the sketch of the land in the occupation of the Inámádár is smaller, and land which formerly was measured off as inám is either waste or in another Khátedár's occupation, the land formerly measured as inám must be correctly laid down in the field by taking the old base line, and perpendiculars and laying down

¹ This rule requires that the Inám land thus separated should be made into a separate Survey No. if exceeding 1 acre in area, and if less, into a separate Pôt No. or Phalni Tukra.

the old measurements, and the exact amount of inám land as formerly measured should be now recorded as such.

7. If, on the other hand, the inám area is now in excess of what was formerly recorded as such, or the sketch of the land in the occupation of the Inámdár is larger than the old sketch, then the only conclusion that can be drawn therefrom is that the Inámdár has encroached on the Government waste land or the Pôt varkas, and in that case the land formerly measured off as inám must be laid down correctly as such in the field, and all in excess of that, now in the Inámdár's occupation, should be made into separate Pôt numbers or Phalni Tukras and recorded as Government land in the occupation of the Inámdár.

8. All inám Pôt numbers or Phalni Tukras should, once for all, be clearly demarcated in the field by having stones erected at all the bends.

CHAPTER V.

Rules applicable to all lands.

1. If in any existing Pôt number or Phalni Tukra there are more Khátedárs¹ having separate vahivat than one, the Pôt number or Phalni Tukras must be made into separate new Pôt numbers or Phalni tukras according to the "vahivat" of each Khátedár.

2. If in existing Pôt numbers or Phalni Tukras there are separate Khátedárs having no separate occupation of the land, but they either share the crop or in some other way exercise a joint occupation of the land, in such cases, if all the Khátedárs agree to divide the land and point out boundaries of division, new Pôt numbers or Phalni tukras should be made accordingly.

3. The names of the Khátedárs or Inámdárs entered in the registers (accounts) of the village only should be now entered to each Pôt number or Phalni Tukra according to present occupancy. No other cultivator or Pôt Lawnidár should have his name entered, nor should his Pôt vahivat be considered in any way.

4. If any portion of a Revenue Survey number, Pôt number, or Phalni Tukra has been made over to any person by a decree of a Civil Court, it must be made into a separate new Survey number, Pôt number, or Phalni Tukra, even if it has not been made into a separate khata; but if the decree of the Civil Court gives the right of holding the land for only a term of years, it is not to be made into a separate new survey number, pôt number, or phalni tukra.

¹ (1) The one or more Khátedárs of any Pôt number must be understood to be the one or more individuals whose names are entered in Village Form No. 3 as occupants opposite that Pôt number.

(2) A Khátedár of one or more Pôt numbers in a village is not to be considered a Khátedár in any other Pôt number opposite which his name is not entered as occupant in Village Form No. 3. [Superintendent's No. 347 of 29th March 1888.]

(3) New rice made in Varkas land when measured should have the name of the Khátedár to whom the Varkas is entered in the Village Form No. III. entered as Khátedár and the present occupant of such new rice land as Vahivatdár in the Survey papers. [Appendix to Rule 3 by Vernacular Wat Yádi No. 138, dated 27th March 1888.]

5. When deposits of soil have formed on the bank of streams, rivers, or creeks, if the land so formed has been assessed, and the permanent right of separate occupancy granted to any person by the Collector and so recorded in the village accounts, the land must be made into a separate number, pôt number, or phalni tukra, and the name of the occupant entered. If the right of cultivating the land is put up to auction, a remark should be entered to that effect in the measurers' books, but no name is to be entered, and the land so sold by auction should be made into a separate number, pôt number, or phalni tukra.

6. If any such alluvial land, whether waste or cultivated, adjoins a Government number, and is not of the nature provided in Rule 5, it is not to be made into a separate number, but is to be included in the adjoining Government number.

7. All measuring work which has to be done should be dependent on one or more good base lines which should be determined on and marked out in the field on first beginning work (*vide* Appendix A—Base Line), and these base lines should be fixed in on the maps accurately by the theodolite kárkúns, and the maps must be plotted thereon. Everything depends on a good base line being taken to work on, and care should be taken that this is not neglected.

8. Made roads are to be measured as follows :—

(1) Where the road has been already measured as the boundary of survey numbers, the old boundary marks are to be strictly followed.

(2) Where, though not yet measured by the Survey Department, the boundaries of the land taken up for the road are clearly ascertainable from the Mámlatdár, these boundaries are to be adopted.

(3) In varkas lands the boundary marks should be placed at 5 annas' distance from a single gutter, or 2 annas from the side of the double gutter.

(4) In rice land, if the rice land extends up to the made road, the boundary of the number must be made (2) two annas from the side of the single ditch.

(5) Where land has been taken up for a made road, and is marked out in the field by stones, the boundary of survey numbers should be measured up to those stones and no further. In this case paragraphs (3) and (4) will not apply.

(6) When a road, which was measured as such in the former survey, has fallen into disuse and is not made use of, and a new road has been made, the land occupied by the old road may be included in adjacent numbers if now cultivated according to vahivat; if not, half to each number adjacent on either side, or made into a separate Government waste number; but should the traffic still go along the old road, then both old and new roads should be measured as such.

9. When a measurer is appointed to a village he will be supplied with printed vernacular forms, with headings as shown below. This form must be filled in daily as the work proceeds :—

According to Original Survey.										According to Revision Survey.						Difference.		Percentage on Survey Numbers area.
Survey Numbers.	Pot Numbers.	Total Area.	Unculturable area.	Culturable area.	New Chálta Numbers					Decrease.			Increase.					
					Pot Numbers.	Total area.	Unculturable area.	Culturable area.	Total area.	Unculturable area.	Culturable area.	Total area.	Unculturable area.	Culturable area.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		

At the end of this statement an abstract is to be made out in the following form:—

Total No. of Survey Numbers.	No. of Numbers whose difference falls within						Total of Columns 2 and 7.	
	0.	5 per cent.	6 to 10 per cent.	11 to 15 per cent.	16 to 20 per cent.	Over 20 per cent.		
1	2	3	4	5	6	7	8	9

10. Each measurer will be allowed 12 men when hired labour has to be employed for flag-holders and chain-men.

11. The present revenue survey numbers—that is, the numbers measured since the year 1852 up to the present time—are to be called “Revenue survey numbers.”

The numbers which are being measured when they have been entered in consecutive order are to be called “New survey numbers,” and when entered according to the order measured in the field, they are to be designated “New chálta numbers.”

12. Village sites should be confirmed, as such, according to the boundaries of the former survey and gaonthán should be written in them on the maps, but they should not be numbered as a survey number.

In case the village site is deserted, and has been so for many years, a reference should be made to the Assistant Superintendent, who will obtain the Superintendent's decision.

13. All maps to be drawn on double scale of 10 chains to an inch.

14. Pardi lands should be dealt with as follows:—

(1) All Pardi land which may be varkas and of or above 5 gunthas in area should be measured; below 5 gunthas should be left unmeasured in the village site.

(2) All Pardi land which may be rabi, rice, or garden land must be measured into Pardi numbers irrespective of area.

(3) Pardi lands should be measured together with the houses and out-houses belonging to one owner as one Pardi number, and out of the total area obtained the proper deduction for buildings, wells, &c., should be made as usual for ('kharáb') unculturable.

(4) All Pardi numbers should be demarcated with stones, one at each corner.

(5) In Pardi numbers containing different descriptions of land such as garden, rice, &c., each kind of land should be made into a separate Pôt number.

(6) Pardi lands should be classed according to their capabilities, the same way as Survey numbers.

(7) By Pardi land should be understood only land surrounding dwellings and houses within the village site; lands outside the village site boundaries are not to be considered Pardi lands.

(8) The sketches of Pardi numbers should be drawn in the Kshetra Book after those of the Survey numbers, and they should be entered at the end of the Sûds after the Survey numbers.

(9) As the relative position of Pardi numbers in a village site must be known, after all Pardi numbers have been measured and plotted, the sketch of the village site should be plotted in the Kshetra Book on double scale and the Pardi numbers shown therein as Phalni Tukras are now shown in Varkas Survey numbers.

15 & 16. [As the Rules regarding Pôt kharáb are given in Section II. Chapter II. of Appendix C., Deccan and S. M. C. Survey Measurement Rules, they are not printed here.]

17. In the Konkan Districts at the original Revenue Survey, pieces of varkas land were included in the rice Pôt numbers, and being incapable of assessment as rice, these pieces of varkas were deducted as unculturable, leaving only the rice area assessable as rice land. Therefore the following rules are made for guidance in determining how the old kharab should be confirmed and how apportioned to the Pôt Varkas and the several new rice Pôt numbers:—

(1) Where, on comparing the old sketch with the new, it appears that some portion of the old sketch which was shown as rice but was really included varkas and has now been marked off as Pôt Varkas, the kharab area formerly deducted should be considered as consisting wholly or in part of the old included varkas, and in confirming the old kharab the Pôt Varkas now measured off separately should be entered as unculturable, and any excess of old kharab over area of new Pôt Varkas deducted from the rice area now obtained if such excess of kharáb is more than the unculturable now found to exist in the new rice pôt number :

Example.

		Old Survey No.				New Survey No.	
		A.	G.			A.	G.
Culturable rice	...	4	11	Culturable rice	...	4	23
Unculturable	...	1	17	Unculturable	...	0	2
				Pôt varkas	...	1	2

Pôt Varkas area 1-2 should be entered as kharab and the balance remaining of old kharab 15 gunthas, being in excess of 2 gunthas kharab now found in the rice Pôt number should be deducted from rice area and new number confirmed as :

	Total.		Unculturable.		Culturable.	
	A.	g.	A.	g.	A.	g.
Rice area	4	25	0	15	4	10
Pôt varkas	1	2	1	2	...	...
Total	<u>5</u>	<u>27</u>	<u>1</u>	<u>17</u>	<u>4</u>	<u>10</u>

(2) In cases where the area of the new survey number is more than 10 per cent. less than the area of the old survey number, the proportion of old kharab to be confirmed in accordance with areas should first be worked out and then clause 1 applied :

Example.

	Old Survey No.		New Survey No.	
	A.	g.	A.	g.
Rice culturable area	1	20	1	13
Unculturable	0	17	0	2
Pôt varkas ... ..	...	...	0	9
Total	<u>1</u>	<u>37</u>	<u>1</u>	<u>24</u>

Old kharab must be confirmed in proportion to areas thus :

$$1-37 : 0-17 :: 1-24 : x = 14 \text{ gunthas.}$$

Therefore new Pôt varkas 0-9 to be entered as kharab and the balance of the kharab to be deducted 0-5, should be deducted from the rice area as it is in excess of the unculturable now found in the field, and new number confirmed as :

	Total.		Unculturable.		Culturable.	
	A.	g.	A.	g.	A.	g.
Rice area	1	15	0	5	1	10
Pôt varkas	0	9	0	9	...	...
Total	<u>1</u>	<u>24</u>	<u>0</u>	<u>14</u>	<u>1</u>	<u>10</u>

(3) In cases where the old kharab is less than the area of the new Pôt varkas, the unculturable area now found to exist in the rice Pôt number should be confirmed and the balance of the old kharab, remaining after deducting the new kharab confirmed, should be apportioned as unculturable to the new Pôt varkas :

Example.

	Old Survey No.		New Survey No.	
	A.	g.	A.	g.
Rice culturable area	2	30	2	13
Unculturable	1	4	0	3
Pôt varkas ... ..	...	...	1	8
Total	<u>3</u>	<u>34</u>	<u>3</u>	<u>24</u>

Old kharab to be confirmed as follows :—

3 gunthas now found unculturable in rice Pôt number to be confirmed :

balance of old kharab 1-1 to be deducted as unculturable in the new Pôt varkas area and new number confirmed as :

	Total.	Unculturable.	Culturable.
	A. g.	A. g.	A. g.
Rice area	2 16	0 3	2 13
Pôt varkas	1 8	1 1	0 7
Total ...	3 24	1 4	2 20

(4) When old kharab has to be confirmed in consequence of its being greater than the present kharab and the old number or Pôt number has now been divided into two or more, the excess of the old kharab must be apportioned to the several new Pôt numbers, in proportion to their total areas and in addition to the new kharab now deducted in the field :

Example.

	Old Survey No.	Pôt No. 1.	New Survey No.
	A. g.		A. g.
Rice culturable area	4 11	Rice culturable area ...	2 13
Unculturable	1 17	Unculturable	0 2
Total ...	5 28	Total ...	2 15
		<i>Pôt No. 2.</i>	
		Rice culturable area ...	1 35
		Unculturable	0 5
		Total ...	2 0
		<i>Pôt No. 3.</i>	
		Rice culturable area ...	0 10
		Unculturable ... ..	.....
		Total ...	0 10
		Rice Total ...	4 25
		Pôt Varkas ...	1 2
		Total area ...	5 27

In accordance with clause I, the Pôt varkas area 1-2 is entered entirely as kharab, and the 15 gunthas of old kharab remaining should be divided over the several new Pôt numbers as follows :—

	A. g.
Old kharab to be deducted in rice land	0 15
New kharab already deducted in rice land	0 7
Excess of old kharab ...	0 8

to be apportioned in the following proportions :

	A. g.	A. g.	A. g.	A. g.
Pôt No. 1	4 25	: 0 8	:: 2 15	: x = 0 4
Pôt No. 2	4 25	: 0 8	:: 2 0	: x = 0 34
Pôt No. 3	4 25	: 0 8	:: 0 10	: x = 0 04

Kharab in the Pôt numbers will thus be confirmed :

					A. g.	A. g.	A. g.
For Pôt No. 1	...	...	...	...	0 2	7 0 4	= 0 6
" Pôt No. 2	...	...	...	...	0 5	+ 0 3½	= 0 8½
" Pôt No. 3	...	...	...	...	0 0	+ 0 0½	= 0 0½

and hence the new Survey number will be :

		Total.		Unculturable.		Culturable.
		A. g.		A. g.		A. g.
Rice Pôt No. 1	...	2 15	...	0 6	...	2 9
" " No. 2	...	2 0	...	0 8½	...	1 31½
" " No. 3	...	0 10	...	0 0½	...	0 9½
Pôt varkas	...	1 2	...	1 2	...	0 0
Total	...	<u>5 27</u>	...	<u>1 17</u>	...	<u>4 10</u>

(5) It must be borne in mind that the above rules apply only to cases in which no record has been kept in the old measurement books of the particulars of the kharab area then deducted. If the entries in the old survey books show in sufficient detail the nature of the kharab, whether given for streams, roads, temples, tanks, &c., and whether for included varkas, such old entries must be accepted and kharab dealt with as ordered in Rules 15 and 16.

(6) Classers should, when examining the kharab confirmed by the measurers, to verify the correctness thereof, ascertain—during the recess—whether in the old classification books there is any record of reasons for deduction of kharab, and, if so, they should correct the kharab confirmed by the measurers wherever necessary as may be required by the rules.

18. In accordance with Government Resolution No. 8036, dated 13th November 1886, forest lands should be numbered in the new Revision Survey maps as follows :—

(1) Where demarcation has been completed and forest numbers have been gazetted all forest blocks should be left blank, that is, not numbered but merely "forest" written in the centre, as is done in the case of village sites, and below the word forest the former Survey numbers comprised in that forest block should be entered as shown in the margin.

Forest.

45-56-57.

(2) Where demarcation has not been completed the forest blocks should not be numbered with the serial number which they would bear if they were not forest, but with the last of the serial numbers after all other new Survey numbers have been numbered in the usual manner; so that when the Forest numbers are gazetted and the new Survey numbers are cancelled in order that the forest blocks may remain blank as in the first case, the cancelling of these new Survey numbers may not upset the serial numbering of all other new Survey numbers. In this case the forest blocks should have written in the centre of them the word "Forest," below it the new Survey number being last in the series, and below that the old Survey numbers comprised in that block as shown in the margin.

Forest.

New Survey Number 261.

150-151-153.

CHAPTER VI.

Theodolite Work.

1. The theodolite karkums will be provided with skeleton maps of stations taken by the Topographical Survey, giving the exact position of each trijunction point on the boundaries of all the villages. These skeleton maps should form the base on which all their work must be done.

2. The theodolite karkums will fix in accurately all the boundary lines from one trijunction point to another, marking off the bends according to the boundary marks now existing in the field.

3. When measuring along the boundary of a village from one old boundary mark to another he should have the village officers and Mahars of that and the adjacent village present with him, and if any small bend in the occupation appears to have been overlooked, and should it, after making allowance for dharsod, be such as to deserve notice, he should consult the people of both villages and take the necessary bend, if both villagers agree; if not, he should report for the orders of the Assistant.

4. In case the boundary line as laid down now, in accordance with existing boundary marks in the field, does not coincide with the boundary line shown in the old map, the matter should be reported to the Assistant, after having verified the correctness of the new work, and the boundary line thus laid down in accordance with existing boundary marks must be considered the true and correct boundary; whatever error exists being that of the old map, which must be corrected.

5. Theodolite karkums, if preceding the measurers in the village, should lay down a good base line, or, if more appear necessary, several, which should be marked in the field by a staff being firmly erected and a small cairn of stones made at the foot of it, and the measurer should take all measurements on these base lines; but if they follow the measurers in the village, they should be careful to ascertain what base lines the measurers have worked on and fix them in on to their map with the theodolite.

6. It will not be necessary for the theodolite karkums to fix in a number of stations after they have laid down a sufficient number of base lines for the measurers to work on, unless Varkas numbers extend far up on the hills or in ravines, where no base lines can be laid down and where it is absolutely necessary to give the measurers theodolite stations to work on, and in such cases they should, as much as possible, make their theodolite stations at the corners or principal bends of old Survey numbers, and note in their field book which corner or bend they have made stations of.

7. Where villages contain large blocks of forest extending to the boundary, the village traverse should only be made up to the point where the forest begins and then be carried along the forest boundary to the other side of the village just as if the forest land did not belong to the village. The forest portion of the village will be plotted on to the new map either from the topographical sheets or from the old Survey map. It is the duty of the Bombay Forest Survey Party to traverse forest boundaries.

CHAPTER VII.

Boundary Marks.

1. Boundary marks—that is, earthen mounds, stone cairns, and simple stones—should be of the following dimensions:—

(1) Earthen mounds (Iranis)—

Length at bottom	...	5 annas.
Do. at top	...	3½ do.
Breadth at bottom	...	2½ do.
Do. at top	...	1 of an anna.
Height	...	1½ annas.

(2) Stone cairns (Bunuj)—

At bottom	...	2 annas square.
At top	...	1½ do.
Height	...	2 annas.

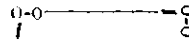
(3) Stones—

Length not less than 1½ cubits (háths).
 Thickness not less than 3 inches.
 Black, hard, and durable stones.

2. All numbers over 5 acres in area should have 2 Iranis at each corner



Numbers of or over 2 acres in area, to have 1 Irani and 2 stones at



each corner, as shown in sketch



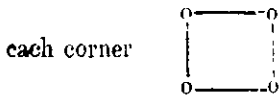
Numbers under 2 acres, but above half an acre in area, to have 3 stones at each corner



¹ In rice and garden this rule should not be applied as far as the erection of earthen mounds is concerned. The corners of rice and garden Nos. in area over 20 gunthas should be demarcated by three stones in smaller Nos. by one stone at each corner. In Yarkas and other lands where by this rule earthen mounds are required stones may be substituted where the lie of the land or wash of water interferes with the preservation of earthen mounds. [Survey Commissioner's No. 199 of 23rd February 1893.]

(2) The demarcation above directed would be sufficient but for the comparative ease with which stones can be removed and were it not for the intricacy and irregularity in shape of Survey Nos. in the Konkan. To ensure ready identification of numbers and to reduce the danger of wilful removal of stones it is ordered as follows—that (1) in rice and garden Khata at points where two or more Nos. meet, one earthen mound shall be erected in lieu of one corner stone to show that spot is a corner, and (2) where rice or garden Nos. project into Yarkas Nos. or into forest the projecting corner shall be shown by the substitution of one earthen mound for one of the corner stones. [Survey Commissioner's No. 8.—2663 of 36th November 1893.]

Numbers of and under 20 gunthas in area to have only 1 stone at



3. By corner of a number must be understood the prominent salient angles at the extremes of the number, and as much as possible opposite each other.

All numbers to have four corners, except numbers which are made in shape of a triangle, when only three corners can with justice be said to exist.

4. All the corners of the old Survey numbers should not now, as a matter of necessity, be considered to form the corners of the new Survey numbers. This opportunity should be taken to cancel corners made, against all rules, at places where there is hardly any bend, and the angles formed by the sides of numbers are very broad; but, if possible, it is desirable to confirm the old corners if made according to rules.

5. In rabi and varkas lands on the straight line boundaries of numbers, stone cairns (Burujs) should be erected between the corners when no intermediate mark exist or earthen mounds where stones are not procurable, as follows:—

(1) None, if Bándh map is 12 chains or under.

(2) One about half-way between the corners if the Bándh map is from 12 to 25 chains.

(3) If the distance between the corners is over 25 chains, a Buruj should be erected at 12 to 15 chains apart.

6. "Burujs" should be erected only on varkas land, but not on the boundary of rice land, which will be marked by stones.

7. "Burujs" should be erected at all the large bends and at all principal salient or re-entering angles of Varkas numbers, which are to be clearly discernible as denoting the boundary of the number.

8. All bends in boundaries of villages should be demarcated by stone cairns (Burujs). Stones should not be used, except where village boundaries run through rice land.

9. Stones are to be erected—

(1) At all bends over 4 annas on the boundary of a rice Survey number, provided that the boundary is not defined by an embankment.

(2) At all bends over 4 annas of rice Survey numbers, even though the boundary may be defined by an embankment of one anna in height where the land on one side the boundary is occupied and on the other is Government waste, forest, village site or land appropriated to any public purpose.

(3) At the four corners of each Pôt number if an application for the demarcation, accompanied with the prepayment of all costs be presented in time by the parties interested.

Survey No. 22,
North.

The mode of demarcating the four corners of Pôt numbers is given in the marginal sketch.



(4) At all the smaller bends of over 8 annas, on boundaries of Varkas numbers which do not require a "Buruji".

(5) At the four corners of all Pardi numbers of which the bends need not be demarcated by stones.

(6) At all the bends of all Pôt numbers or Phalni tukras recorded as inâm land of separate occupancy.

10. All stones now erected in the field for the old Survey numbers not required at the corners should be made use of for the bends without any charge being made for them; these should be used for the bends of the Survey numbers, and not for the Pôt numbers, unless some remain in excess of the requirements of the Survey number.

11. At the points of Trijunction of boundaries of villages a stone, marked on the top with a broad arrow, should be erected where the trijunction points have not already been marked otherwise.

12. Where, in consequence of sheet rock or only very shallow superficial soil existing in places where stones are required, it is impossible to bury the stones, small cairns or "Burujs" of half size should be substituted, and a remark to that effect written in the measurers' books.

13. All matter of detail with regard to the erection of boundary marks should be dealt with in accordance with No. 18¹ of the New Compilation of English Circulars.

¹ This Rule contains detailed instructions to the Measurers for giving effect to the rules on the subject of "Erection of Boundary Marks" in different descriptions of land.

14. Boundary mark inspection by measurers should, except where measurers will have to measure occupied Nos. of rice, garden, and rabi lands, take place invariably once a week : Saturday of each week should be named for that work, and on sending in the Saturday's Wardi report, if the measurer has not done boundary mark inspection, he should give some good reason for not having done so.

15. As soon as the boundary mark inspection is done, the measurer should prepare his Mazoori patrak and Bāndh book at once,—the latter as ordered below :—

(1) The "Phālñi" of all the boundary marks on the boundary of the Survey number should be made according to the Thāna Printed Rules, chapter 8.¹

(2) The total amount chargeable to each Survey number should be divided equally between all the Khātedārs or occupants of Pôt numbers or Phālñi tukras.

(3) The stones erected at the interior corners of each Pôt number in rice land should be charged to the occupant of that pôt number.

(4) Four stones erected at the interior corners of Pôt numbers should be apportioned by "Phālñi," the same as for Survey numbers, to each of the adjacent pôt numbers.

16. Built-up marks erected by the Forest Department should be shown on the maps and field books thus ⊕

The position of Trijunction points and Topographical Survey stations should be shown thus Δ

17. All boundary marks erected for Survey number should be noted near sketch of number in fair sketch books, as shown below, under the following heads :—

For Survey Number.

Iranis ■ 1, 3, 5, 6—total 4.

Burujs □ 2, 4—total 2.

Stones ○ 7, 8, 9, 10—total 4.

For Pôt Numbers.

Total stones ○ 25

Old stones utilized for Survey number ... 8

18. In Varkas numbers where stone cairns (Burujs) now exist, they should be confirmed, unless put up contrary to vahivat, and where the corners of Varkas numbers are defined by a central Buruj and stones as shown in margin, these corners should be considered well defined by the cairns, but in case of removal of the stones, the corner could not easily be ascertained in the field; therefore the stones should be replaced by earthen mounds placed at a distance of 4 annas from the Buruj as shown in sketch ■□■

¹ This chapter contains detailed instructions to the Measurers, but they being in vernacular are not printed in this compilation.

19. Where two or more earthen mounds are put up denoting a corner of a Survey number, no central stone is required ; but if the old corner is confirmed, the central stone marking the corner should not be removed — □ =

CHAPTER VIII.

Orders for Assistants.

1. In all cases the Assistant Superintendent should in commencing work in a tálaka, communicate with the Mámlatdár, and induce him to interest himself in getting the required stones supplied and bandhs erected at the cheapest possible rate : as far as is practicable any reasonable suggestion of the Múnlatdár should be attended to.

2. In some villages the villagers will not supply chain-men and flag-holders. When this occurs, the Assistant must send for the village officers when he is about to commence work in the village, and explain to them that if they will not supply chain-men and flag-holders they will be supplied and paid for by Government, and their cost recovered from the villagers. He should also communicate with the Mámlatdár, and induce him to use his influence, and persuade the villagers to supply flag and chain-men.

3. There are three courses available for erecting boundary marks :—

(1) The people of the village putting them up themselves without payment.

(2) The people of the village finding a contractor, an inhabitant of the village, to do so.

(3) The employment of a contractor, an inhabitant of another part of the country.

The first of the above plans is the best, and, where the people will do the work in time, should be adopted. The last plan is the worst, and must never be resorted to, except where the first and second plans have been found impracticable. A report on the subject must be made to the officer in charge of the Survey whenever it is necessary to resort to the third course.

Every Assistant Superintendent is responsible for using his best endeavours to keep down the cost of boundary marks ; and where unnecessary expense is caused by his neglect, he may be required to make it good.

4. When testing, numbers in which there is a large difference should be looked at ; and when the difference is large, and cannot be accounted for, it should be placed beyond all doubt that the new measurements are correct. All numbers tested in which the difference between old and new is over 5 per cent., should have the test area shown opposite them, and after the Patraks have been examined they should be sent to the Superintendent.

5. In revision survey Forms the “Khanisumari” and “Isamwar” Forms should not be prepared by the classers in future. The plan of village or “Ghar Nakásha” should be prepared as heretofore by the classers and forwarded to the Superintendent for transmission to the Collector, under whose orders the census of villages will be taken for the future.

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to

KONKAN REVISION SURVEY SUPPLEMENTARY RULES.

1. Original measurement of rice, garden and rabi to be confirmed.
2. Old Survey Numbers of above description containing Pôt Varkas of or above 10 gunthas to be examined.
3. Boundaries of Survey Numbers described in Rule 1, adjacent Varkas Numbers to be examined.
4. Varkas found to be now rice, garden or rabi, how to be dealt with.
5. Measurement of converted Varkas how to be done.
6. Pieces of rice, garden and rabi found in entire Varkas Numbers how to be dealt with.
7. Old Survey Numbers not corrected or altered.
8. Corrections or alterations in entire Varkas Numbers.
9. New measurements how recorded.
10. Old Survey or Pôt Numbers required to be subdivided.
11. Old Survey or Pôt Numbers intersected by new made-roads or Railways.
12. Old Survey or Pôt Numbers of which river or stream forms the boundary.
13. Lands taken up for public or special purposes.
14. New rice, garden, or rabi found in Forest Gurcharan or unoccupied Government land how to be dealt with.
15. Village site boundaries.
16. Boundaries of Municipalities.
17. Pardi Numbers in village sites.
18. Mixed descriptions of land in one Survey or Pôt Number how to be dealt with.
19. New boundary marks to be erected.
20. Remarks to be written in field books regarding all Survey Numbers or Pôt Numbers dealt with.
21. Entire Varkas Numbers to be confirmed as they stand.
22. Oversized Numbers need not be broken up.
23. [Cancelled.]
24. Applications for examination of boundaries of Survey Numbers how to be dealt with.
25. Village Officers required to show new rice, garden and rabi in entire Varkas Numbers.
26. Rabi lands found in Varkas how to be dealt with.
27. Boundary dispute of villages.

28. Boundaries of adjacent villages to be compared and where necessary corrected.
29. Boundaries of Forest lands not to be traversed.
30. Scattered Survey Numbers to be fixed correctly in maps.
31. All Theodolite work to be connected with Topographical Survey stations.
32. All Theodolite work to be done on the triangle check system.
33. Theodolite work how to be plotted
34. Old Survey maps to be made use of as far as possible.
35. Confirmed old Survey Numbers need not be re-plotted.
36. New maps to be made where old Survey map is found to be decidedly incorrect.
37. All matters not referred to in these rules to be disposed of in accordance with Konkan Revision Survey Rules.
38. Original classification to be confirmed.
39. Lands to be re-classed, verified and valued.
40. Varkas need not be re-classed.
41. Khatedars wishing to have Phadni and classification done of their Varkas lands to pay fee for having it done.

APPENDIX E⁽¹⁾.

KONKAN REVISION SURVEY SUPPLEMENTARY RULES.*

1. The original measurement of rice, garden, and rabi lands done with the cross-staff and chain has been found to be generally sufficiently accurate for adoption as it stands, and therefore no time should be wasted in re-measuring Survey numbers originally made of such description of lands.

2. All old Survey numbers of the above description containing, according to the old Survey area described as Pôt varkas of which any one or more pieces (compact and in one block) are of 5 gunthas and upwards in area, must be examined in respect to all such pieces of Pôt varkas, and if no alteration has taken place should be confirmed as they stand. All small pieces of Pôt varkas under 5 gunthas in area, whether aggregating 5 gunthas or more, need not be examined, but should be confirmed as they are. Survey numbers containing only small separate pieces of Pôt varkas all under 5 gunthas in area each need not be examined at all. Rabi land found in Pôt varkas must be divided off separately whatever its area. Detached pieces of rice in entire Varkas numbers under 5 gunthas in area need not be measured. Detached pieces of rice in Pôt varkas (which cannot be included in neighbouring rice presumably) of under 1 guntha in area need not be measured, but a report should be made of such pieces, as the existence of rice cultivation points to the capability of the Pôt varkas being converted into rice.

3. The boundaries adjacent to Varkas numbers of all old Survey numbers of the description given in Rule 1 should be examined, and if no alteration is required, those Survey numbers should be confirmed as originally measured.

4. All lands originally measured as Varkas, either in the above description of Survey numbers or on their boundaries, and now found to be rice, garden, or rabi land should be measured and dealt with in accordance with the Konkan Revision Measurement Rules—Appendix E.

5. In all cases where such measurement is required to be done, the converted varkas only should be measured and added on to or deducted from the original sketch of the Survey or Pôt number, but the whole Survey number should not be re-measured unless it is found by this examination to have been originally measured so incorrectly as to absolutely require re-measurement in full. In short, as little measurement as possible should be undertaken, provided important errors in the original work are not passed over and left uncorrected.

6. All pieces of rice and garden above 5 gunthas in area and rabi above 20 gunthas in area found in entire Varkas numbers should be measured off into separate Survey numbers, and fixed in their proper places inside the entire Varkas Survey numbers. All such newly made Survey numbers should have boundary marks erected in accordance with the Konkan Revision Measurement Rules—Appendix E.

7. All old Survey numbers, except those in which, according to the above rules, correction or alteration has to be made, should be confirmed as they are and need not be examined nor have new boundary marks erected.

* To expedite the revision Survey operations in the Thána and Kolála Districts these Rules were introduced in 1890.

8. Corrections or alterations in entire Varkas numbers does not necessitate re-measurement of such Varkas numbers nor erection of new boundary marks, unless some important error is found which cannot be passed over and must be corrected.

9. All new measurements should be recorded in the measurers' field books as usual with corresponding marks and letters in the old field books showing the bases on which the new measurements were taken, and they should be plotted on the old "pakka" fair field books and on the old maps, and a statement should be prepared for each number altered or corrected in the form of a Kamzasti Patrak showing the increase of area under one head and the proportionate decrease under the other head, so that the work may be easily verified by any other measurer taking up the books.

10. All old Survey or Pôt numbers requiring to be subdivided in consequence of being held by different Khâtedárs or Inám-dárs or containing Government and Inám lands must be subdivided and have new boundary marks erected according to the Konkan Revision Measurement Rules—Appendix E.

11. All old Survey and Pôt numbers which have been intersected by new made-roads or railways, should be made into separate Survey or Pôt numbers and have new boundary marks erected on the road or railway boundary. The line of road or railway should be fixed by theodolite and offsets taken to the sides and pieces where new boundary marks are required should be marked off on the ground at once by the theodolite karkûn. The whole number on either side need not be entirely re-measured.

12. Old Survey numbers of the description given in paragraph 1, of which a river or stream forms the boundary, must have that boundary examined, and wherever any considerable change is apparent, must be measured only as far as may be absolutely necessary to correct that boundary.

13. In all Survey or Pôt numbers in which land has been taken up for a public purpose or for any other special purpose sanctioned by Government, and of which intimation should be received from the Collector or Mâmlatdâr, the land so taken up only should be measured and demarcated according to the Konkan Revision Measurement Rules—Appendix E.—and shown in the maps and sketches as usual, the remaining part of the Survey or Pôt number need not be re-measured entirely.

14. When new rice, garden, or rabi is found in old Survey numbers appropriated for forest or grazing or any other public purpose or recorded as Government unoccupied land, such pieces of new rice, garden, or rabi should not be measured either separately or included in the adjacent occupied Survey numbers, for all such encroachments are unauthorised, and it is a matter for the Collector's decision whether such appropriation of land without permission is to be allowed and given over to the cultivators thereof or not. In all such cases the original boundary of the occupied Survey numbers should be confirmed, new boundary marks erected along that boundary, and the encroachment reported to the Superintendent for communication to, and disposal by, the Collector of the district.

15. If village site boundaries are altered in any way since the original Survey, wherever the adjacent Survey numbers have, in accordance with these rules, to be examined and demarcated, the original boundary should be confirmed, and the encroachment of cultivation on village site or *vice versa* should be reported on for enquiry and decision by the Collector.

16. In the larger towns such as Kalyán, Thana, &c., where municipal limits have been fixed and demarcated, the boundaries of the municipality should be traversed and shown on the survey maps, and none of the lands within that boundary should be noticed in any way by the measurers.

17. Pardi numbers in village sites of whatever description should all be measured in accordance with Rule 14 of Chapter V. of the Konkan Revision Measurement Rules—Appendix E.

18. All old Survey Pôt numbers containing mixed descriptions of lands, such as rice, garden, rabi, should be re-measured only as far as may be absolutely necessary to divide off and make into separate Pôt numbers lands of the different descriptions; whichever description of land is the smallest in area should be measured, and the area deducted from the original area and where the line of division is easily fixed from point to point of the old sketch no re-measurement will be necessary, and the respective areas of each description of land should be ascertained with the area comb, to tally with the area of the original whole Pôt number.

19. New boundary marks according to the Konkan Revision Measurement Rules—Appendix E.—should be erected for all Survey numbers in which the measurer has to make corrections or alterations. All other numbers not examined by him and in which no corrections or alterations have to be made, as well as all entire Varkas Survey numbers need not have boundary marks erected at once. With regard to such Survey numbers that duty will be performed later on by the Agricultural Department.

20. For all Survey or Pôt numbers re-measured, corrected, or altered a remark should be written in his field-book by the measurer, giving the number of the rules under which it has been thought necessary to measure, and for all Survey numbers examined and not altered or which it has not been necessary to examine at all, a remark should be written stating that the original measurements have been confirmed, and the rule quoted under which they have not been even examined.

21. Old Survey numbers of entirely Varkas land should not be wholly re-measured, but their principal corners should be demarcated in the field and plotted on the map after being fixed by verifying chain measurements or by theodolite angles which should be recorded in the field books, so that there may be no difficulty in plotting these numbers in their proper position on a new map should it be necessary to do so. The measurement and demarcation of the intermediate bends will be done hereafter by the Agricultural Department.

(1) Varkas numbers entirely surrounded by rice land will have been practically thoroughly examined and probably sufficiently demarcated by the action of Rules 3, 4, 5: therefore such numbers should be held to have been fully dealt with in the field and their correct area (taken out by scale) as determined at Revision Survey should be recorded. Any boundary marks found necessary should be erected.

(2) Varkas numbers bounded on three sides by rice land and on the fourth side by the village boundary should be similarly treated as their examination in the field will also have been fully done under Rules 3, 4, 5, and 28.

(3) Varkas numbers bounded on three sides by rice land and the correct record of which therefore can be completed with little additional labour by the

measurement of the remaining side should have this measurement done and recorded and the number should be then treated as directed in clause (1).

(1) Where the old boundary marks at the corners of Varkas numbers still exist in the field they may be confirmed, as the substitution of earthen mounds for these will be done hereafter by the Agricultural Department, but in places where new marks may be required they should be erected in accordance with the rules in force.

22. The rule for making Survey numbers of different descriptions of lands of certain fixed areas should be considered in abeyance, and all Survey numbers exceeding the sizes laid down in the Thana Printed Rules should not be broken up, but allowed to stand as they are.

23. [This Rule which referred to the breaking up of old Survey Nos. was subsequently cancelled and therefore not printed.]

24. Applications to have boundaries of Survey numbers examined and demarcated which are not necessarily examined and demarcated in accordance with these rules should be forwarded to the Superintendent with an estimate of the time required for such examination, and if necessary rectification of the old boundaries and orders will be issued to have the work done on payment of the cost of such operations.

25. When the revision of each village is begun the Assistant should issue an order to be given to the village officers by each measurer or theodolite karkun appointed to work in that village, desiring them to point out all scattered pieces of rice, garden, and rabi known to exist in entire Varkas Survey numbers, and the acknowledgment of that order as well as a written statement to be obtained from the village officers on completion of the work to the effect that all such lands have been pointed out to the measurer and disposed of by him and that none remain undisposed of, should be recorded among the village papers under the signature of the measurers concerned.

26. During the general inspection of the village lands done in accordance with these orders by the measurer, all lands producing rabi crops or which are obviously rabi lands should be noted, and if they were originally recorded as varkas the necessary corrections should be made in accordance with the Konkan Revision Measurement Rules—Appendix E.

27. Whenever an application is received complaining of a boundary dispute between two villages or of boundaries of villages not having been properly laid down, the Assistant should examine the disputed ground, and, if necessary, order a boundary dispute map to be prepared, after which the correct boundary should be settled and laid down in accordance with orders on the subject.

28. When working in the field the theodolite karkuns should compare the boundaries of their villages with those of all the adjacent villages, and where both tally, should have new boundary marks erected on the common bound-

¹ The following were the sizes fixed by the Thana printed Rules for the different descriptions of land :—

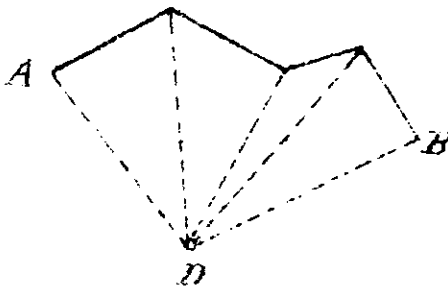
Description of land.	Maximum area of survey No.	Maximum No. of occupants.
Rice	5 acres	Not to contain more than 6 occupants.
Do.	1 to 1½ acres	If held by more than 6 persons.
Do.	8 acres	If held by one person.
Bagrah	Same as Rice	Same as rice.
Rabi	Double the maximum for Rice	Do.
Varkas	(Flat level Varkas = 30 acres)	Nil.
	(Katal or sheet rocks = 50 acres)	
	(Hill sides or sloping Varkas = 125 acres)	

ary in accordance with the Konkan Revision Measurement Rules—Appendix E.—but where the boundaries do not tally he should fix the correct line if undisputed on both original maps in red ink and demarcate it in the field, and if disputed he should report to the Assistant for orders.

29. Should it be necessary to traverse all or most of the boundaries of any village the theodolite karkun should traverse only such portions of the boundaries as lie between the corners of forest numbers. The forest boundaries are all traversed by the Bombay Forest Survey Party, and therefore need not be gone over again by the theodolite karkans of this Department.

30. All scattered Survey numbers of the description given in Rule 1, whether existing at the time of the original Survey or newly measured, should be fixed correctly on the map by the theodolite karkun.

31. All theodolite work done in any village should be connected at both ends with the nearest stations of the Topographical Survey of India and their observations from those stations taken as a check on the correctness of our theodolite work which will have to fit in with the points fixed by the Topographical Survey.



32. All theodolite work should be done on the triangle check system, that is to say, in surveying in any direction, say A B, to fix on the map the correct position of scattered rice fields, a check point D should be selected on some corner of a Survey number, where it can easily be seen from all the theodolite stations, and from each of these an angle should be taken to the flag at D, so that by working out the triangles the correctness of the angles and measurements will be verified.

33. All theodolite work done in each village should be plotted on a separate piece of map paper with longitude and latitude lines drawn thereon by calculation of co-ordinates with the traverse tables, and should be compared with the old map, and if any material difference is found in the position of scattered numbers shown on the original map which will affect the correctness of the Varkas numbers plotted thereon, it should be shown to the Assistant, who will give orders to have a further examination made by theodolite of the principal points which it is absolutely necessary to have fixed accurately on the map. Should this theodolite work result in any one of the boundaries of the village being proved to have been inaccurately surveyed or plotted, the new theodolite work will have to be extended to that boundary line, so that it may be accurately shown on the new map.

34. It is desirable to make use of the old maps whenever it is possible to do so, and therefore no new map need be made unless it becomes absolutely necessary to do so. All new measurement, correction, or alteration work should be shown in red ink on the old maps, so that in the recess a new map may be pricked off from it.

35. Old Survey and Pôt numbers of which the original measurements are confirmed need not be re-plotted in the fair field-books.

36. If the original map is decidedly incorrect and cannot be made use of, a new map should be plotted on the new theodolite kárkun's map with the aid of the old field-books, and in such cases it will be necessary for the theodolite kárkun to fix in on his map the original Survey base lines on which the original work was plotted, and for this purpose all original kacha maps and parighs of villages if obtainable, should be made available.

37. Whenever re-measurement or alterations have to be made they must be made in accordance with the existing Konkan Revision Measurement Rules—Appendix E.—which must also be considered the guide for the disposal of all cases not dealt with in these supplementary rules.

38. As regards original classification it has been found that the work now under examination is fairly correct, and the results may be accepted without further re-classification, therefore on being ordered to revise the classification of any district the Assistant should report in English under which officer's supervision the original classification was done and ask for the Superintendent's instructions with regard to the verification thereof.

39. Under any circumstances the following revision of the old classification will be necessary :—

A. To re-class—

- (1) All new rice-lands except Rabi turned into rice.
- (2) Lands originally classed as rice now recorded as Rabi.
- (3) Lands originally classed as garden, now recorded as Rice, ráh or varkas.
- (4) Lands originally classed as Varkas, now recorded as Rabi or rice.
- (5) All Pullan lands.
- (6) New Pôt varkas land where absolutely none was classed before.
- (7) Lands originally classed as rice and Rabi now recorded as Varkas.

B. To verify but not re-class—

- (1) Lands originally classed as rice, now recorded as garden.
- (2) Lands originally classed as Rabi, now recorded as rice or garden.
- (3) Lands originally classed as Varkas, now recorded as garden.

C. To verify old classification and not necessarily re-class—

- (1) All Khárápat numbers adjoining Shils and on boundaries between Khárápat and Úthalpát lands.

D. To value all Dusota crops in lands not originally classed for second crops.

E. If whilst verifying the old classification under Rule C (1) or valuing the capability for growing second crops under Rule D, an error of 4 annas or more in the old classification is suspected with good reason or comes to notice, the number in which it occurs must be re-classed (sanctioned by Survey Commissioner's memorandum No. 2312 of 14th December 1891).

40. Varkas lands need not be re-classed, but when going over the village lands, the classers should note, and deal with all Rabi lands, originally classed as Varkas and left unnoted by the measurers, in the manner ordered above.

APPENDIX F.

RULES REGARDING TRAVERSE SURVEY.

1. Main circuits must be first run, including an area of ten or twelve square miles, or of from 7,000 to 10,000 acres including several villages. These must then be broken up into minor circuits of one or more villages including 2,000 to 3,000 acres each. In taking these minor circuits any conspicuous natural marks within the village area should have their position fixed by measurement or bearing.

2. Villages up to 5,000 acres may be included in one traverse, any village of more than 5,000 acres must be first included in one main traverse and then subdivided into two or more minor traverses according to size, making use of roads as the lines of subdivision. A minor traverse should be made for each 3,000 to 4,000 acres.

3. In traversing along lines of road or boundaries of villages, offsets should be taken to salient points, and the points on which numbers break off and the distances should be noted in the field book. A printed copy of the original village map should be furnished to the establishment employed upon the new survey.

4. In case of two or more small villages being included in one minor circuit, the point of junction of boundaries should be accurately laid down and bearings and measurements be taken with offsets to bends on the most distant point visible on the boundary which does not form part of the minor circuit.

5. When two or more small villages are included in one minor circuit, points of triple junction ("tawdas") should always form stations. In fact it is advisable to form the stations always on known fixed points which can be afterwards found if necessary, such as the junction of two or more old Survey Numbers. The points of crossing of roads should be noted in the minor circuit field book.

6. We cannot wait to commence cross-staff work till the circuit survey of the village is completed. The only course will be to push the circuit survey as rapidly as possible, in order to have the advantage of the theodolite map before finishing up the detailed village map. Two or three theodolite measurers should be set aside to this circuit work and put on it at once. Great care must be taken to see that their chains are accurate and are kept so.

7. The country is open and stations should be made at a good distance apart, as far in fact as can be readily seen. The measurers must be warned that great care must be taken by them in chaining,—any error or carelessness must be detected as their angles and measurements will be subjected to careful check under the Assistant's own immediate eye.

8. In the circuits, Assistants will follow the system * of traverse surveying described in letter No. 962 of 21st September 1868, which was forwarded

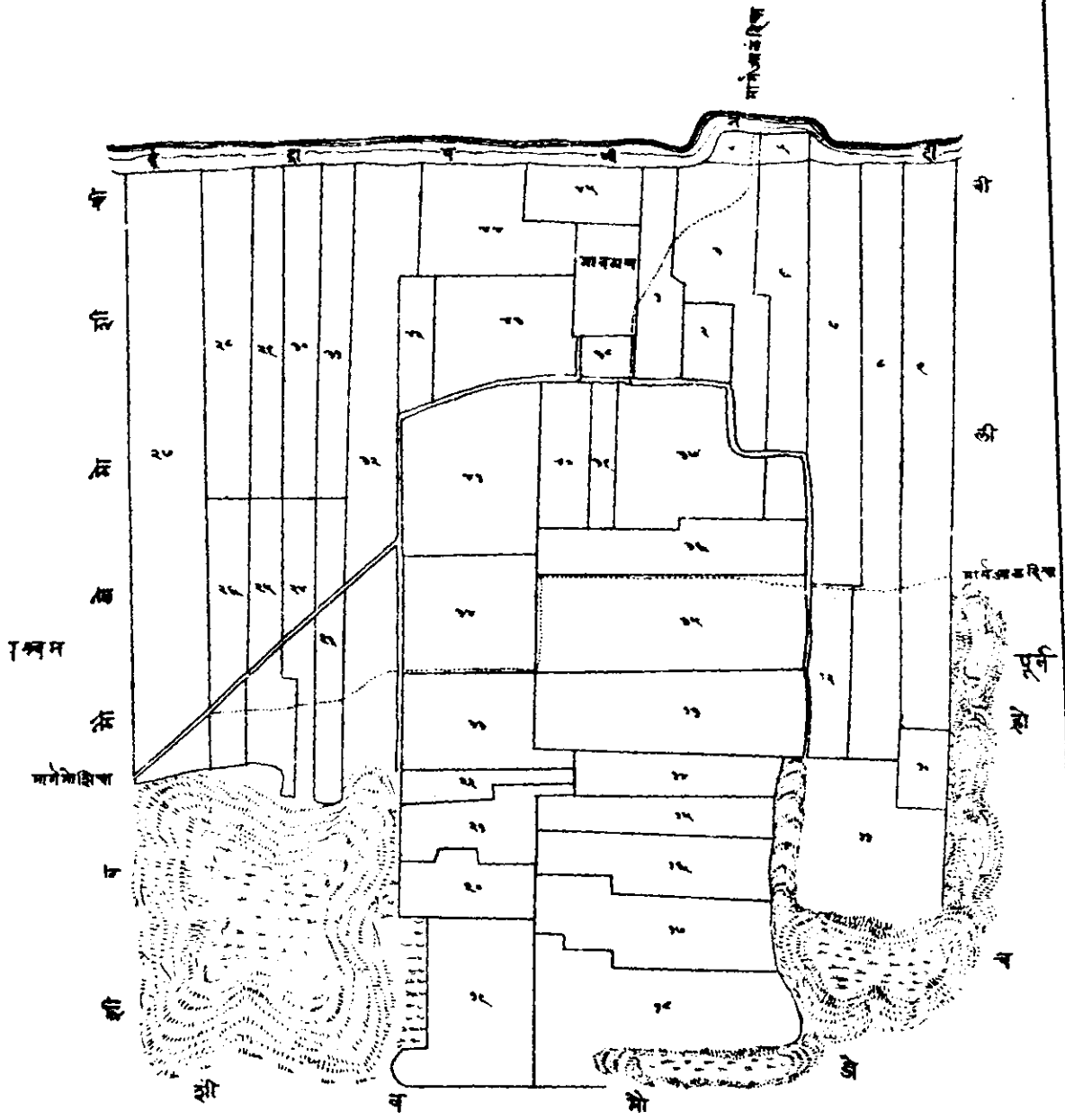
* See Chapter VII, Section I. of this Part, in which the system is described.

to the Deputy Superintendent with letter No. 973 of the 21st September 1868.

9. Great care must be taken to ensure the connection of traverse work done with different instruments and to avoid error arising from instrumental error or local attraction. To effect this the best course will be to take, at all triple junctions of village boundaries, a bearing to a well-defined permanent distant object, the precise point from which it is taken being first fixed by a peg at least a foot long driven up to the head in the ground over which the theodolite should be placed exactly perpendicular. This will enable the same point to be taken up in commencing the traverse of the adjacent village and will ensure all the work being done on a common meridian though at the time unknown.

10. The precautions enjoined in the preceding paragraph must be invariably followed with the greatest care in the case of all main circuits, as on those the accuracy of the taluka map principally depends.

उत्तर



म काशा

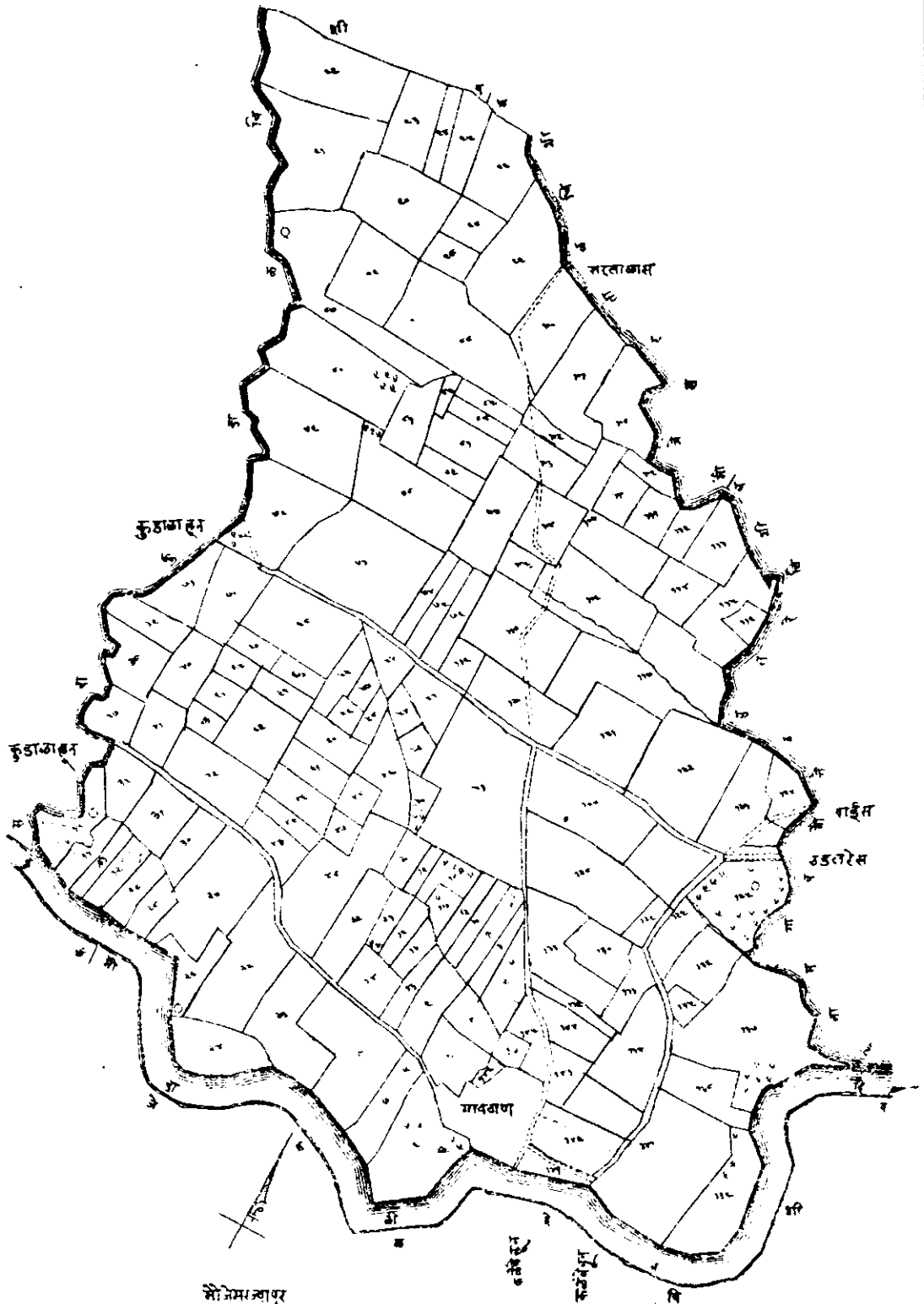
मेडोडुडुक गांव ताकु के हूयेमी

दक्षिण

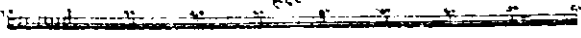
मिन्हापुजे

र हुन का आलेके प्रमाणे कहिहालववशा आहे

Reduced to Scale from a Lithograph
Govt. Photoduc. Office, Poona, 1900



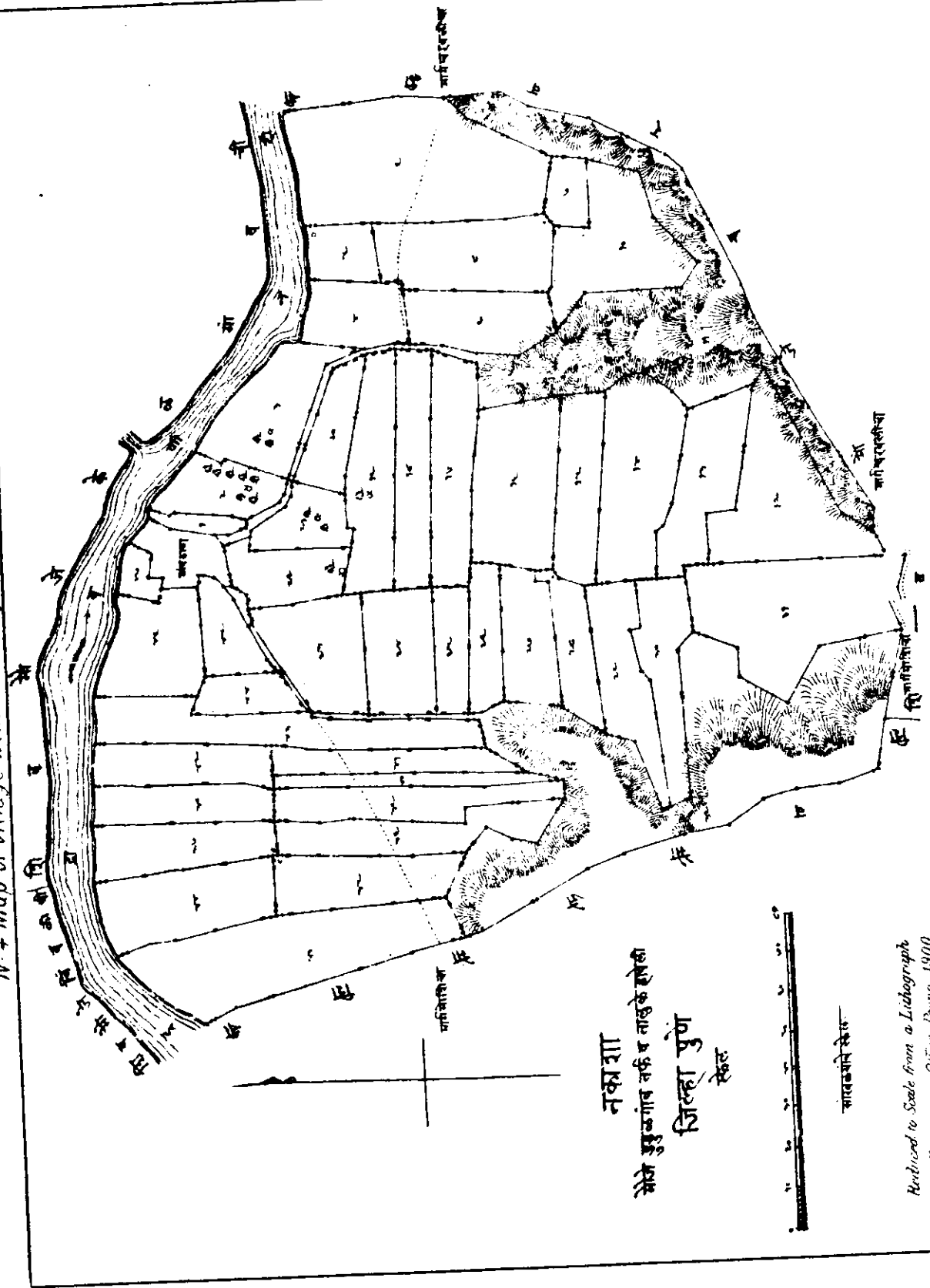
सोत्रेस
 बाईस
 उडलारेस
 सुडलारेस



सुडलारेस स्केल

Reduced to Series from an Lithographic
 Civil Photoduplication Office, Nov. 1909

No. 4 Map of village with boundary accurately traversed 1870-71.

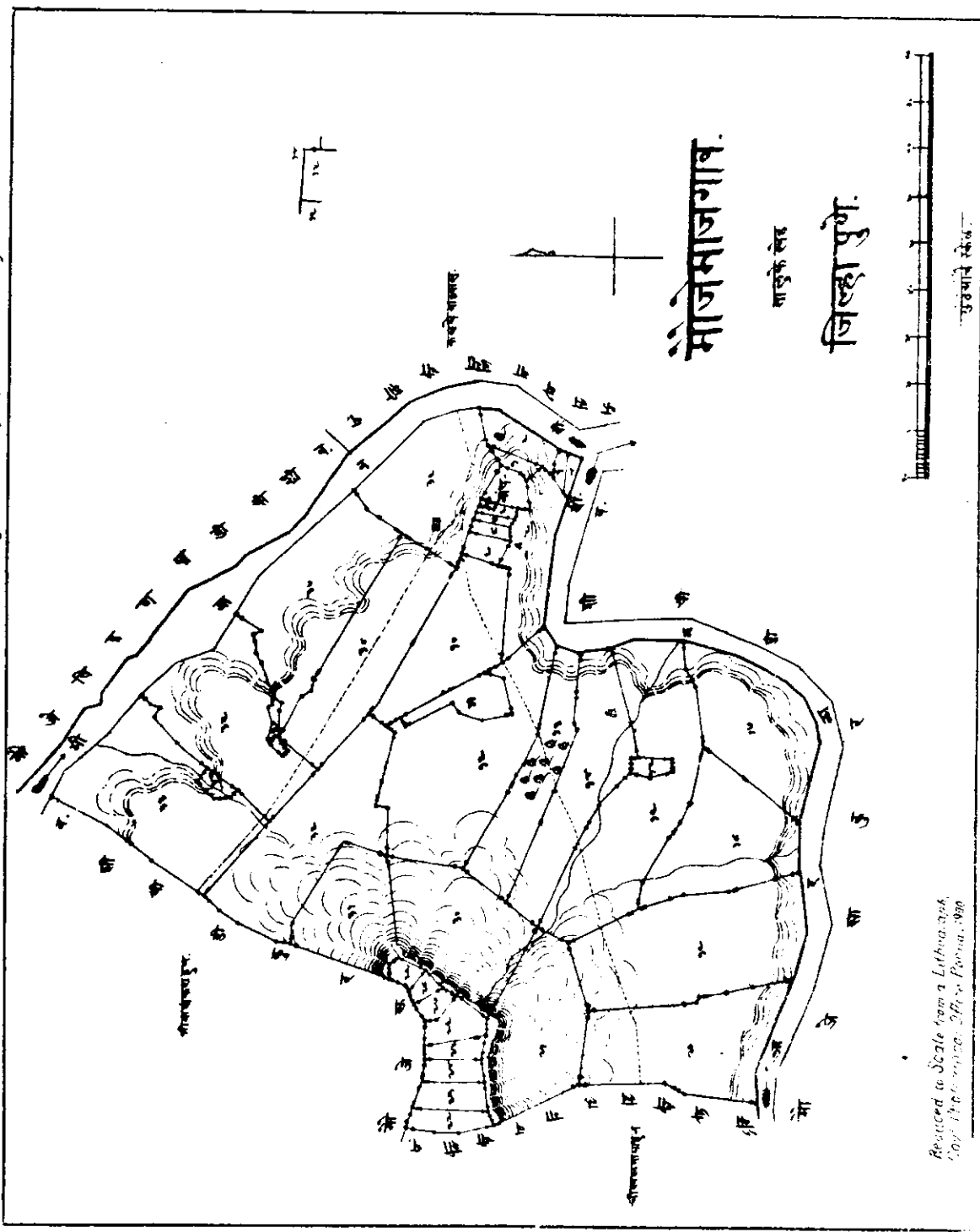


नकाशा
 सोने पुस्तकाने वर्क व ताडके इलेली
 जिल्हा पुणे
 सेकल

साठबरोसे सेकल

Reduced to Scale from a Lithograph
 Govt. Photoduplication Office Poona, 1900.

N^o 5 Map constructed with the aid of points fixed by the Topographical Survey, 1884-85.



Revised to Scale from a Litho. 206.
Copy 1766-1770. 217-218. 219-220.

APPENDIX A.

(Referred to in para. 7 of Chapter III. "Field Measurement.")

ROUGH FIELD BOOK.

Form No. 1.

Page 1.

Village Gumfa.

Táluka Nevása.

District Ahmednagar.

Tippan of Corrections.

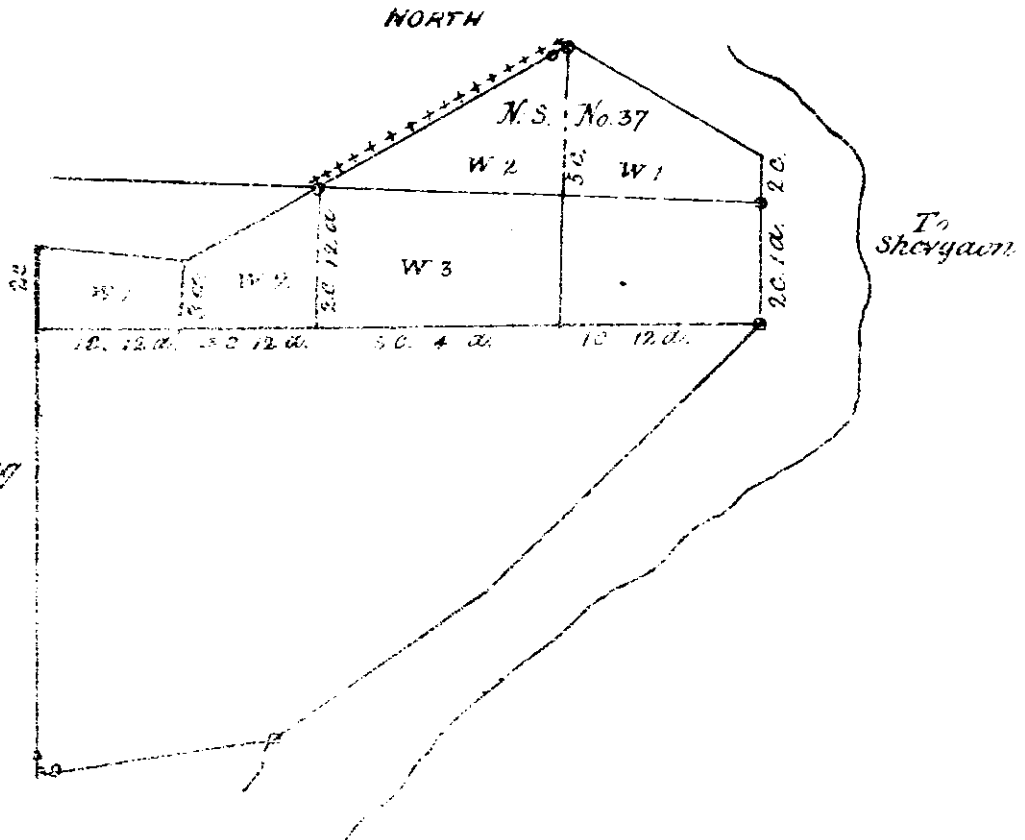
Names of persons present in the field on 24th February 1898.

1. Appaji bin Ramji Patel.

1. Govind Ramchandra Kulkarni.

Revision Survey No. 20.

Total Area.	<i>Deduct</i> —Pôt Kharáb.	Remainder.
A. g.	A. g.	A. g.
5 24	0 0	5 24
	Rate.	Káim Akár
	Rs. a.	Rs. a. p.
	1 2	6 4 9
		6 0 0



Form No. 1.

Page 2.

Village Gumfa.

Táluka Nevása.

District Ahmednagar.

Tippan of Corrections.

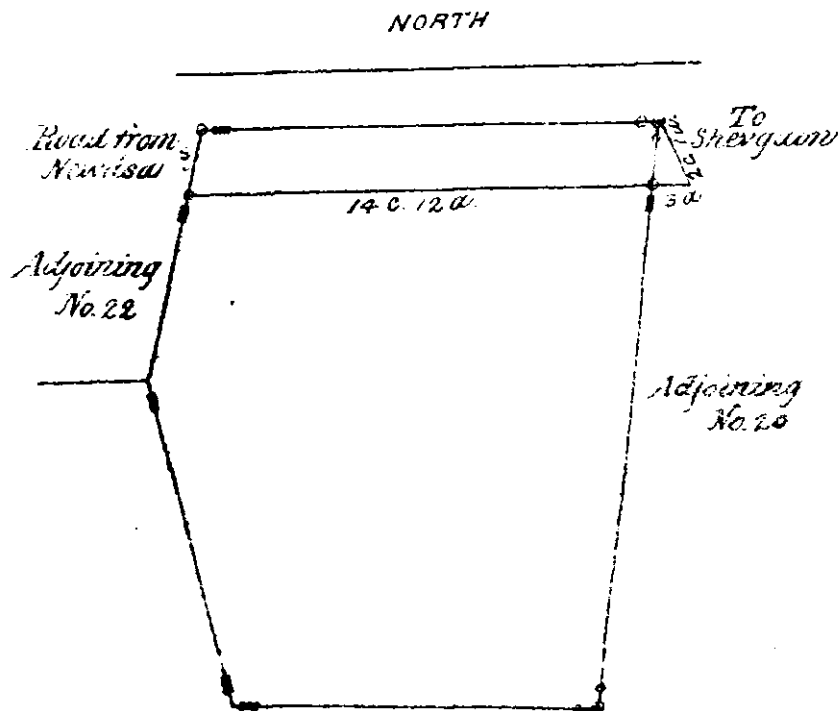
Names of persons present in the field on 25th February 1898.

1. Appaji bin Ramji Patil.

1. Govind Ramchandra Kulkarni.

Revision Survey No. 21.

Total Area.	<i>Deduct—Pót Kharáb.</i>	Remainder.
A. g.	A. g.	A. g.
7 7	0 2	7 5
	Rate.	Káim Akár.
	Rs. a.	Rs. a. p.
	1 8	10 11 0
		Káim Akár.
		Rs. a. p.
		11 0 0



Form No. 1.

Page 3.

Village Gumfa.

Táluka Nevása.

District Ahmednagar.

Tippan of Corrections.

Names of persons present in the field on 26th February 1898.

1. Appaji bin Ramji Patil.

1. Govind Ramchandra Kulkarni.

Revision Survey No. 23.

Total Area.

Deduct—Pót Kharáb.

Remainder.

A. g.
18 2

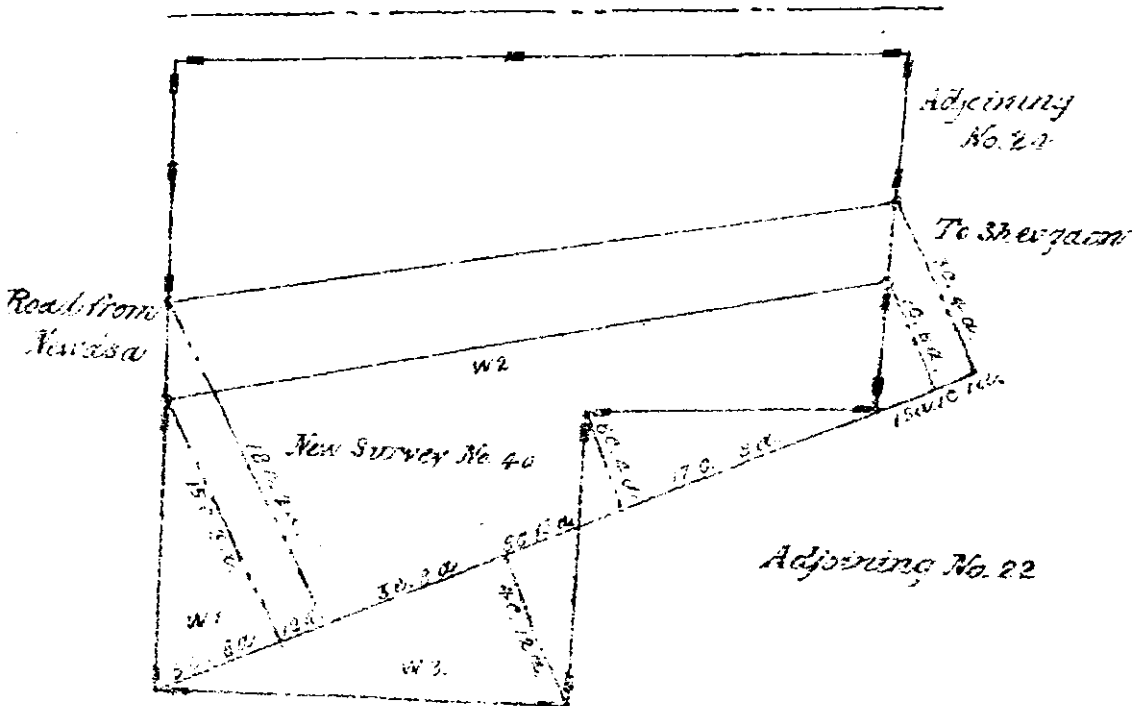
A. g.
0 0

A. g.
18 2

Rate. Kacha Akár.
Rs. a. Rs. a. p.
1 2 20 5 0

Káim Akár.
Rs. a. p.
20 0 0

NORTH



Form No. 1.

Page 4.

Village Gumfa.

Táluka Nevása.

District Ahmednagar.

Tippan of Corrections.

Names of persons present in the field on 26th February 1898.

1. Appaji bin Ramji Patil.

1. Govind Ramchandra Kulkarni.

Revision Survey No. 24.

Total Area.

A. g.
7 0

Deduct—Pôt Kharáb.

A. g.
0 0

Remainder.

A. g.
7 0

Rate.

Rs. a.
1 2

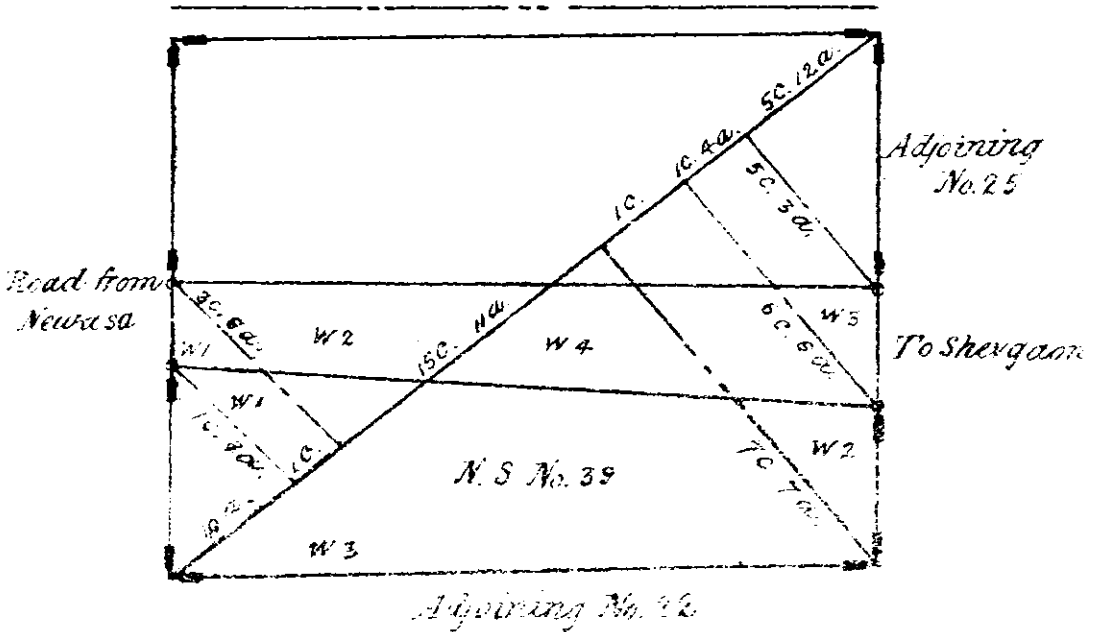
Kacha Akár.

Rs. a. p.
7 14 0

Káim Akár.

Rs. a. p.
8 0 0

NORTH



Form No. 1

Page 5

Village Gumfa.

Táluka Nevása.

District Ahmednagar.

Tippan of Corrections.

Names of persons present in the field on 26th February 1898.

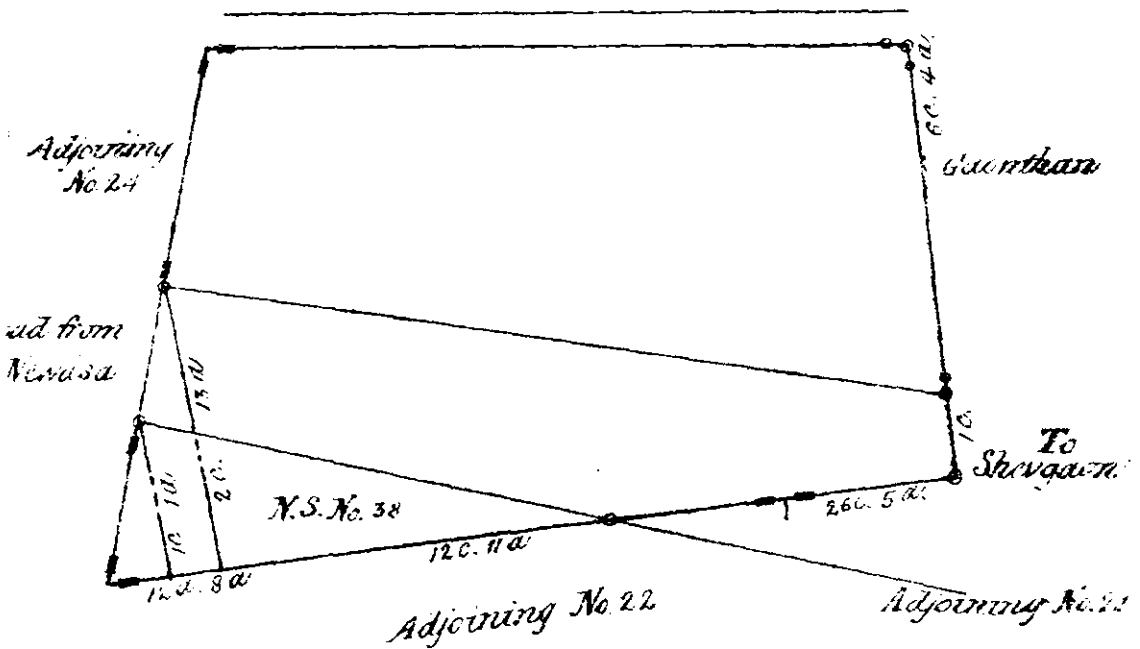
1. Appaji bin Ramji Patil.

1. Govind Ramchandra Kulkarni.

Revision Survey No. 25.

Total Area.	Deduct—Pôt Kharáb.	Remainder.
A. g.	A. g.	A. g.
8 19	0 0	8 19
	Rate.	Káim Akár.
	Rs. a.	Rs. a. p.
	1 0	8 7 6
		Káim Akár.
		Rs. a. p.
		8 0 0

NORTH



FAIR FIELD BOOK.

Page 1.

Fair Field Book.

Corrections made in accordance with Order No. 246, dated 13th December 1897.

Village Gumfa.

Táluka Nevása.

District Ahmednagar.

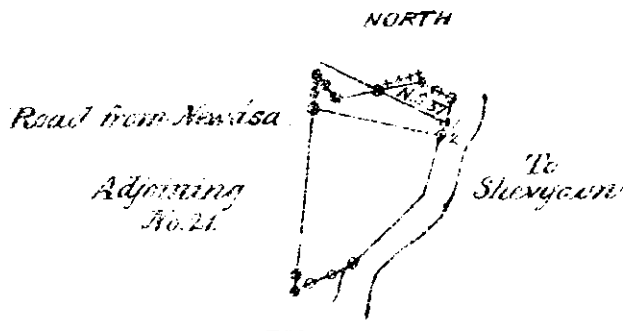
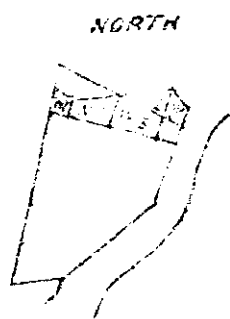
Names of the persons present in the field on 24th February 1898.

1. Appaji bin Ramji Patil.

1. Govind Ramchandra Kulkarni.

Details of the No. according to the Akárband and subsequent alterations.

Description.	Area.	Kharáb.	Remainder.	Rate.	Kucha Akár.	Káim Akár.
	A. g.	A. g.	A. g.	Rs. a.	Rs. a. p.	Rs. a. p.
Area of the No.	5 24	0 0	Dry-crop 5 24	1 2	6 4 9	6 0 0
<i>Deduct—</i>						
Area transferred to road	0 27	0 0	0 27	...	0 12 2	0 12 0
Area of the New Survey No. 37	0 11	0 0	0 11	...	0 4 11	0 4 0
Remainder	4 26	0 0	4 26	...	5 3 8	5 0 0
Total Area	5 24	0 0	5 24	...	6 4 9	6 0 0



Two stones to be erected.

Circle Inspector.

I inspected all the boundary marks on 28th February 1898. They have all of them been properly erected.

Circle Inspector.

Survey No.	Whether Govern- ment or Inam.	Description of Land.	Name of the Holder.	Number of the Wahas.	Triangle or Trape- zium.	OFFSETS.			CHAIN LINE.		AREA.																	
						Lengths.	Sum of the Lengths.	Half the sum of the Lengths.	Lengths.	Sum of the Lengths.	Gauthas.	Annas.	Prati annas.															
20	Government.	Dry-crop	Trimlak Narayan Gosavi.	1	Trapezium.	<i>Transferred to Road.</i>			C. a.	C. a.	C. a.	C. a.	C. a.	C. a.	C. a.	C. a.												
						2 0	0 8	2 8									1 4	1 12	1 12	2	3	0						
																							0 8	2 12	3 4	1 10	4 12	4 12	7	11	8
						2 12	2 1	4 13									2 6 1/2	5 4	1 12	7 0	16	13										8
																							26	12	0			
						<i>New Survey No.</i>												<i>i. e.</i>	27	gauthas.								
						1	Trapezium.	2 1									2 0	5 0	9 1	4 8 1/2	1 12	1 12	7	14	11	20	5	3
						<i>Deduct:</i>												<i>i. e.</i>	11	gauthas.								
						1	Trapezium.	2 12									2 1	4 13	2 6 1/2	5 4	1 12	7 0	16	13	8	11	6	11
11	6	11																										

Abstract.

		A. F.
Transferred to road ...	...	0 27
New Survey No. 37 ...	...	0 11
Remainder ...	...	4 26
Total ...	...	5 24

Page 2.

Fair Field Book.

Corrections made in accordance with Order No. 246, dated 13th December 1897.

Village Gumfa.

Tiluka Nevása.

District Ahmednagar.

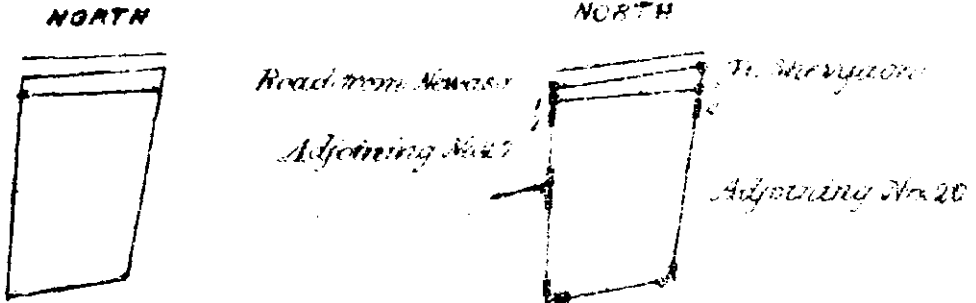
Names of the persons present in the field on 25th February 1898.

1. Appaji bin Ramji Patil.

1. Govind Ramchandra Kulkarn

Details of the No. according to the Akárband and subsequent alterations.

Description.	Area.	Kharáb.	Remainder.	Rate.	Kacha Akár.	Káim Akár.
	A. g.	A. g.	A. g.	Rs. a.	Rs. a. p.	Rs. a. p.
Area of the No. ...	7 7	0 2	Dry-crop 7 5	1 8	10 11 0	11 0 0
<i>Deduct :</i> Area transferred to road.	0 19	0 0	0 19	...	0 11 5	0 12 0
Remainder ...	6 28	0 2	6 26	...	9 15 7	10 4 0
Total Area ...	7 7	0 2	7 5	...	10 11 0	11 0 0



Two stones and two maunds to be erected.

Circle Inspector.

I inspected all the boundary marks on 28th February 1898. They have all of them been properly erected.

Circle Inspector.

Survey No.	Whether Govern- ment or Indm.	Description of Land.	Name of the Holder.	Number of the Wasla.	Triangle or Trape- zium.	OFFSETS.			CHAIN LINE.		AREA.		
						Lengths.	Sum of the Lengths.	Half the sum of the Lengths.	Lengths.	Sum of the Lengths.	Gunthas.	Annas.	Prati annas.
21	Government.	Dry-crop.	Trimbak Narayan Gosavi.	1	Trapezium.	C. a.	C. a.	C. a.	C. a.	C. a.			
						<i>Transferred to road.</i>							
						0 8	2 9	1 4½	14 12	14 15	19	2	3½
						2 1			0 3				
					<i>Deduct:</i>								
				1	Triangle...	2 1	2 1	1 0½	0 3	0 3	0	3	1½
											18	15	2
										<i>i. e.</i>	13	gun	thas.

Page 3.

Fair Field Book.

Corrections made in accordance with order No. 246, dated 13th December 1897.

Village Gumfa.

Taluka Nevása.

District Ahmednagar.

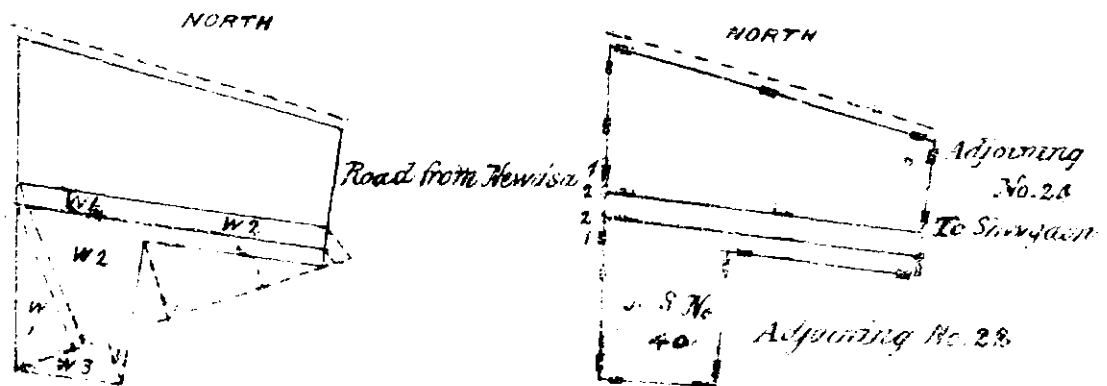
Names of the persons present in the field on 26th February 1898.

1. Appaji bin Ramji Patil.

1. Govind Ramchandra Kulkarni.

Details of the No. according to the Akárband and subsequent alterations.

Description.	Area.	Kharáb.	Remainder.	Rate.	Kacha Akár.	Káim Akár.
	A. g.	A. g.	A. g.	Rs. a.	Rs. a. p.	Rs. a. p.
Area of the No. ...	18 2	0 0	Dry-crop 18 2	1 2	20 5 0	20 0 0
<i>Deduct:</i> Area transferred to road	2 0	0 0	2 0	...	2 4 0	2 4 0
Area of the New Survey No. 40 ...	5 21	0 0	5 21	...	6 3 5	6 4 0
Remainder ...	10 21	0 0	10 21	...	11 13 7	11 8 0
Total Area ...	18 2	0 0	18 2	...	20 5 0	20 0 0



Two stones and two mounds to be erected.

Circle Inspector.

I inspected all the boundary marks on 28th February 1898. They have all of them been properly erected.

Circle Inspector.

Survey No.	Whether Govern- ment or Inām.	Description of Land.	Name of the Holder.	Number of the Wasla.	Triangle or Trape- zium.	OFFSETS.			CHAIN LINE.		AREA.							
						Lengths.	Sum of the Lengths.	Half the sum of the Lengths.	Lengths.	Sum of the Lengths.	Gunthas.	Annas.	Prati annas.					
23	Government.	Dry-crop.	Eknath Trimbak Kulkarni.			<i>Transferred to road.</i>												
						1	Trapezium.	{ 15 3 18 1 }	32 4	16 10	0 12	0 12	12	7	8			
						2	Do.	{ 18 1 3 4 }	21 5	10 10½	{ 3 8 5 15 17 9 0 15 1 1 }	29 0	309	0	8			
						<i>Deduct:</i>										321	8	0
						1	Trapezium.	{ 3 4 1 8 }	4 12	2 6	1 1	1 1	2	8	6			
						2	Do.	{ 1 8 15 3 }	16 11	8 5½	28 11	28 11	239	5	12½			
																241	14	2½
																79	9	13½
																<i>i.e.</i> 2 acres.		
						<i>New Survey No.</i>												
						1	Triangle...	15 3	15 3	7 9½	5 8	5 8	41	12	4			
						2	Trapezium.	{ 15 3 1 8 }	16 11	8 5½	28 11	28 11	239	5	12½			
						3	Triangle...	4 12	4 12	2 6	15 11	15 11	37	4	2			
																318	6	2½
						<i>Deduct:</i>												
1	Triangle...	1 8	1 8	0 12	0 15	0 15	0	11	4									
2	Do.	8 4	8 4	4 2	23 8	23 8	96	15	0									
										97	10	4						
										220	11	14½						
										<i>i.e.</i> 5 acres								
										21	gunthas.							

<i>Abstract.</i>		A. g.
Transferred to road ...	...	2 0
New Survey No. 40 ...	...	5 21
Remainder ...	...	10 21
Total ...		<u>18 2</u>

Fair Field Book.

Corrections made in accordance with order No. 246, dated 13th December 1897.

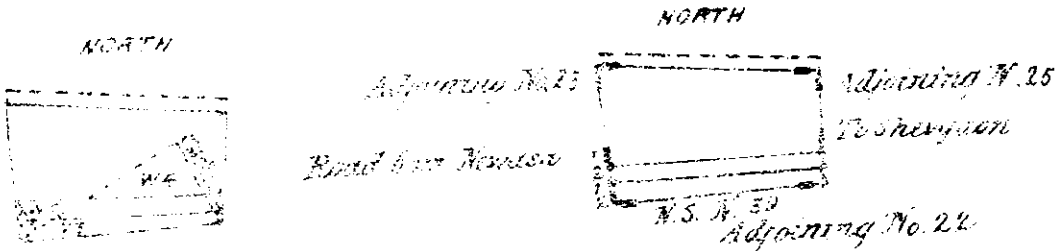
Village Gumfa. Táluka Nevása. District Ahmednagar.

Names of the persons present in the field on 28th February 1898.

1. Appaji bin Ramji Patil. 1. Govind Ramchandra Kulkarni.

Details of the No. according to Akárband and subsequent alterations.

Description.	Area.	Kharáb.	Remainder.	Rate.	Kacha Akár.	Káim Akár.
	A. g.	A. g.	A. g.	Rs. a.	Rs. a. p.	Rs. a. p.
Area of the No. ...	7 0	0 0	Dry-crop 7 0	1 2	7 14 0	8 0 0
<i>Deduct:</i> Area transferred to road.	0 37	0 0	0 37	...	1 0 8	1 0 0
Area of the New Survey No. 39 ...	0 29	0 0	0 29	...	0 13 1	0 12 0
Remainder ...	5 14	0 0	5 14	...	5 0 3	6 4 0
Total Area ...	7 0	0 0	7 0	...	7 14 0	8 0 0



Two stones and two mounds to be erected.

Circle Inspector.

I inspected all the boundary marks on 28th February 1898. They have all of them been properly erected.

Circle Inspector.

Survey No.	Whether Govern- ment or Inam.	Description of Land.	Name of the Holder.	Number of the Wasta.	Triangle or Trape- zium.	OFFSETS.			CHAIN LINE.		AREA.								
						Lengths.	Sum of the Lengths.	Half the sum of the Lengths.	Lengths.	Sum of the Lengths.	Gunthas.	Annas.	Pai annas.						
24	Government.	Dry-crop.	Trimbak Narayan Kulkarni.			<i>Transferred to road.</i>													
						C. a.	C. a.	C. a.	C. a.	C. a.									
						1	Trapezium	{ 1 8 3 6 }	4 14	2 7	1 0	1 0	2	7	0				
						2	Triangle...	3 6	3 6	1 11	{ 15 11 1 0 1 4 }	17 15	30	4	5				
						3	Trapezium	{ 5 3 6 6 }	11 9	5 12½	1 4	1 4	7	3	10				
						4	Triangle...	6 6	6 6	3 3	{ 1 0 15 11 1 0 }	17 11	56	6	1				
						96											5	0	
						<i>Deduct :</i>													
						1	Triangle...	1 8	1 8	0 12	17 11	17 11	13	4	4				
						2	Do. ...	5 3	5 3	2 9½	17 15	17 15	46	8	6½				
						59											12	10½	
						36											8	5½	
						<i>i. e.</i>											37	gunthas.	
						<i>New Survey No.</i>													
						1	Triangle...	1 8	1 8	0 12	18 5	18 5	13	11	12				
						2	Trapezium	{ 6 6 7 7 }	13 13	6 14½	1 0	1 0	6	14	8				
						3	Triangle...	7 7	7 7	3 11½	17 5	17 5	64	6	1½				
						85											0	5½	
						<i>Deduct :</i>													
						1	Triangle...	6 6	6 6	3 3	17 11	17 11	56	6	1				
						28											10	4½	
						<i>i. e.</i>											29	gunthas.	

<i>Abstract.</i>		A. g.
Transferred to road ...	...	0 37
New Survey No. 39 ...	...	0 29
Remainder ...	...	5 14
Total ...	...	<u>7 0</u>

Page 5.

Fair Field Book.

Corrections made in accordance with order No. 246, dated 13th December 1897.

Village Gumfa.

Táluka Nevása.

District Ahmednagar.

Names of the persons present in the field on 26th February 1898.

1. Appaji bin Ramji Patil.

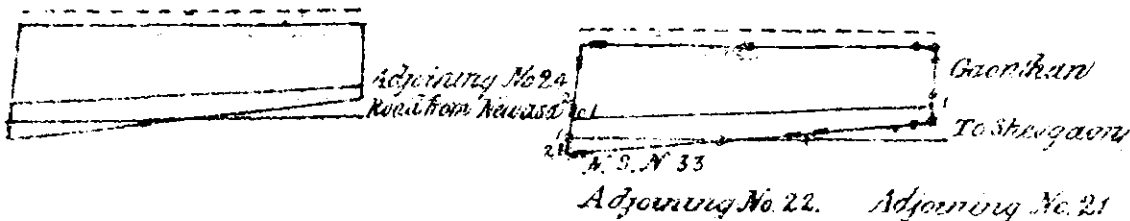
1. Govind Ramchandra Kulkarni.

Details of the No. according to the Akárband and subsequent alterations.

Description.	Area.	Kharáb.	Remainder.	Rate.	Kacha Akár.	Kám Akár.
	A. g.	A. g.	A. g.	Rs. a.	Rs. a. p.	Rs. a. p.
Area of the No. ...	8 19	0 0	Dry-crop 8 19	1 0	8 7 6	8 0 0
<i>Deduct:</i> Area transferred to road.	1 28	0 0	1 28	...	1 11 2	1 12 0
Area of the New Survey No. 38 ...	0 7	0 0	0 7	...	0 2 10	0 4 0
Remainder ...	6 24	0 0	6 24	...	6 9 6	6 0 0
Total Area ...	8 19	0 0	8 19	...	8 7 6	8 0 0

NORTH

NORTH



Three stones and two mounds to be erected.

Circle Inspector.

I inspected all the boundary marks, on 28th February 1898. They have all of them been properly erected.

Circle Inspector.

Survey No.	Whether Govern- ment or Inam.	Description of Land.	Name of the Holder.	Number of the Washa.	Triangle or Trape- zium.	OFFSETS.			CHAIN LINE.		AREA.		
						Lengths.	Sum of the Lengths.	Half the sum of the Lengths.	Lengths.	Sum of the Lengths.	Gunthas.	Annas.	Prati annas.
	Government.	Dry-crop.	Mahadev Dinanath (Gusavi).			C. a.	C. a.	C. a.	C. a.	C. a.			
						<i>Transferred to road.</i>							
				1	Trapezium	{ 1 1 2 13 }	3 14	1 15	0 8	0 8	0 15	8	
				2	Do.	{ 2 13 1 0 }	3 13	1 14½	{ 12 11 26 5 }	39 0	74	5	8
											75	5	0
					<i>Deduct:</i>								
				1	Triangle...	1 1	1 1	0 8½	{ 0 8 12 11 }	13 3	7	0	1½
											68	4	1½
									<i>i. e.</i>	1 acre	28		gunthas.
						<i>New Survey No.</i>							
				1	Triangle...	1 1	1 1	0 8½	{ 0 8 12 11 0 12 }	13 15	7	6	7½
											<i>i. e.</i>	7	gunthas.

Abstract.

Transferred to road ...	...	A. g.	1 28
New Survey No. 38 ...	...	0 7	
Remainder ...	...	6 24	
Total ...	...	8 19	

APPENDIX B.

(Referred to in para. 8 of Chapter III. "Field Measurement.")

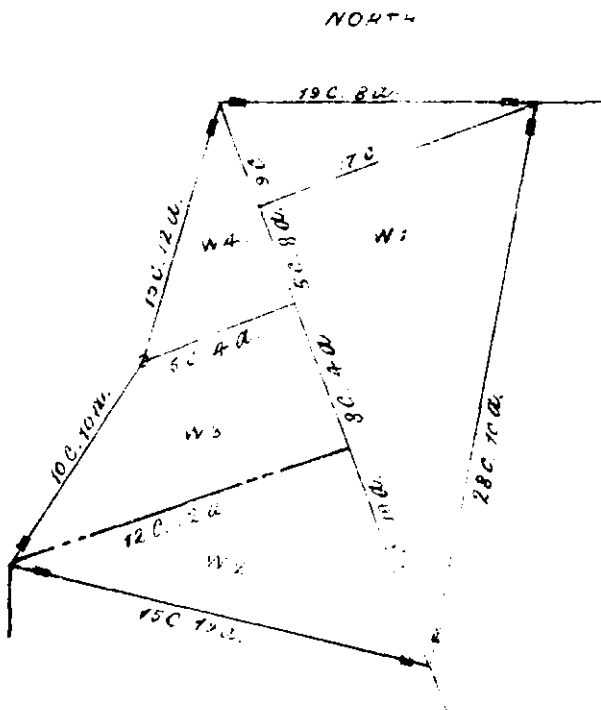
ROUGH FIELD BOOK.

15th December 1898.

Names of persons present in the field.

1. Govinda bin Pandu Patil. 1. Ramchandra Janardan Kulkarni.

Current No.	Revenue Survey No.	Name of field.	Government or Inam.	Name of Karda.	Present or absent.
1	20	Malai	... Government	Govinda valad Bapu Patil.	Present.

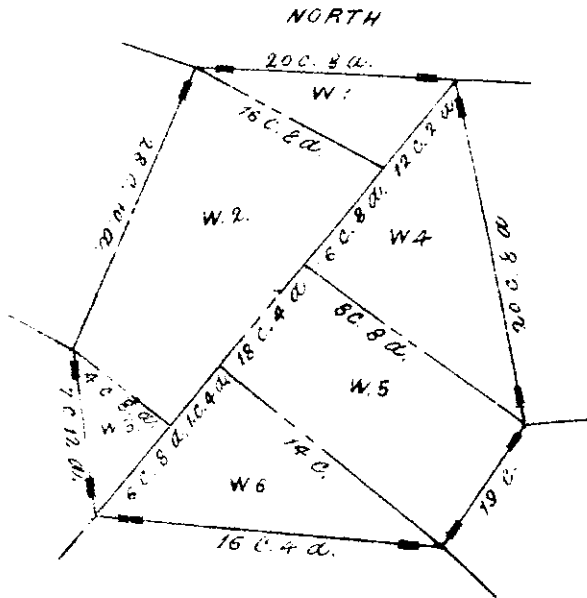


15th December 1898.

Names of persons present in the field.

1. Govinda bin Pandu Patil. 1. Ramchandra Janardan Kulkarni.

Current No.	Revenue Survey No.	Name of field.	Government or Inam.	Name of Karda.	Present or absent.
2	10	Patilwale ...	Government	Bapu valad Patil. Ramji	Present.

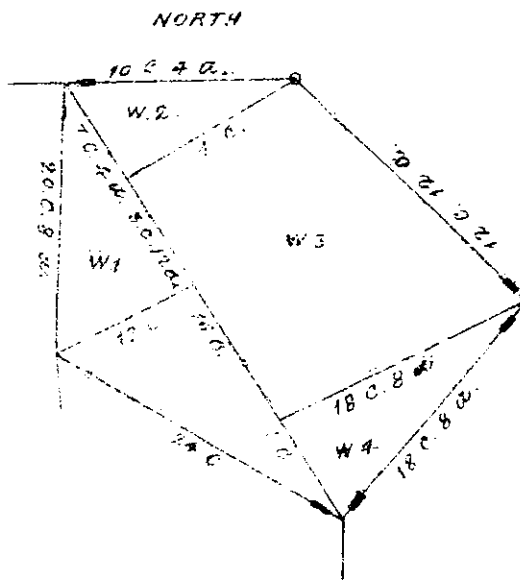


15th December 1898.

Names of persons present in the field.

1. Govinda bin Pandu Patil. 1. Ramchandra Janardan Kulkarni.

Current No.	Revenue Survey No.	Name of field.	Government or Inám.	Name of Karda.	Present or absent.
3	10	Wadawale...	Government	Rama bin Gojala	Present.

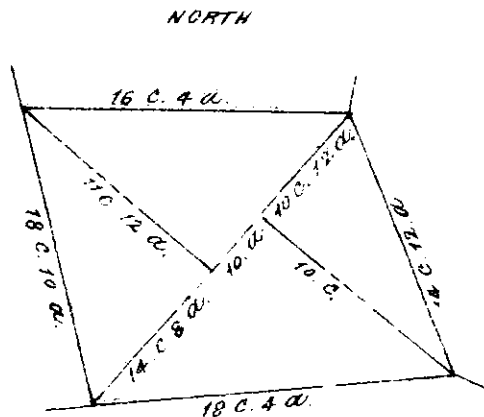


15th December 1898.

Names of persons present in the field.

1. Govinda bin Pandu Patil. 1. Ramchandra Janardan Kulkarni.

Current No.	Revenue Survey No.	Name of field.	Government or Inam.	Name of Karda.	Present or absent.
4	10	Patilwale ...	Government.	Ramchandra Hanmant.	Present.

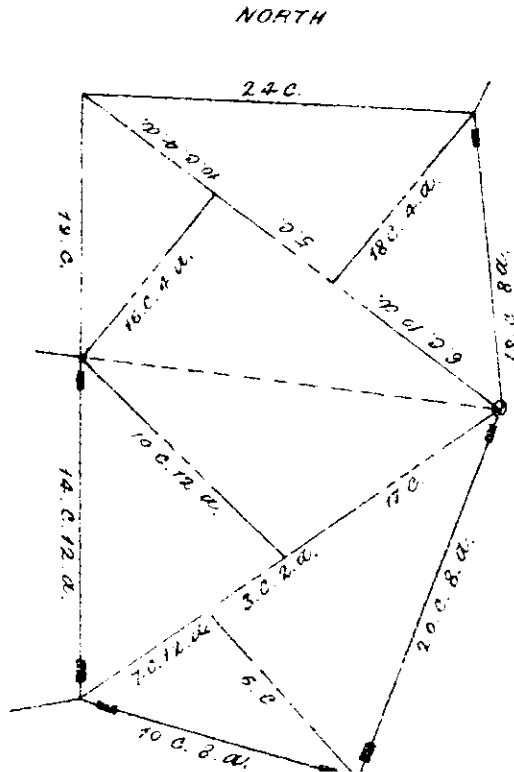


15th December 1898.

Names of persons present in the field.

1. Govinda bin Pandu Patil. 1. Ramchandra Janardan Kulkarni.

Current No.	Revenue Survey No.	Name of field.	Government or Inám.	Name of Karda.	Present or absent.
5	10	Chincháwale	Government	Sitaram Govind Deshmukh.	Present.

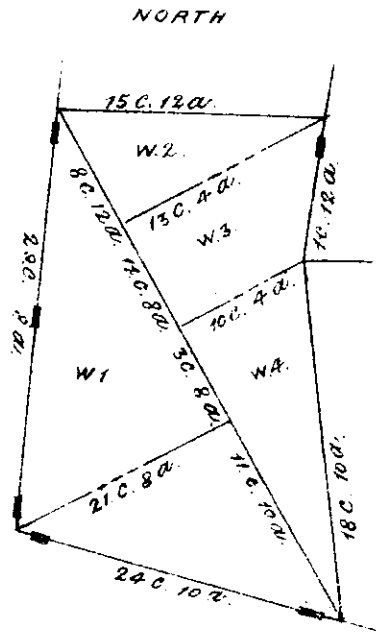


15th December 1898.

Names of persons present in the field.

1. Govinda bin Pandu Patil. 1. Ramchandra Janardap Kulkarni.

Current No.	Revenue Survey No.	Name of field.	Government or Inám.	Name or Karda.	Present or absent.
6	10	Limbwále ...	Government	Hari Govind Gosavi ...	Present.



FAIR FIELD BOOK.

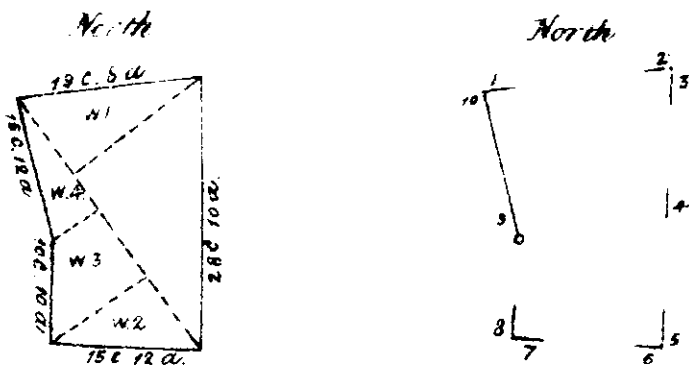
15th December 1898.

Names of persons present in the field.

1. Govinda bin Pandu Patel. 1. Ramechandra Janardan Kulkarni.

Current No.	Revision Survey No.	Revenue Survey No.	Name of field.	Description of Land.	Colour of soil.	Government or Ináin.	Name of Karda.	Present or absent.
1	1	10	Malai.	Dry-crop.	Black.	Government.	Govind valad Bapu Patil.	Present

The boundary marks of this Survey number are shown in the following sketch, and those not yet ready are to be put up under the superintendence of the Bándh Kárkún.



Stone No. 9 and earthen ridges Nos. 1 at 8 and 10 should be erected for this number.

Measurer.

On 18th December 1898 I went into the above number, and having inspected the marks, found them all properly erected as shown in the above sketch.

Measurer.

No. of the Whata.	OFFSETS.			CHAINLINE.		AREA.		Description of Land.	DETAILS OF AREA.		
	Lengths.	Sum of the Lengths.	If 3/4 the sum of the Lengths.	Lengths.	Sum of the Lengths.	Guthas.	Annas.		Total area.	Kharab.	Remainder.
Triangle or Trapezium.	C. a.	C. a.	C. a.	C. a.	C. a.				A. R.	A. R.	A. R.
1 Triangle ...	17 0	17 0	8 8	$\left. \begin{matrix} 9 0 \\ 5 2 \\ 3 4 \\ 10 \end{matrix} \right\}$	32 6	275	3	Dry-crop ...	11 20	0 0	11 20
								Garden ...	0 0	0 0	0 0
								Rice ...	0 0	0 0	0 0
2 Do. ...	12 12	12 12	6 6	0 10	0 10	61	5	12			
3 Trapezium ...	$\left. \begin{matrix} 12 12 \\ 6 4 \end{matrix} \right\}$	18 0	9 8	8 4	8 4	78	6				
4 Triangle ...	6 4	6 4	3 2	$\left. \begin{matrix} 5 2 \\ 0 0 \end{matrix} \right\}$	14 8	45	5				
						460	3	12			
					Area.	Guthas.	Annas.	Prak.	Annas.		
					11	20	2	12			
Total ...									11 20	0 0	11 20

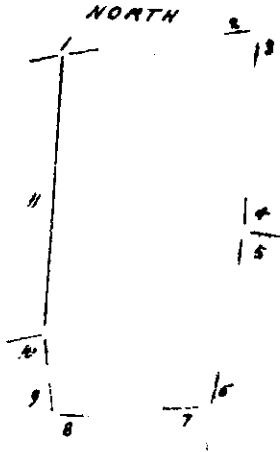
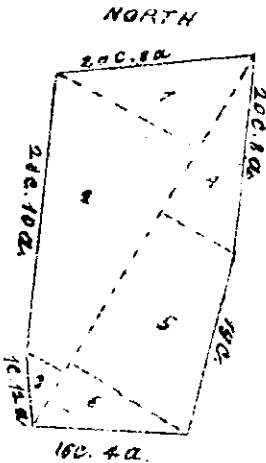
15th December 1898.

Names of persons present in the field.

1. Govind bin Pandu Patil. 1. Ramchandra Janardan Kulkarni.

Current No.	Revision Survey No.	Revenue Survey No.	Name of field.	Description of Land.	Colour of soil.	Government or Indim.	Name of Karda.	Present or absent.
91	2	10	Patil-wala.	Dry-crop.	Black.	Government.	Bapuvalad Ramji Patil.	Present.

The boundary marks of this Survey number are shown in the following sketch, and those not yet ready are to be put up under the superintendence of the Bándh Kárkún.



Earthen ridges Nos. 1 @ 10 should be erected for this number. Mark at No. 11 has been shown under Survey No. 1 previously measured.

Measurer.

On 15th December 1898 I went into the above number and having inspected the marks, found them all properly erected as shown in the above sketch.

Measurer.

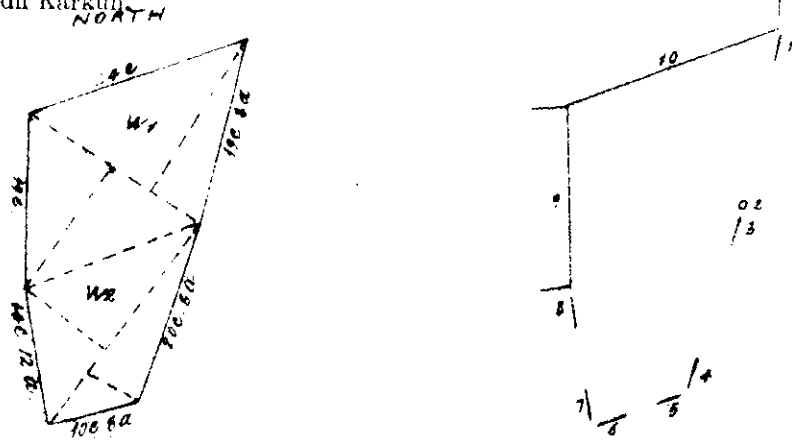
15th December 1898.

Names of persons present in the field.

1. Govinda bin Pandu Patil. 1. Ramchandra Janardan Kulkarni.

Current No.	Revision Survey No.	Revenue Survey No.	Name of field.	Description of Land.	Colour of soil.	Government or Inám.	Name of Karda.	Present or absent.
3	3	10	Wada-wala.	Dry-crop.	Black.	Government.	Rama bin Gopala.	Present.

The boundary marks of this Survey number are shown in the following sketch, and those not yet ready are to be put up under the supervision of the Bandh Karkun.



Stone No. 2 and earthen ridges Nos. 1 and 3 @ 7 should be erected for this number. Mark at No. 8 has been shown under Survey No. 2 previously measured.

Measurer.

On 18th December 1898 I went into the above number, and having inspected the marks, found them all properly erected as shown in the above sketch.

Measurer.

APPENDIX B. TO CHAP. III., FIELD MEASUREMENT. XXVII

No. of the Waqa.	Triangle or Trapezium.	OFFSETS.			CHAIN LINE.		AREA.			Description of Land.	DETAILS OF AREA.			
		Lengths.	Sum of the Lengths.	Half the sum of the Lengths.	Lengths.	Sum of the Lengths.	Guthabs.	Annas.	Padi Annas.		Total area.	Kharab.	Remainder.	
		C. a.	C. a.	C. a.	C. a.	C. a.					A. g.	A. g.	A. g.	
1	Triangle ...	17 0	17 0	8 8	$\left. \begin{matrix} 7\ 4 \\ 3\ 12 \\ 16\ 0 \\ 1\ 0 \end{matrix} \right\}$	28 0	235	...	...	Dry-crop...	13 4	0 0	13 4
											Garden ...	0 0	0 0	0 0
											Rice ...	0 0	0 0	0 0
											Total ..	13 4	0 0	13 4
2	Do. ...	7 0	7 0	3 8	7 4	7 4	25	6	...					
3	Trapezium.	$\left. \begin{matrix} 7\ 0 \\ 18\ 8 \end{matrix} \right\}$	25 8	12 12	$\left. \begin{matrix} 3\ 12 \\ 16\ 0 \end{matrix} \right\}$	19 12	251	13	...					
4	Triangle ...	18 8	18 8	9 4	1 0	1 0	9	4	...					
							524	7	...					
						Acres.								
							Guthabs.							
							Annas.							
							Padi Annas.							
						13	4	7	...					

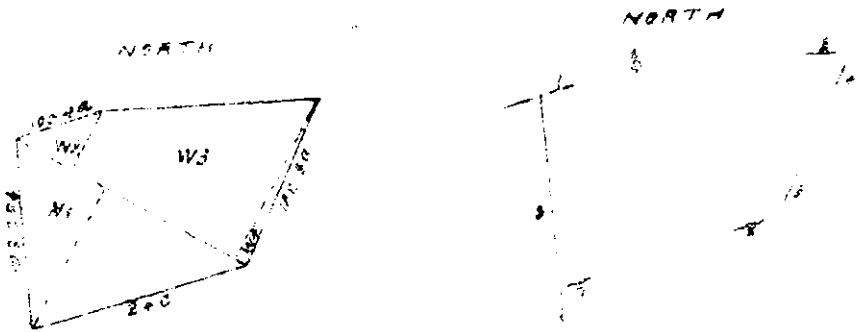
15th December 1898.

Names of persons present in the field.

1. Govind bin Pandu Patil. 1. Ramchandra Janardan Kulkarni.

Current No.	Revision Survey No.	Revenue Survey No.	Name of field.	Description of Land.	Colour of soil.	Government or Inam.	Name of Kardā.	Present or absent.
4	4	10	Patil-wala.	Dry-crop.	Black	Government.	Ramchandra Hanmant.	Present.

The boundary marks of this Survey number are shown in the following sketch, and those not yet ready are to be put up under the superintendence of the Bāndh Kārākūn.



Stone No. 3 and earthen ridges Nos. 1, 2 and 4 @ 8 should be erected for this number. Marks at Nos. 9 and 10 have been shown under Survey Nos. 2 and 3 previously measured.

Measurer.

On 18th December 1898 I went into the above number, and having inspected the marks, found them all properly erected as shown in the above sketch.

Measurer.

APPENDIX B. TO CHAP. III. FIELD MEASUREMENT. **XXIX**

Nos. of the Wasla.	OFFSETS.			CHAINLINE.		AREA.			DETAILS OF AREA.				
	Triangle or Trapezium.	Lengths.	Sum of the Lengths.	Half the sum of the Lengths.	Lengths.	Sum of the Lengths.	Ganths.	Annas.	Prati Annas.	Description of Land.	Total area.	Kharab.	Remainder.
	C. a.	C. a.	C. a.	C. a.	C. a.	C. a.					A. g.	A. g.	A. g.
Trapezium.	$\begin{pmatrix} 15 & 4 \\ 18 & 4 \end{pmatrix}$	84 9	17 4	$\begin{pmatrix} 10 & 4 \\ 5 & 0 \\ 6 & 10 \end{pmatrix}$	21 14	377	5	8		Dry-crop ...	15 11	0 0	15 11
										Garden ...	0 0	0 0	0 0
Do. ...	$\begin{pmatrix} 10 & 12 \\ 0 & 0 \end{pmatrix}$	16 12	8 0	$\begin{pmatrix} 17 & 0 \\ 3 & 2 \\ 7 & 12 \end{pmatrix}$	27 14	233	7	4		Rice ...	0 0	0 0	0 0
										Total ...	15 11	0 0	15 11
						610	12	12					
					Ver. s.								
							Ganths.						
							Annas.						
							Prati Annas.						
						15	10	12	12				

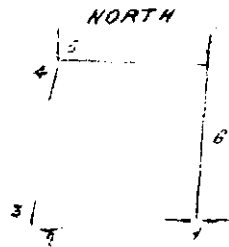
15th December 1898.

Names of persons present in the field.

1. Govind bin Pan-lu Patil. 1. Ramchandra Janardan Kulkarni.

Current No.	Revision Survey No.	Revenue Survey No.	Name of field.	Description of Land.	Colour of soil.	Government or Inam.	Name of Karta.	Present or absent.
5	5	10	Chinch-walla.	Dry-crop.	Black.	Government.	Sitaram Govind Deshmakh.	Present.

The boundary marks of this Survey number are shown in the following sketch, and those not yet ready are to be put up under the superintendence of the Bāndh Kārkūn.



Earthen ridges Nos. 1 @ 4 should be erected for this number. Marks at Nos. 5 and 6 have been shown under Survey Nos. 2 and 4 previously measured.

Measurer.

On 18th December 1898 I went into the above number, and having inspected the marks, found them all properly erected as shown in the above sketch.

Measurer.

APPENDIX B. TO CHAP. III. FIELD MEASUREMENT. XXXI

No. of the Waala.	Triangle or Trapezium.	OFFSETS.			CHAINLINE.		AREA.			Description of Land.	DETAILS OF AREA.		
		Lengths.	Sum of the Lengths.	Half the sum of the Lengths.	Lengths.	Sum of the Lengths.	Gunthas.	Annas.	Prati Annas.		Total area	Kharab.	Remainder
		C. a.	C. a.	C. a.	C. a.	C. a.					A. g.	A. g.	A. g.
1	Trapezium	{ 10 0 11 12 }	21 12	10 14	{ 10 12 0 10 14 8 }	25 14	281	6	4	Dry-crop ...	7 1	0 0	7 1
										Garden ...	0 0	0 0	0 0
										Rice ...	0 0	0 0	0 0
										Total ...	7 1	0 0	7 1
					i.e.	Acres. 7	Gunthas. 1	Annas. 6	Prati Annas. 4				

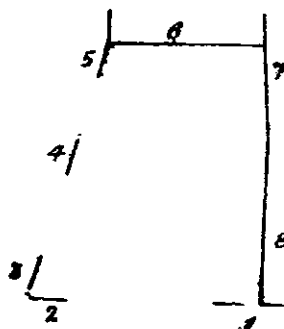
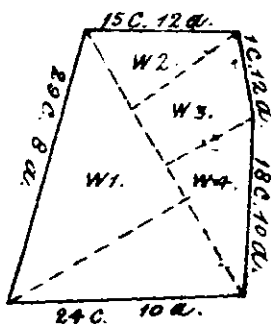
15th December 1898.

Names of persons present in the field.

1. Govind bin Pandu Patil. 1. Ramchandra Janardan Kulkarni.

Current No.	Revision Survey No.	Revenue Survey No.	Name of filed.	Description of Land.	Colour of soil.	Government or Ingh.	Name of Karda.	Present or absent.
6	6	10	Limb-wala.	Dry-crop.	Black.	Government.	Hari Govind Gossavi.	Present.

The boundary marks of this Survey number are shown in the following sketch, and those not yet ready are to be put up under the superintendence of the Bandh Karkun.



Earthen ridges Nos. 1 @ 5 should be erected for this number. Marks at Nos. 6 at 8 have been shown under Survey Nos. 1, 2, and 5 previously measured.

Measurer.

On 18th December 1898 I went into the above number, and having inspected the marks, found them all properly erected as shown in the above sketch.

Measurer.

APPENDIX B. TO CHAP. III. FIELD MEASUREMENT. XXXiii

No. of the Waak.	Triangle or Trapezium.	OFFSETS.			CHAINLINE.		AREA.			Description of Land.	DETAILS OF AREA.		
		Lengths.	Sum of the Lengths.	Half the sum of the Lengths.	Lengths.	Sum of the Lengths.	Gunthas.	Annas.	Prati Annas.		Total area.	Wharsh.	Remainder.
		C. a.	C. a.	C. a.	C. a.	C. a.					A. g.	A. g.	A. g.
1	Triangle ...	21 8	21 8	10 12	{ 8 12 7 5 3 8 11 10 }	31 6	337	4	8	Dry-crop ...	14 1	...	14 1
2	Do. ...	13 4	13 4	6 10	8 12	8 12	67	15	8	Garden ...	...	...	...
3	Trapezium.	{ 13 4 10 4 }	23 8	11 12	7 8	7 8	88	2	...	Rice ...	...	...	...
4	Triangle ...	10 4	10 4	5 2	{ 3 8 11 10 }	15 2	77	8	4	Total ...	14 1	...	14 1
						Acres.	660	14	4				
						Acres.	...	14	4				

PART II.—CLASSIFICATION.

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PART II.—CLASSIFICATION.

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PART II.

CLASSIFICATION.

SECTION I.

DECCAN AND SOUTHERN MARATHA COUNTRY DISTRICTS.

CHAPTER I.

GENERAL REMARKS.

Of the two field branches of a Revenue Survey Department, Measuring and Classing, the latter is the most important, as it forms the basis of a survey settlement, and upon the accuracy of the field work depends the equitable apportionment of the rates of assessment. The framers of the classification rules, being fully alive to the difficulties that would be experienced by learners of classing without having some general rules laid down for their guidance, devised the classification valuation scale given under paragraph 42 of their Joint Report. In the first place, the different soils were classed under three orders, and a maximum depth of $1\frac{3}{4}$ cubits fixed as sufficient to raise a good crop of any kind of cultivation, dry or irrigated, and the 1st class, value 16 annas, assigned to soils of that depth coming under the 1st order, having no deteriorating fault, and then a graduating scale of depths and values was fixed for the remaining classes, which sufficiently differentiated the relative fertility of each class of soil. The 1st order has seven classes, from the 1st to 7th. The 2nd order, seven classes, commencing from the 2nd with a depth of $1\frac{3}{4}$ cubits, and ending with the 8th or $\frac{1}{4}$ cubit, and the 3rd order has four classes, commencing from the 6th with a depth of 1 cubit, and ending with the 9th or $\frac{1}{4}$ of a cubit. The depths and classes assigned are for soils having no deteriorating fault. For each fault present the soil is lowered by one class.

Classification Valuation Scale.

Class.	Relative value of class in annas or 16th of a rupee.	SOILS OF THE		
		1st Order.	2nd Order.	3rd Order.
		Of a fine uniform texture, varying in colour from deep black to dark brown.	Of uniform, but coarser texture than the preceding, and lighter also in colour, which is generally red.	Of coarse, gravelly or loose friable texture, and colour varying from light brown to grey.
1	2	3	4	5
1	16	1 $\frac{3}{4}$ cubits in depth...	.....	.....
2	14	1 $\frac{1}{2}$ do. ...	1 $\frac{1}{2}$ cubits in depth...	.....
3	12	1 $\frac{1}{4}$ do. ...	1 $\frac{1}{2}$ do. ...	.....
4	10	1 do. ...	1 $\frac{1}{4}$ do. ...	.....
5	8	$\frac{3}{4}$ do. ...	1 do. ...	.....
6	6	$\frac{1}{2}$ do. ...	$\frac{3}{4}$ do. ...	1 cubit in depth.
7	4 $\frac{1}{2}$	$\frac{1}{4}$ do. ...	$\frac{1}{2}$ do. ...	$\frac{3}{4}$ do.
8	3	.....	do. ...	$\frac{1}{2}$ do.
9	2	.....	.....	$\frac{1}{4}$ do.
10	1	.....	.....	.....

2. During the very many years that the above classification valuation scale has been in use, the only permanent changes that have been made in it are, 1st, the addition of a 10th class, first in the Southern Marátha Country Survey, and in 1878 in the Deccan Survey, which is to be confined to soil that cannot be cultivated throughout; occasionally, only in a few places where there is a little more soil it may perhaps be ploughed, but the produce could only be used as fodder; land on which even grass will not grow must be considered worse than the 10th class and deducted as unarable; and 2nd, the substitution of the following amended scale for rice lands only, about the year 1870 in the Southern Marátha Country Survey, and in the Deccan Survey in 1886, as experience has proved that a depth of soil of 1 $\frac{1}{4}$ cubits, instead of 1 $\frac{3}{4}$ cubits, is all that is necessary for the cultivation of rice.

Amended scale for the soil classification of Rice lands only.

Class.	Depth of Soil.	Value in Annas.
1	1 $\frac{1}{4}$	16
2	1	14
3	$\frac{3}{4}$	12
4	$\frac{1}{2}$	10
5	$\frac{1}{4}$	8

3. The recognized deteriorating ingredients, or faults, reducing the fertility of soils are, as given under paragraph 44 of the Joint Report, to which, however, has been added the fault of "Gochu," as given in the scale under Rule 2 of Section XII of the Southern Maratha Country Survey rules:—

Number.	Conventional Marks.	Deteriorating ingredients, or faults, by which the fertility of soil is reduced.
1	∴	"Chunkhad." A mixture of minute fragments or nodules of limestone.
2	>	"Gochu." The same as the above, only that the nodules are larger.
3	/	"Utarwat." Sloping surface.
4	∨	"Walsar." A mixture of sand.
5	×	"Reswat." Want of cohesion among the constituent particles of the soil, arising from the presence of fine sand.
6		"Dupan." Liable to be swept over by running water.
7	□	"Upalwat." Excess of moisture from surface springs.
8	∧	"Kard." Clayey soil, which when dry turns very hard, which does not easily absorb water, and which if once wetted does not dry soon. It is sometimes so bad that even grass will not grow on it. In this case it should be entered as Parampok (unculturable).

Explanation of faults.

4. (1) In a wet climate minute fragments of lime counteract the effects of excess of moisture, and should not therefore be considered and given as a fault.

(2) Large nodules of lime when met with thickly strewn over a field should be given as a fault, as they tend to materially diminish fertility.

(3) This fault may be given when the surface slopes so much as to prevent moisture being retained in the soil.

(4) As a rule, sand is found more or less in all except clayey soils. When the grains are large, and there is such a quantity present as to cause clods of earth when taken up to crumble, then a fault should be given.

(5) When fine sand is found to such an extent in the soil as to cause want of cohesion, a fault should be given.

(6) In some cases, instead of being a fault, it is an advantage, as the moisture retained in the soil adds to fertility; when, however, the running water washes away the soil, a fault should be given.

(7) Whenever this fault is met with, one or two faults, to meet the extent of damage caused, should be given.

(8) One, two, or three faults should be given, according to its deteriorating effects. As a rule, when two or three faults of clay are in the soil, it is impervious to moisture except in very good seasons of rainfall. Argillaceous clay is the worst kind, on which even grass will not grow; in such a case the land should be entered as unarable. Heavy clods of earth denote the presence of clay and absence of sand: when this is found to be the case, half or one fault should be given according to its presence.

5. The different descriptions of soil met with come under the heads of sandy, gravelly, loamy, clayey, alluvial, village site, and table-land. As the two latter kinds are only occasionally met with, it would be as well to give a short description of each. The village site soil "gao-pandri" is met with within, or in the vicinity of, village sites. It is generally of a light-greyish colour, owing in some cases to its being the earth of walls of houses or of villages, and in others to the plentiful application of manure. It is, however, very fertile. The peculiarity of this soil is want of cohesion, owing to the presence of a large proportion of fine sand, for after a certain depth has been reached by throwing the crowbar, the bar begins by its own weight to sink into the soil. As a rule, the depth of such soil ranges from $\frac{3}{4}$ to $1\frac{1}{4}$ cubits, and is classed under the 2nd order, from the 6th to the 4th class. The fault given is "reswat" X, *i. e.* want of cohesion. "Utarwat" when present should be given. Table-land soil "Patar zamin" is purplish black, or brown in colour, very fertile, but of varying depth, and comes under the 1st order. Great care should be taken to ascertain the depth of this soil by taking several "khashtas" (pits) and throwing the bar, as it is common to get a depth of $\frac{1}{2}$ a cubit, $1\frac{1}{4}$ cubits, or $1\frac{3}{4}$ cubits a few feet apart from each other. This description of soil is classed by striking the average of the several depths taken in a share, or compartment. The lie of the land generally indicates the depth. When clay is present and the soil requires heavy rainfall to saturate it, a fault for "karal" should be given, and the value of the soil reduced by one class.

"Pôt Kharab" deduction.

6. All unculturable land included in a Survey or Pôt number of all villages subjected to the survey system prior to the end of December 1851 should have their Pôt Kharab deductions made as actually found to exist in the field. This course is also to be followed whenever villages are brought under survey for the first time. Villages brought under the survey system subsequent to the 31st December 1851, when being revised, should have the Pôt

Kharab deductions made in consonance with the rules issued on the subject (*vide* Section II,¹ Chapter II, page 20 of the Revision Survey Measuring Rules). Such Pôt Kharab deductions are to be made by the classing branch. The Pôt Kharab rules were drawn up and issued consequent on paragraph² 3 of the Government Resolution quoted below.

Paragraph 3.—With reference to the assessment of Pôt Kharab in districts and tracts assessed before 1854, *i.e.*, in which a re-valuation of soils is required, the Government of India agrees with the Bombay Government in accepting the assurance of Mr. Stewart that the amount of culturable 'Pôt Kharab' entered in the settlement record of the area still remaining to be assessed is of so small amount as to render any necessity for progressive revenues unlikely."

7. Before proceeding to describe the manner in which land is classified, and the average value of a field is worked out, it is essentially necessary to a proper understanding of the subject to give the different rules under which Motasthal, Patasthal, Kuva Bagait, rice lands, &c., are classed, as well as to detail the different increases, "chads," that are put on to lands at the time of classification, or noted for the information of the Superintendent on account of possessing certain advantages.

¹ See Appendix C, to Chapter I. Measurement.

² Government of India Resolution No. 355-R., dated 9th October 1883.

CHAPTER II.

BAGAIT LANDS—MOTASTHAL AND PATASTHAL.

(a) MOTASTHAL.

Villages to be brought under First Survey Settlement.

8. When a field is found to be partly under dry-crop cultivation and partly under well irrigation, the portion of land annually under irrigation and that portion of the dry-crop land taken for rotation, "Pherpali," should be separately measured and the respective areas shown in the classer's Bagait book¹ and the Bagait Takta.² The dry-crop land and the area annually under well irrigation are to be classed according to the classification valuation scale given under paragraph 2 and separately shown. The information to be given regarding wells, &c., will be understood from the entries made in columns 1 to 16 of form of Bagait Takta, combining Motasthal and Patasthal.

9. The mode of reckoning the increase to be made to the annual Motasthal Bagait area by taking from the rotation or "Pherpali" area is the same as in the case of Patasthal Bagait, which will be explained under the head of Patasthal.³

Villages for Revision Survey Settlement.

10. It has been ruled⁴—

"1st.—That in the case of old wells constructed before the first settlement in dry and arid districts, all special water assessment should be abandoned and the maximum Jirat rate alone levied ;

"2nd.—That in the case of new wells constructed subsequent to the first settlement, the ordinary dry-crop rate should be imposed without any addition whatever on account of the new wells";

and in 1874 ruled⁵ as follows :—

"Paragraph 3.—The question has now been very fully discussed. His Excellency the Governor in Council has no hesitation in re-affirming the second order, which has been approved of by the Secretary of State, which has already been productive of good results in encouraging the construction of new wells and which is based on the broad and liberal principle laid down in section 30 of the Survey Act, namely, that improvements made during the currency of a settlement are not to be taxed."

"Paragraph 4.—The opinions that have been elicited during the course of the present correspondence convince Government as to the policy and expedi-

¹ *Vide* Appendix O.

² *Vide* Appendix F.

³ See paragraph 17 of this Part.

⁴ *Vide* Government Resolution No. 4050, dated 22nd August 1871, referred to in Government Resolution No. 1028, dated 25th February 1871.

⁵ *Vide* Government Resolution No. 1028, dated 25th February 1871.

ency of the first rule. It was intended in the first instance to be applicable to the drier talukas of the Deccan Collectorates, where the rainfall is, as a rule, light and uncertain. His Excellency the Governor in Council is now pleased to decide that it should be generally adopted in the Deccan and Southern Marátha Country, but that the Survey Commissioners should at their discretion be empowered, in the case of districts where well irrigation has been carried on on an extensive scale, to impose an assessment which should in no case exceed a well assessment previously levied."

11. At revision survey, therefore, all lands found assessed as Motasthal Bagait at first survey, as well as increased areas of land under assessed wells, together with lands irrigated under new wells are assessed within the rate imposable under the maximum dry-crop rate of each village.

12. Since 1884¹ wells of first, as well as of revision, survey villages, whether old or new, are treated alike with respect to classification. The information necessary for assessing the land is given in Appendix.² Lands under well irrigation are not, therefore, to be measured but noted in shares or portion of a share, as the case may be, in the classification sketch.³

13. Land irrigated by means of water thrown up by "súps," baskets, or wooden scoops by ladling on to higher-lying land, and thence carried by channel, if necessary, are to be classed for soil according to the classification valuation scale that may be applicable to "Khushki" or "Jirait." The number of places at which the water has to be thrown on to higher lying land should be noted, as well as the crop usually raised and those grown during the year of classification in the classer's book.

(b) PATASTHAL.

14. Lands irrigated by water conveyed by means of a pát (channel) obtained from a tank, river, nala, or surface spring are considered as Patasthal in contradistinction to Motasthal, water raised by móts from a well or Budki. Such lands are classed for soil according to the valuation scale given under paragraph 1, and the water according to its supply and duration. This practice has been in force for years in the Poona⁴ and Násik Survey. The latest rules⁵ on the subject were issued on the 3rd December 1877 by the Superintendent, Revenue Survey, Poona and Násik,

¹ Vide Government Resolution No. 2619, dated 26th March 1884.

² Vide Appendix G. ³ Vide Appendix P.

⁴ Vide copy of the superseded rules given in Appendix B.

⁵ A copy of the Khándesh Patasthal rules and of the information to be supplied by classing Assistants is given in Appendix C.

and approved of by the late Colonel W. C. Anderson, Survey and Settlement Commissioner, when the Department passed under his control in 1877.

1st Class.

Water-supply perennial, and capable of growing superior kinds of garden produce such as sugarcane on the same lands with a triennial or quadrennial rotation, or oranges, figs, grapes, plantains, limes sweet and sour, or panvel, without any fear of a deficiency of water.

2nd Class.

Water lasting until the end of April and growing the same kinds of produce as the first class, as also guavas, pomegranates and ginger, but owing to insufficiency of water-supply the produce is inferior to that grown under the 1st class.

3rd Class.

Water lasting until the 15th of March, to enable two good garden crops being grown, such as chillies, potatoes, ratali or bājri, with an after-crop of wheat, or vegetables, or one good garden crop of turmeric.

4th Class.

Water lasting until the 1st of February, to enable one good garden crop being grown, such as bhumiug, or two inferior ones, such as bājri, rala, Indian corn, veri, or mug, with an after-crop of gram, vatana, masur, coriander, methi, lucerne or vegetables.

5th Class.

Water lasting until the 1st of December, to enable one good garden crop to be grown, such as chillies, rice, or vegetables.

6th Class.

Water lasting until the 1st of November, to enable one inferior crop of rice to be grown, or any other ordinary crop aided by a pāt.

15. For first survey villages the form of Bagait Takta¹ to be prepared is that given for Motasthal and Patasthal Bagait combined. This form has been duly filled in as an example, of which columns 17, 18, and 25 refer to Patasthal Bagait.

(1) Information must be given regarding the crops cultivated in such detail as is explained in the rules on the subject for the Bagait Takta.

(2) Information regarding the source of Patasthal irrigation and the pāt must also be given.

(3) From the example attached of the entries in the Bagait book the explanations will be made clear.

16. For revision survey villages the form of Patasthal Bagait Takta is to be prepared according to form.² The entries required to be made in it will be understood from the headings of its columns, and the following clauses:—

¹ Vide Appendix E.

² Vide Appendix H.

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(1) In column 6 the area of the superior crops must be shown in detail, and also that of the minor crops, and the totals of the two kinds should be shown in separate anna valuations.

(2) Whether a number is Government or Inām and its distance in miles from the village should be entered in column 2.

(3) If the Patasthal Bagait has also môt irrigation the class of the well should also be entered in column 9.¹

(4) The Bagait crops that were cultivated in the two years previous to the one in which the revision classification is being done must be entered in the Bagait books and Taktas to all Patasthal Bagait numbers. The information is obtained from the "Pik Pahani Patrak" of the village papers.

(5) The above information should be entered in the Patasthal Bagait Takta in the blank space left in columns 3 to 5 as shown in the form of Bagait Takta attached.

(6) In cases of one old sarvey number being broken up into two or more numbers, all being Patasthal Bagait, the information regarding the past two years' crops should be entered only to the first of the new numbers, and in the other numbers a note should be written stating against which number the information has been entered.

(7) By superior crops are meant those requiring irrigation throughout the year, such as sugarcane, turmeric, &c., and all perennial crops such as plantains, betel vines, &c., and also all orchard crops. Supari and cocoanut trees also come under this heading. Minor crops are those requiring irrigation for only a few months of the year, such as khapli, sweet potatoes, onions, brinjals, &c.

(8) Areas under supari and cocoanut trees only and under those trees mixed with other crops must be shown separately as in the example given below. Also the number of supari and cocoanut trees must be given in detail as shown in the example. Of fruit trees not occupying a continuous area, but standing detached, the number only is to be given. In doing this the number of tamarind and mango trees must be shown separately, and the number of the other trees lumped together.

(9) Care must be taken to always give the area in a number that is under rotation (Therpali Bagait).

	<i>Example.</i>				A. g.
(10)	{	Plantain, cocoanut, and supari trees mixed ...			1 0
Superior Bagait—		Betel leaf vines, cocoanut, and supari trees			
16 annas		mixed ...			1 18
		Cocoanut and supari trees mixed ...			1 20
				3 38	
		Number of Cocoanut and Supari Trees.			
			Large.	Small.	Plants.
	Cocoanut ...	...	273	20	7
	Supari ...	...	224	14	4
Minor Bagait—	}	Area of minor Bagait			
0 anna					0 0
16 Total annas.				Total Acres ...	3 38

¹ Well Position class, 1st or 2nd.

Other fruit trees, their kind and number :

Tamarind 6, mango 31, bullock-heart, lime, jack, and guava trees 15.

A. g.

3 38 Area of Bagait every year.

0 0 Area of rotation Bagait.

(11) Land in a number irrigated both by mô't and pât, if a portion of it is irrigated from one source and not the other, must have the soil classification and area under each source of irrigation shown separately.

(12) All numbers against which Patasthal Bagait of any kind is entered in the original survey papers must be brought into the revision classification Bagait books and Bagait Taktas. In cases where a difference of area exceeding 25 per cent. has taken place in the area irrigated, or in the area respectively irrigated by pât and well, the cause must be explained in a note against each number.

(13) It will be necessary for the Assistant Superintendent to inform the classers from the old classification papers the area of Bagait entered against each original survey number.

(14) The Patasthal Takta is to be made out in the order of the Bandharas ; Bandhara No. 1 coming first with all the numbers watered thereunder, and the area totalled after the last number, and the same for every other Bandhara consecutively.

(15) On the first page of a Bagait Takta an index of the numbers in it should be made in the consecutive order of the revision survey numbers.

(16) The month in which the water classification was made should invariably be entered on all Bagait Taktas. This should be entered in English in any vacant space on the first page of the Bagait Takta, or in the English remarks made by the classing officer, and a Sherâ to the same effect be written in vernacular at the end of the Bagait Takta above the Assistant's signature.

(17) A note must be written in English on the first page of a Bagait Takta stating what has been observed by the classing Assistant regarding the general condition of the Bagait of the village.

(18) This applies more especially to villages in which there is a large quantity of bagait irrigated from pâts, whether the water is derived from streams or tanks. It often appears that the supply of water from these sources is entered as only available for a very few months, perhaps only up to January and February, and notwithstanding large quantities of superior coconut trees are grown, deriving their supply of water from the general dampness of the situation. Whether this Bagait appears flourishing or not is an important fact to note.

(19) A Bandhara statement¹ should be prepared, the English remarks being filled in by the classing Assistant on personal inspection of each Bandhara. The kind of information to be reported on will be understood from the entries in the Bandhara statement.

(20) A Patasthal "Kamal Patrak"² is to be prepared for each village by the Kulkarni and classer together and signed by the village officers.

(21) The distance of each number from the water-supply is to be noted in column 14 of the Patasthal Takta ; this should be measured from the point

¹ Vide Appendix I.

² Vide Appendix J.

where the water enters the first irrigated number. Again, under large pats sometimes a batch of fields lying higher than the rest will be found to which the water has to be raised by damming the pat up or by using a "sup" or lift; points of this kind should be inquired into and noted by the Assistant Superintendent in the Bandhara statement.

17. The area of rotation or "Pherpali" to be reckoned as Bagait is as follows, unless special orders are given to the contrary, for Patasthal and Motasthal Bagait:—

Example 1.—The area of a number is 15 acres, of which 3 acres are annually cultivated as Bagait, and of the remaining 12, 4 acres are taken annually for rotation or "Pherpali" Bagait and 8 acres cultivated as dry-crop. The classification Bhág annas are as follows:—

	A. g.	Classification Bhág Annas.
Annual Bagait ...	3 0	15
Pherpali or rotation Bagait ...	4 0	12
Dry-crop ...	8 0	12

Take one-third of the annual Bagait from the rotation or Pherpali area provided it does not exceed half the Pherpali area. In this case one-third of the annual Bagait is 1 acre, and as it is less than half the Pherpali, the annual Bagait is to be increased by 1 acre, which increases the annual Bagait area to 4 acres. The remaining 3 acres of the Pherpali area should be added to the dry-crop. As the classification Bhág annas of the Pherpali and dry-crop are the same, nothing further is necessary than to add the two areas together, which makes the dry-crop 11 acres and the classification Bhág annas 12. On the other hand, the average Bhág annas of the 3 acres of annual Bagait are 15, and that of the 1 acre of the Pherpali 12; it is therefore necessary after adding 1 acre of the Pherpali to the 3 acres of annual Bagait to deduce the average Bhág annas of the combined area thus:—

	Classification Bhág Annas.	Total Annas.
3 acres annual Bagait ...	15	45 0
1 acre added of the Pherpali ...	12	12 0
—		—
4		57 0
Average Bhág annas ...		14 3

Example 2.—The area of a number is 15 acres, of which 5 acres are annually cultivated as Bagait, and of the remaining 10 acres, 3 acres are taken for rotation or Pherpali Bagait, and 7 acres cultivated as dry-crop. The classification Bhág annas are as follows:—

	A. g.	Classification Bhág Annas.
Annual Bagait ...	5 0	14
Pherpali or rotation Bagait ...	3 0	13
Dry-crop ...	7 0	13

As one-third of the annual Bagait is 1 acre and 27 gunthas, or 7 gunthas more than half the Pherpali area 1 acre 20 gunthas, therefore 1.20 should be added to the annual Bagait, which increases it to 6 acres 20 gunthas, and the remaining 1 acre and 20 gunthas added to the dry-crop, which makes it 5 acres

20 gunthas at 13 annas per acre. As the classification Bhág annas of the annual Bagait 5 acres are 15, and that of the 1 acre 20 gunthas added from the Pherpali area 13 annas, it is necessary after adding the 1 acre 20 gunthas of the Pherpali to the 5 acres of annual Bagait to deduce the average Bhág annas of the combined area :—

		Classification Bhág Annas.	Total Annas.
5 acres annual Bagait	...	... 15	75 0
1 acre and 20 gunthas of the Pherpali	...	... 13	19 6
<u>6½</u>			<u>94 6</u>
	Average Bhág annas	... 14 6	

CHAPTER III.

RICE LANDS.

18. Two sets of rules, according to which the classification of rice lands was carried out in the "Desh" or champaign country, and the "Dáng" or hilly tracts (also the rules for the classification of Jirait lands as they differ from the Desh), are given in an Appendix.¹ The Desh rules were based upon soil and water, and the Dáng on soil, water and embankments. Since the amalgamation of the two offices of Survey and Settlement Commissioner in 1877-78, under the sole charge of the late Colonel W. C. Anderson, that officer for the sake of uniformity made the rules of the Southern Marátha Country generally applicable to all tracts of country, including the two Dángi talukas, Igatpuri of the Násik Collectorate and Akola of the Ahmednagar Collectorate. To all other tracts, the first survey of which was made by the Dáng Survey, the Southern Marátha Country rules were not applied, as parts of talukas Dindori and Násik, in which the Dáng tracts were situated, had already been revised.

19. About ten years after the Southern Marátha Country Survey rules had been in operation in the Poona and Násik Survey, it was, for reasons already stated, deemed advisable to amend the soil classification valuation scale for rice lands only. (*Vide* paragraph 2).

20. Rice land water-supply according to the Southern Marátha Country Survey rules:—

1st Class.

When water is conveyed by means of a pát (artificial water-course) from a good tank, or river, or nála, which yields a plentiful supply till the end of March or April, and when in consequence of the soil irrigated being in a low situation, it continues sufficiently moist to admit of the better kinds of sugarcane being grown every second or third year, without any fear of a deficiency of water, then the supply should be entered in the 1st class.

2nd Class.

When the water is supplied by means of a pát from a good tank, or river, or nála, in the same manner as is shown in the foregoing class, but in consequence of the soil irrigated being in rather an elevated situation, it does not retain so much moisture as that alluded to in the foregoing paragraph, and will not, therefore, produce with certainty a superior crop of sugarcane, but will produce a second rate one, then the supply of water should be entered in the 2nd class.

3rd Class.

The following two paragraphs define the 3rd class:—

(1) When the supply of water is the same as in the 1st and 2nd classes, but the soil irrigated is elevated, or when the soil is not elevated, but the supply

¹ See Appendix D.

of water does not continue after the end of December, or January, and consequently, in either case, sugarcane can only be grown when the rains are very favourable.

(2) When water is not conveyed by a *pât* from a tank, river, or *nála*, but in consequence of the soil being in a very low situation, a sugarcane crop can be grown when the rains are favourable.

4th Class.

When there is a supply of water from a tank, or river, or *nála*, but not sufficient for sugarcane, in consequence of the soil irrigated being in an elevated situation, or when the soil is in a low situation, but without capabilities of irrigation from a tank, or river, or *nála*, and therefore not adapted for sugarcane, but in both cases possessing sufficient moisture to admit of a rice and an after-green crop being grown in one season, or if an after-crop, in consequence of some defect in the soil, cannot be raised, but yet the moisture is sufficient to produce an excellent rice crop, then the supply of water should be entered in the 4th class. In some places in the hilly country bordering on the *gháts*, two rice crops are raised in the same soil in one season, and in such cases it may appear necessary to raise the supply of water above the 4th class. To this there is no objection; but a remark should be made in the classer's book showing the reason for so raising the class.

5th Class.

When the supply is the same as in the last class, but no after-crop can be raised in consequence of the land lying high, or when the supply of water is insufficient for an after-crop, owing to its being taken from a small tank, or from a channel cut to convey the rain water falling on slopes, and owing to these circumstances rather frequent falls of rain during the monsoon are required to ensure a middling rice crop, then the supply should be entered in the 5th class.

6th Class.

When the land is in an elevated situation, and the water is not supplied from a tank, or river, or *nála*, but is wholly dependent on the fall of rain, so that any deficiency in this would cause the soil and crop to dry up, then the supply should be entered in the 6th class.

21. The above rules are well adapted for the country for which they were framed. Local circumstances, however, of the Southern Marátha Country and the Deccan being dissimilar, inasmuch as rice in the former is grown by water obtained from a tank, river, or *nála*, and carried by a channel to the lands to be irrigated, while in the latter rice cultivation is dependent upon surface springs, or rainfall, and the natural advantages of position of the land to receive water by drainage from up-lands and to retain moisture, the rules drawn up for the classification of water for rice lands in the Southern Marátha Country do not meet the requirements of the Deccan—this is more especially the case with respect to the 1st and 2nd water classes—and have therefore been inoperative in the Deccan districts.

Note.—As it is possible that in some parts instances may be met with of low-lying lands receiving water from surface springs until the end of March or April,

and retaining moisture for a longer period to which 1st and 2nd water classes would be applicable, the wording should be as follows:—

1st Class.

Land low-lying receiving water from surface springs up to the end of March or April, and retaining sufficient moisture to grow the better kinds of sugarcane once in two or three years without any fear of a deficiency of water, and during the intervening years capable of growing an excellent rice and a good after-crop.

2nd Class.

Land and water similar to that of the 1st class, but owing to the land not retaining the same amount of moisture, will not therefore produce with certainty a superior crop of sugarcane in two or three years, but a somewhat inferior one, and during the intervening years capable of growing a very good rice and an after-crop.

Of the remaining four water classes of the Southern Marátha Country, clause 2nd of the 3rd, the 4th, 5th, and 6th classes have been applied in the manner given below.

3rd Class.

Land low-lying and retaining sufficient moisture to admit of sugarcane to be grown when the rains are favourable, or to grow in ordinary seasons a good rice and an after-crop.

4th Class.

Land fairly low-lying and retaining sufficient moisture to admit of a rice and an after-crop to be grown in one season, or owing to some defect in the soil an after-crop cannot be raised, yet the moisture is sufficient to raise a good rice crop only.

5th Class.

Land somewhat high-lying receiving water from uplands, which however is insufficient to raise an after-crop, or requiring frequent falls of rain during the monsoon to ensure a middling rice crop.

6th Class.

Land in an elevated situation and wholly dependent for water on rainfall.

Note.—Copy of Rice Classification Rules as applied in the Khándesh Survey (*vide* Appendix E).

22. The rice lands of all first survey villages are considered and classed as old rice, and settled under the maximum rice rate that may be fixed for the village.

Naokhird.

23. "Naokhird,"¹ *i.e.* land converted during the currency of a survey lease from Jirait into rice, is also classed under the rice classification rules. As such lands, however, come under the head of improvements they are not assessed as old rice, but in proportion to the natural advantages of each plot of land with respect to moisture, within the rate imposable under the maximum on favourably situated dry-crop land. As all rice plots included in a Jirait number at first survey, though separately measured, have

¹ *Vide* Appendix K.

not been demarcated with stones, it is impossible to locate the side of each plot on which rice cultivation has been extended, unless the rice plot is distinct from the old and therefore new. The only method, therefore, to separate the old and new rice is to deduct the area of each plot recorded as rice at first survey from that found at revision survey. Each plot in which an increase has taken place as well as the new plot of rice has therefore to be classed both for soil and water.

CHAPTER IV.

RULES REGARDING "CHADS" OR INCREASES TO BE MADE
TO CLASSIFICATION ANNAS.*(a) Scale increases on Dry-crop Soil Classification.*

24.¹ It has been the practice for some years past in the Southern Marátha Country Revenue Survey to apply in certain cases what has been denominated a "Scale chad" or "Scale increase" to the classer's Bhág annas of numbers. But the object of these scale increases has not been always understood by the classing officers. The following are the dry-crop scale increases at present in use, as may be ordered in each case, the increase being placed on the average Bhág annas of the survey number not in the field by the classer, but after applying for and receiving orders on the subject when the classing tapasni is executed:—

SCALE I.

Original Bhág Annas.	Increase.
16 to 12... 1	0 2 0
12 to 10... 1	0 1 6
10 to 8... 1	0 1 0
8 to 6... 1	0 0 6

In the trap districts where this scale was applied no survey field classing as high as even 6 annas would be met with without containing a proportion of the better class of soil.

SCALE 2.

Original Bhág Annas.	Increase.
16 to 12... 1	0 1 6
12 to 10... 1	0 1 0
10 to 8... 1	0 0 6

SCALE 3.

Original Bhág Annas.	Increase.
16 to 12... 1	0 1 0
12 to 11... 1	0 0 9
11 to 10... 1	0 0 6
10 to 9... 1	0 0 3

The first of the above scales of increase was first used in the western districts of Sátára, where there was little waste land, two

¹ Vide Survey and Settlement Commissioner's No. 407, dated 17th April 1878.

Note.—Soil "chad" is not to be applied to land taking alluvial increase. When, however, the soil "chad" gives a higher increase than the alluvial the latter is to be abandoned and the former applied (*vide* Rule 6 of rules relating to lands subject to inundation, paragraph 37).

crops were occasionally raised on the better dry-crop soils, and a dry-crop maximum as high as Rs. 3 was adopted. It became therefore most necessary to devise a plan for protecting the very poor soils in some degree from the effect of a high maximum dry-crop rate which might throw them or keep them out of cultivation. To obtain the revenue which we did obtain, it would have been necessary to adopt a dry-crop maximum higher than Rs. 3 had the scale increase not been imposed, by the adoption of which a higher share of the assessment was imposed upon the superior soils and the lower soils spared.

(1) The second scale was devised for meeting the case of districts possessing the same advantages, but in a minor degree than in the western talukas of Sátara.

(2) Both the first and the second scales have been also used to increase the revenue in Jágbir districts when it was necessary to make up a certain sum which the maximum rate ordinarily applicable would not give. In doing this it became necessary to avoid any over-assessing the poor soils and to impose the extra assessment on the better soils which could best bear it.

(3) The third scale was drawn up for use in the part of the Bijápúr Collectorate of which the assessment has been revised, the object being to throw a somewhat higher assessment in proportion on the better soils than would be imposed by the operation of the ordinary classification valuation.

(4) The present proportional classification valuation was framed when a great part of the land of the country in all Collectorates was waste, especially the better land on which a very high assessment was ordinarily found to have been placed. The result was that the people resorted to the poor soils which were assessed at proportionally very low rates and thus expended their labour to the least productive result.

(5) The classification values were so fixed in the early days of the survey, when capital was scarce in the country, as to afford an absolute premium on the occupation of the better soils, and rather to deter from the occupation of the poor soils so long as better were not taken up. The desired result was attained, the good soils were at once resorted to, and resignations so far as they occurred were confined to the poorer soils. When all the better lands had been appropriated, the next best were gradually taken up and so on, till at present there is very little even of the poorest land which is not either permanently occupied or annually sold for mere grazing at a rate equal to or even in excess of the survey assessment.

(6) It has been everywhere a subject of remark among the people that our assessments were high on the poor soils in proportion to those on the better soils; there was beyond all doubt truth in their remark, but they did not see that there was positive intention in the apparently disproportionate assessment, namely, to turn labour and capital preferentially on to the better soils, the increase of wealth derivable from the cultivation of which would ultimately bring the poor soils into occupation remuneratively.

(7) The desired object having been obtained there is no reason to perpetuate the original preferential rate on the good soils. We might push the classification up, but our classers have been trained to work in one way, and it would be very difficult to give them an entirely new standard; in practice, too, it is found that if they are made to class higher than they are accustomed to do in the better soils, they become uncertain and unequal in their work, and their standard in the lower soils has a decided tendency to be dragged up too, the practical result being worse than if the original standard had been left untouched so far as the lower soils are concerned.

(8) In all classification there is a tendency to avoid the use of the highest classes, and also of the lower classes. A classer would avoid, if he could, classing an entire field up to the very highest rate possible, or down to the very lowest rate, for obvious reasons in regard to the test. Six pies too high or low would not materially affect the assessment of a sixteen (16) anna field—it would only be some 3 per cent; but 6 pies too high in a two (2) anna field would seriously affect the assessment, namely, to the extent of 25 per cent; yet this amount of error producing such different results would present the same appearance in the test returns. It is the duty of the Assistants in charge of the classing establishments to constantly watch over the standard in use by their men and check their inevitable tendency to class the better soils down and the poorer up. Let the Assistants do what they will, the tendency will still exist to a greater or less extent according to the influence of the Assistant Superintendent. The use of a scale increase here comes in and produces the wholesome result of putting a somewhat higher rate on the better soils without touching the poor* soils.

(9) The Assistants in charge of classing establishments must not rely on the possible ultimate application of a scale increase

* Note—To rectify the tendency on the part of classers to over-value poor soils beyond their natural fertility, the scale jantries are so adjusted as to place on them moderate fixed rates of assessment, much lower in fact than would be obtained by the classification Bhag annas and the maximum dry crop rate of the village.

and allow their men to fall into the fault of classing low in high and high in low soils. The scale increases, as far as they go, are intended merely to correct the existing standard when worked in all its integrity.

(b) *Well "Position Class" and other "Chads" for water advantages.*

25. This "chad"¹ or increase is to place some extra classification valuation upon Motasthal garden land as well as upon land possessing the natural advantage of susceptibility of a well being sunk in it to advantage, and is to supersede the 25 per cent. increase given at time of classification to all shares of Motasthal Bagait land from 1st to 7th class.

26. In the case of existing wells "Position class" should be applied at the rate of 5 acres to each môt, if so much land is clearly below the level of the môt, and to an area not exceeding 4 acres, if so much could be watered, looking at the level of possible well in numbers adjacent to existing wells, but not actually having wells now in them. The instances and area of land in which "Position class" is to be given and the scale of increase are as follows:—

1st "Position Class."

1st.—To lands having neither wells nor Budkis, but clearly showing from springs breaking out on the surface that water could be reached within a short depth. To the area under sugarcane cultivation (grown triennially or quadrennially) or to as much land as is capable of growing sugar-cane.

2nd.—To lands having wells or Budkis, and the depth from the wheel to surface of water is within 12 yards, and to lands situated at a distance from the well but receiving water from it by right. "Position class" to be given to as much land as is under the influence of water, but not to exceed 5 acres to a môt (unless actually under irrigation) including "Pherpali." Area to be calculated on the number of môts actually worked, or that can be worked, and not on the number of môts actually working at the time of classification.

2nd "Position Class."

1st.—To lands having wells or Budkis in which the depth from the wheel to surface of water is above 12 and within 18 yards, and to lands having a right to the well water, although situated at a distance, as well as to lands having neither well nor Budki, but from being within 10 chains of an existing well or Budki, and owing to the possibility of getting water were a well to be sunk. To lands under wells or Budkis, the area to be reckoned is the same as has been given for the 1st "Position class," and for lands having neither well nor Budki but for the possibility of getting water were a well to be sunk, area

¹ *Vide* Survey and Settlement Commissioner's No. 1189, dated 8th December 1879, and No. 1281, dated 13th December 1879.

up to 4 acres in all in a number, if so much land can be irrigated looking at level of possible well.

27. Scale of increase to be given :—

Soil Classification.	1st "Position Class," extra Annas.	2nd "Position Class," extra Annas.
From 16 to 8 annas ...	2 0	1 0
„ 7-11 to 6 do. ...	1 6	0 9
„ 5-11 to 4 do. ...	1 0	0 6
Below 4 annas. ...	0 0	0 0

Percolation Class.

28. The object¹ of the Percolation class is to ascertain whether direct benefit has accrued to wells by percolation from proximity to—

1st.—Large irrigational works.

2nd.—Big Government tanks.

3rd.—First class canals leading from pakka Bandharas.

29. Information is to be ascertained at the time of classification and reported on :—

1st.—In the case of old wells the level of the water in the well may have been raised throughout by the construction of the tank or canal, perennial crops may now be grown under it where formerly only winter crops could be grown, or two môtis may be worked where only one could be worked before.

2nd.—In the case of new wells built subsequent to the irrigational work or tank, such facts as the character of the soil and the regularity of the formation as indicating facility of percolation.

30. Percolation class is to be assigned to all wells benefiting² by percolation as follows :—

Wells within 2 chains of the tank or canal, 1st Class.

„ over 2 and within 5 chains „ 2nd „

„ above 5 chains „ 3rd „

31. Wells³ within 5 chains of a nâla that has water till the end of December and having water in them within 5 yards of the surface, should be considered as 1st class.

Indirect advantages from Irrigational works.

32. In this connection it is necessary to ascertain whether lands, though not actually irrigated, receive indirect advantages from the construction of an irrigational work. Classing officers

¹ Vide Survey and Settlement Commissioner's No. 1223, dated 11th June 1884, and No. 1457, dated 11th July 1884.

² Vide Government Resolution No. 1028, dated 25th February 1874.

³ Vide Rule 26, Chapter IV, of the Revised Survey Classing Rules.

are, therefore, directed to make notes from local inquiry as to whether lands under command of such a work, although not actually irrigated, have appreciably increased in value from the fact of the construction of the work. The information gained should be embodied in their statistical reports.

Increase to be given to lands situated within 5 chains of Nālas.

33. Lands situated within 5 chains of nālas, which contain water till the end of December, and on which there would be no difficulty in drawing water by means of a Budki or other contrivance, should have an increase¹ added to the Bhag annas as follows :—

Soil classification.		Additional Class increase.
From 15 to 10	...	One class, 2 annas.
„ 9-11 to 6	...	Half a class, 1 anna.
Under 6	...	No increase.

34. Paragraph 5²—“ Budkis of permanent construction are to be treated as wells. There is no objection to the plan which Colonel Anderson states he has adopted of classing at a higher rate land within a certain distance from a stream from which water can be obtained by means of a Budki. The same principle may be adopted in the case of land which is found to derive benefit from its proximity to a tank. This should form part of the regular process of classification, in order that it may be tested by the classing Assistants in the same manner as other classification returns.”

35. The increase³ of one class for possible Budkis on lands within 5 chains of nālas is not to be applied to lands, 1st, actually Bagait, 2nd, alluvial soils classed as such; but to, 1st, lands on which vegetables are grown by means of hand water, 2nd, dry-crop lands capable of getting water.

36. The “ chad ” or increase⁴ on account of lands being within 5 chains of nālas is not to be applied to, 1st, Patasthal Bagait, and 2nd, rice lands.

(c) Rules⁵ relating to lands subject to inundation.

37. *Rule 1.*—The following descriptions of land are to have an increase of three classes :—

¹ *Vide* Survey and Settlement Commissioner's No. 193, dated 1st February 1873.

² *Vide* Government Resolution No. 1028, dated 25th February 1874.

³ *Vide* Survey and Settlement Commissioner's No. 1366, dated 4th September 1874.

⁴ *Vide* Survey Commissioner's No. S.—2310, dated 2nd November 1874.

⁵ *Vide* Rules issued by the Survey and Settlement Commissioner known as the Kolhapur Rules.

Clause 1.—Where there is a large alluvial deposit, and the land being of an even surface dries quickly, and there is no difficulty in sowing a crop.

Clause 2.—Where there is a large alluvial deposit, and the land is of an even surface but does not dry until about a month after the close of the monsoon, yet owing to the proximity of water, Vangis (brinjals) and other garden crops and superior late dry-crop (Rabi) can be grown.

Rule 2.—The following descriptions of land are to have an increase of two classes :—

Clause 1.—Where there is a large alluvial deposit, but the land is not of an even surface, and retaining the water does not dry quickly, and there is difficulty in sowing a crop.

Clause 2.—Where there is a large alluvial deposit but it does not lie evenly over the land, and in some places is liable to be washed away.

Rule 3.—The following description of land is to have an increase of one class :—

Clause 1.—When the land is overflowed once or twice during the rains, but there is not much alluvial deposit.

Clause 2.—It will be understood from the above three rules how the water class increase is to be applied, but it will sometimes happen that in soil which has only the one class increase applicable to it there will be in one share some soil which is and some which is not inundated: in such cases an increase of only half a class is to be made; similarly this half class increase should be made in land which is usually inundated every year, but is not always so. The villagers should be consulted as to how far the inundation extends, but their statements should not be entirely depended on; an independent opinion should also be formed by observation of the ground, trees and bushes, in which grass and sticks, brought down by the flood, lodging, will show how far the inundation extends.

Rule 4.—Some doubts having arisen as to the manner of applying the half class increase for alluvial, the following additional rules are given :—

Clause 1.—Land which is inundated occasionally, and has some small alluvial deposit on it which is plainly visible, and changes the original colour of the soil and imparts to it a yellowish colour, should always have the alluvial increase. If the alluvial deposit is not sufficient to warrant one whole class increase, then half a class increase should be made.

Clause 2.—Land which is occasionally inundated but has no alluvial deposit on it, none is visible, and except for the statement of the villagers it would not be believed that it was inundated, as in appearance it is exactly similar to land which is not inundated, should not have the alluvial increase. But if the land is good and its fertility and natural moisture increased owing to its being inundated and consequently better crops are obtained, then the standard of classification for such lands should be somewhat high, that is to say, if there is doubt whether a share should be classed 2nd or 3rd it should be classed 2nd, and in this manner the average annas should be brought out half a class or one auna higher than the standard of classification for ordinary dry-crop land. Should the land, however, be liable to be washed away and the crops suffer rather than benefit by inundation in consequence of the presence of clay in the soil, then the land must be classed similarly to other dry-crop soils and no increase for alluvial class should be made.

Rule 5.—The following clauses show how the rates for numbers subject to inundation must be made out with the increase for alluvial, but this increase is not to be applied as a matter of course; the Deputy Superintendent will give orders regarding what amount of increase (chad) is to be put on the original water classification after reference to the Survey Commissioner:—

Clause 1.—In all shares of 1st, 2nd, and 3rd class soil which have an increase of three water classes, these three classes should be increased to six classes or 12 annas in value. If they have an increase of two water classes, these two classes should be increased to four classes or 8 annas in value, and if the increase is of only one class it should be increased to two classes or 4 annas in value. An example is given to show how this is to be done:—

Original Water Class.		Further increase in Classes.		Further increase in Annas.
3	...	3	...	6
2	...	2	...	4
1	...	1	...	2

Clause 2.—In all shares of 4th and 5th class soil which have an increase of three water classes, these three classes should be increased to five classes or 10 annas in value. If the increased water class is two water classes, then these two should be increased to three classes or 6 annas in value; and if the increase is one class it should be increased to $1\frac{1}{2}$ classes, of which the following example is given:—

Original Water Class.		Further increase in Classes.		Further increase in Annas.
3	...	2	...	4
2	...	1	...	2
1	.	$\frac{1}{2}$	...	1

Clause 3.—In all shares of soils lower than 5th class, the water class increase entered in the classing books is alone to be confirmed, and no further increase is to be made. The rates for inundated lands are to be made out as above. In the classing books the increase is to be shown in annas opposite each share on the right hand side, and the increase annas being added to the total annas of the soil classification, the average classification annas and the average with increase to be made out as follows:—

Revenue Survey No. 135.

Class.	Share.	Annas.	Increase.
2-3	1	19	3
2-2	2	33	8
4	3½	35	...
5	1	32	...
6	6	36	...
7	2	9	...
	18	158	11

169

Average Annas ... 8-9

Fixed rate ... 9-5

Clause 4.—In the test returns the increase on classers' and test classification is not to be made according to this rule.

Rule 6.—In numbers containing some shares which have an increase for alluvial deposit and other shares which are not subject to inundation, the increase¹ to be given to the soil classification is not to be made on the shares which have alluvial increase, but only on the shares which are not subject to inundation, and the average rate per acre is to be calculated as follows:—

Average Annas of alluvial shares.

Class.	Shares.	Annas.	Acres.
1-1	1	20	3-85
1-2	2	48	
	3	68	
	Average annas	...	1-6-8

Average Annas of share not subject to inundation.

Class.	Shares.	Annas.	Acres.
3	3	36	9-18
4	2	20	
5	1	32	
	6	88	
	Average Annas	...	9-9
	Scale increase	...	1-0

10-9

¹ See scale increase to be put on soil classification, paragraph 24.

	Acres.	Rate.			Assessment.		
		Rs.	a.	p.	Rs.	a.	p.
Alluvial soil	3-6	1	0	8	4	7	5
Soil not subject to inundation.)	9-18	0	10	9	6	5	7
Total	12-24				10	13	0

By Rule of Three--

Acres.	Assessment.	Acres.
12-24	10 13 0	1
		Rs. a. p.
whereby fixed rate is obtained		0 13 9

Rule 7.— When the increase on alluvial according to Rule 5 of this section is ordered not to be made, but the scale increase¹ is ordered to be made applicable, then in cases of half a class alluvial increase, the increase on original soil classification by scale will exceed that made by alluvial half class, and therefore in these cases the half class alluvial increase must be considered cancelled and the scale increase applied.

(d) Chuds or increases not applicable in certain cases.

38. ² Well Position class will never be applicable to lands within 5 chains of nálas and therefore having the increase of one class for possible Budkis. Neither will it be applicable to lands having alluvial increase.

39. ³ When land is found to be subject both to alluvial increase and "Position class" for existing or possible wells, the one giving the higher increase, is to be applied and the other abandoned.

40. ⁴ The "chud" for alluvial deposit is not to be held to apply to rice lands. Such lands will never be classed for soil beyond the ordinary 16 annas of the scale.

¹ (1) See scale increase to be put on soil classification, paragraph 24.

(2) The additional annas placed on alluvial deposits (*vide* Rules 5 to 7) are to be made use of in those tracts of country where they have been applied.

² *Vide* Survey and Settlement Commissioner's No. 1281, dated 13th December 1879.

³ *Vide* Survey and Settlement Commissioner's No. 724, dated 18th April 1885.

⁴ *Vide* Survey and Settlement Commissioner's No. 1139, dated 20th June 1885.

CHAPTER V.

(a) SPECIAL CLASSIFICATION RULES APPLICABLE TO THE SA'TA'RA COLLECTORATE AND KOLHAPUR TERRITORY.

Dry-crop—Khushki and Jirait.

41. Rule 1.—All dry-crop lands situated in open country, and the low-lying lands of hilly villages, are to be considered as Khushki and classed for soil according to the printed rules.

Rule 2.—Lands not being garden or rice, or coming under Rule 1, but owing to heavy rainfall only cultivated yearly with such hill grains as Nachni, Sava and Vari, are to be considered Jirait or dry-crop.

Rule 3.—The following four classes are to be used in classing (Jirait) dry-crop soil. Depth and valuation to be as follows:—

Class.	Depth of soil.	Value in annas.
1	1	11
2	$\frac{3}{4}$	9
3	$\frac{1}{2}$	$7\frac{1}{2}$
4	$\frac{1}{4}$	6

Clause 1.—The colour of the soil in the first three classes must be black or dark brown; if it is red it must be entered as 4th class.

Clause 2.—The deteriorating ingredients are—

1	Walsar	...	...	(Gravelly sand)
2	Utarwat	...	...	(Sloping surface)
3	Reswat	...	...	(Fine sand)
4	Chopan	...	...	(Clay)
5	Chunkhad	...	...	(Fragments of limestone)
6	Nibarpana	...	...	(Hardness)

Rule 4.—First class dry-crop soil should have scarcely any faults, and in like manner in a decreasing scale, considering the quality and depth of the soil, the second and third class should be used. All purely red soils must be classed as 4th class even if of full depth.

Rule 5.—In dry-crop land, Jirait and Khushki¹ which is irrigated once or twice a year, the shares irrigated are to have the water class entered and the valuation in annas is to be increased as follows:—

Clause 1.—Each share of first class soil is to be increased three classes or 6 annas.

¹ *Vide* Superintendent, Deccan Revenue Survey's Vernacular Circular No. 95, dated 12th December 1890.

Clause 2.—Each share of second class soil is to be increased two classes or 4 annas.

Clause 3.—Each share of third and fourth class is to be increased one class or 2 annas.

An example is given below how to use the above rules:—

Class.	Shares.	Annas.	Increase in classes owing to the land being irrigated.	Increase in annas owing to the land being irrigated.
1	2	22	0	12
2	1	9	4	4
3	5	37½	2	10
4	2	6	2	2
	<hr/>	<hr/>		<hr/>
	10	74½		28
		28		
		<hr/>		
Total Annas	...	102½		
Average Annas	...	11-5		

The classes are to be entered, and the average annas calculated as above, and below them a remark is to be written stating from whence the water is obtained.

In the case of Khushki lands the increase¹ is to be given as follows:—

10	to	12	...	...	6	Annas.
10	to	8	...	...	1	do.
6	to	4½	...	...	3	do.
3	to	2	...	...	2	do.

by Tisali and Kunri Lands.

12. In the hilly tracts of the Sātara Collectorate, and in the Kolhapur territory, lands are met with which cannot be cultivated yearly, and known as Tisali and Kunri. The classification of such lands is to be carried out as follows.

Tisali Lands.

43. *Rule 1.*—Land with a tolerably level surface, which cannot be cultivated yearly, is to be considered Tisali and divided into two classes as follows.

Rule 2.—Land red in colour not less than half a háth in depth, which is level and has small embankments similar to those in rice fields, to prevent the soil being washed away, should be classed as first class Tisali, and each share valued at 5 annas.

¹ *Ed.* Superintendent, Deccan Revenue Survey's Vernacular D Circular No. 15, dated 29th June 1894.

Rule 3.—Land red in color, depth the same as above with slightly sloping surface and in which there is no difficulty in using the plough should be considered as second class and valued at 4 annas per share.

Rule 4.—If the soil is similar in quality to that mentioned in Rule 2, but the embankments are close together, or there is any difficulty in ploughing owing to large boulders being scattered over the land, then it must be entered as second class Tisali; but if it should already be second class and the boulders are of the size of grass stacks, then the land should be classed as 1st Kumri.

Kumri Lands.

14. *Rule 1.*—Kumri, that is hill cultivation, is to be divided into two classes as follows.

Rule 2.—Land which is red in color and half a háth or more in depth, which can be ploughed, but with slight difficulty owing to the steepness of the hill, or to large boulders scattered over it, should be classed as 1st Kumri and valued at 3 annas.

Rule 3.—Land red in color which cannot be ploughed owing to the steepness of the hill, but is dug up with a pick, or which being level enough to be ploughed is less than half a háth in depth, should be classed as 2nd Kumri and valued at 2 annas.

Rule 4.—The depths entered in the above two rules need not always be ascertained by actual digging; only in case of doubt need digging be resorted to.

Rule 5.—Occasionally small pieces of land which cannot be cultivated yearly of about 2 or 4 gunthas in extent, at the sides or corners of rice fields, may be found included in the numbers; if such pieces are habitually cultivated they must be classed as 1st Kumri, but if they are never cultivated they must be classed as 2nd Kumri. If the cultivated area exceeds the waste it should be considered 1st Kumri, but if the reverse is the case, then it should be entered as 2nd Kumri.

Rule 6.—Land which cannot be cultivated and which does not produce even grass, is to be considered “Kharab.” If culturable land is covered by large boulders, the size of grass stacks, the space covered by these boulders should be deducted as “Kharab.”

Rule 7.—If in Kumri numbers there are pieces of clear level ground like Tisali whose area is less than about one-sixth of the total area of the number, they should not be considered Tisali, but classed as 1st Kumri; but if their area exceeds one-sixth of the total area, then half of it should be entered as 2nd Tisali and half as 1st Kumri.

Rule 8.—In a number of mixed Tisali and Kumri land, the sketch and average annas of the two kinds of land need not be shown separately, but in give-and-take shares of one acre each from which the average annas are to be calculated. These shares need not be shown according to acres in the sketch, but the position of each kind of land as it may be in the field should be shown.

		Total Area.		Kharab.	Remaining.	
		A.	g.		A.	g.
Tisali ...	...	15	15	...	15	15
Kumri ...	...	20	2	...	20	2
Total ...		35	17	...	35	17

The classification of this number should be shown as under :

				<i>Detail.</i>		
				Area 35-17		
1	2	1		Class.	Shares.	Annas
Tisali	Kumri	Kumri	Tisali...	1	10	50
10 acres.	15 acres.	5 acre.	" ...	2	5	20
			Kumri ...	1	5	15
			" ...	2	15	30
2 Tisali 5 acres.				Total ...	35	115

Average Annas ... 3-3

In this manner the sketch and average annas are to be made out, but if, owing to the number being small, acre shares cannot be made, then in such cases it may be estimated in half or quarter acre shares; in short, the estimate of the different sorts of soil must be made in acres or portions of acres. When classing numbers which are wholly Tisali or wholly Kumri, shares need not be estimated in acres.

Rule 9.—The average annas of mixed Kumri and Tisali numbers are to be taken out as above, but the average annas of mixed rice, garden and dry-crop numbers must be calculated separately with the distinguishing letter for each kind of cultivation entered in it, as directed to be done in the printed rules.

(c) *Rice Land Soil Classification.*

45. *Rule 1.*—All rice lands are to be divided into five classes as mentioned below.

The depth of soil and valuation to be as follows :

Class.	Depth of Soil.	Value in Annas.
1	1½	16
2	1	14
3	¾	12
4	½	10
5	¼	8

These five classes are to be made applicable according to the quality of the soil which is to be estimated as follows.

Rule 2.—Black or dark brown soil is to be considered the best.

Rule 3.—Reddish, that is dark red, is to be considered medium.

Rule 4.—Red soil is to be considered the worst.

Rule 5.—The ingredients in soil, for which an allowance is to be made, are—

1st, Walsar—(Gravelly sand).

2nd, Reswat—(Fine sand).

3rd, Nibarpana—(Hardness owing to clay).

Rule 6.—If owing to the beds into which a rice field is divided being very small, there is a great difficulty in using the plough, or if it cannot be used at all, or if the land is a narrow strip, and the rice embankments (hallias) are less than six háths apart, its classification should be reduced one class on account of the above fault whose distinguishing mark should be made thus —

Rule 7.—The following rules will elucidate the method of classing and of taking into consideration the depth, quality, and deteriorating ingredients of soil.

Rule 8.—Soil black or dark brown in color, $1\frac{1}{4}$ háths in depth with trifling faults, is to be considered 1st class.

Rule 9.—Soil of the following descriptions is to be entered in the 2nd class—

Clause 1.—Soil of which the color and faults are the same as in Rule 8, but the depth is one háth.

Clause 2.—Soil of which the color and depth is the same as that of the 1st class, but its faults are more.

Clause 3.—Soil red in color, depth $1\frac{1}{4}$ háths with few faults.

Rule 10.—Soil of the following descriptions should be entered as 3rd class—

Clause 1.—Soil of which the color is black or dark brown, and faults the same as in the 1st class, but the depth is $\frac{3}{4}$ háth.

Clause 2.—Soil of the same color as above, but with more faults and the depth 1 háth.

Clause 3.—Soil red in color and inferior in quality to that mentioned in Rule 9, clause 3, and depth $1\frac{1}{4}$ háths.

Rule 11.—In the 4th and 5th classes, the depth and quality should be somewhat inferior, decreasing gradually; but if the soil is very inferior in quality and altogether wanting in depth it should be entered in the 5th class.

Rice land classification water-supply.

46. *Rule 1.*—In land irrigated by a *pât*, the water-supply is to be divided into four classes which are as follows.

Rule 2.—Land which will produce sugarcane or “doophasal” crops, that is a first crop of rice (*lawni*) and an after-crop of “*Khapli*,” (&c., should have the water-supply entered in the 1st class.

Rule 3.—Land which will produce “doophasal” crops: that is a first crop of rice (*lawni*) and then by aid of its water-supply, or by its inherent moisture an after-crop of wheat, gram, or peas, should have the water-supply entered in the 2nd class.

Rule 4.—The water-supply of lands of the following descriptions is to be entered in the 3rd class—

Clause 1.—Land which produces only one crop of transplanted rice “*Lawni Bhat*.”

Clause 2.—Land which produces a first crop of ordinary (drilled) rice and an after-crop of wheat, gram, or peas.

Rule 5.—Land which will produce only one crop of ordinary (drilled) rice should have its water supply entered in the 4th class.

Rule 6.—The water-supply is to be classed as above, but if owing to the land being elevated, there is not always a certainty of the crop being a good one, in any of the first three classes, the class may be reduced either one whole or half a class, according to disadvantage of situation.

Rule 7.—If any other crops, besides those mentioned in the above four rules, are met with, then orders should be obtained as to what class it is to be entered in.

(d) *Garden Land.*

47. *Rule 1.*—Garden land is to be classed according to the printed rules, but the water supply of *Patasthal Bagait* is to be divided into four classes as follows.

Rule 2.—When the water-supply is sufficient to grow sugarcane it is to be entered as 1st class.

Rule 3.—When the water-supply lasts up to the 15th February that is sufficient to grow “*Khapli*,” it is to be entered as 2nd class.

Clause 1.—In some hill villages owing to the water-supply decreasing soon after the end of the rains, “*Khapli*” is sown on the hill tops during the rains and reaped about

the end of January; this water-supply should be entered between 2nd and 3rd, that is valued at 2 annas 6 pies.

Rule 4.—In villages below the hills, where the water-supply continues up to the end of December, that is sufficient to grow “Bhuimug” (earth-nuts) and in villages on the hills where it is sufficient to grow “Sathu” (barley), it is to be entered as 3rd Class.

Rule 5.—When the water-supply is available to the 15th December, that is, is sufficient to grow carrots and minor crops, it is to be entered as 4th Class.

(e) *Scale “chads” on soil classification Annas.*

48. The soil classification of all dry-crop and garden lands may be increased according to the following two scales, after reference to the Survey Commissioner, whose sanction is required before the increase according to scale can be made.

First Scale.

Classes		Annas	Increase.
From		to	
A.	p.	Annas.	A. p.
6	1	8	0 6
8	1	10	1 0
10	1	12	1 6
12	1	16	2 0

Second Scale.

Classes.		Annas	Increase.
From		to	
A.	p.	Annas.	A. p.
8	1	10	0 6
10	1	12	1 0
12	1	16	1 6

(f) *Classification of doubtful Tari (Rice) land.*

49. *Rule 1.*—Land in which permanent “hallias” exist or which is permanently levelled (either by nature or art) and ridged so as to retain the water shall be considered to be Tari and classed accordingly.

Rule 2.—Land not coming under the above rule, but in which rice is grown occasionally or annually either alone or in combination with a dry-crop shall be entered as Khushki, but the soil classification shall be increased by one anna or by two annas if the water class would be in excess of 4th under the Western Sātara Tari rules. All land coming under this rule will be also liable to whatever scale of increase may be ordered to be applied to the Khushki lands of the village.

Rule 3.—It must be understood that land which is inundated by the overflow of the rivers does not come under either of the above rules excepting permanent “hallias” exist. The classification of land benefited by inundation is provided for by extra soil classes and the increases “chad” which may be applied thereon. It would only create confusion to consider these lands as Tari except in the clear case of “hallias” existing.

Rule 4.—All lands which according to the above rules are not to be considered rice, but in consequence of rice being grown together with dry-crops in them, some increase has to be made on the classification annas, it is necessary to have some mark made in the shares to show whether one or two annas increase is to be made for each share, therefore shares requiring the increase must be distinguished as follows.

Rule 5.—In the shares where rice and dry-crop are sown together and an increase on the annas is to be made in accordance with Rule 2, the land must be considered “Misrit” crop land, and under the entry of depth of soil the letter M must be written in the share and near the letter M on the right hand side of it the water class applicable in accordance with rules of rice land water-supply is to be entered, so that when the average annas are made out, M³ or M⁴ being in the share, will show whether an increase of 1 or 2 annas is to be made on the annas of that share.

Rule 6.—If this kind of mixed crop land does not exist in a whole share, only a portion of the share is so and the rest common dry-crop soil, then the quantity of this mixed crop land must be ascertained approximately up to a quarter of the share and classing the land as dry-crop the quantity of “Misrit” land must be entered in the share near the letter M in quarter, half, or three-quarter strokes so that $\frac{1}{4}$, $\frac{1}{2}$, or $\frac{3}{4}$ shown in the share will show how much increase is to be made, thus M $\frac{1}{4}$ 3 or M $\frac{1}{2}$ 4 will show at once that half an anna increase is to be made for that share.

Rule 7.—The classification of this mixed crop land must be

1		2	∴	3	√/
		1 $\frac{3}{4}$		1 $\frac{3}{4}$	
1 $\frac{3}{4}$	1st	M 3	1st	M $\frac{1}{4}$ 3	1st
3	√	2	√	4	√/
		1 $\frac{3}{4}$		1 $\frac{3}{4}$	
1 $\frac{1}{2}$	1st	M 4	1st	M $\frac{1}{2}$ 4	1st

done as herein stated and entries made accordingly in the classing books. An example is given to show how this must be done and how the average annas are obtained. Besides

d
r
ut

Class.	Shares.	Annas.	Increase, Annas.	this increase any scale increase
1	1	16	...	
2	2	28	3	
3	2	24	$\frac{1}{2}$	ordered for dry-crop soils is to
4	1	10	$\frac{1}{2}$	
	<hr/>	<hr/>	<hr/>	
	6	78	4	be made as usual and this scale
Total Annas	...	...	82	
Average Annas	...	...	13-8	increase is also shown in the
Superintendent's increase...			2-0	
			<hr/>	
	Rate	...	15-8	example attached.

(g) *Classification of occasional Bágáit watered from "Kuvas" or successive lifts.*

50. It appears that this Kuva Bágáit is sometimes made in undoubted Tari land and sometimes in Khushki land, and that it is not made in the same spot year by year, the first Budki and successive lifts being removed in the rains and re-constructed after the monsoon wherever may be most convenient for the succeeding year's cultivation.

51. This description of garden cultivation has recently been classed under the following rules¹:—

Rule 1.—When the land is "Tari" it will be entered as such by the classer.

Rule 2.—On all such land susceptible of irrigation by one lift, reckoning from the bed of the river inclusive, 1 anna water class will be imposed in addition to the Tari water class otherwise impossible.

Rule 3.—On all land susceptible of irrigation by two or three lifts 6 pies additional water class will be imposed.

Rule 4.—On all land susceptible of irrigation by not less than four lifts no additional water class will be imposed.

Rule 5.—When the land is "Khushki" it will be entered as such by the classers, and will be subject to whatever scale increase is ordered for the remaining dry-crop lands of the village and in addition as below on all lands susceptible of irrigation.

Rule 6.—By one lift two classes = 4 annas.

Rule 7.—By two lifts one class = 2 annas.

Rule 8.—By three lifts half a class = 1 anna.

Rule 9.—For the present no distinction shall be made between lands enjoying temporary and permanent Kuva irrigation.

¹ Vide Survey Commissioner's No. S.—2157, dated 9th September 1895.

But if the Superintendent finds that there is a considerable quantity of permanent Kuva Bágait and is of opinion that its advantages justify a higher assessment than that obtainable under the rules he shall report the case for orders.

Rule 10.—In villages in which Kuva irrigation does not exist, or is not known to have existed within recent times, or has been abandoned after trial, great caution should be observed before the lands are assessed under the new rules. If such cases turn out to be at all numerous and the enhancement leviable under the rules severe, the matter should be reported for orders.

It is believed that the exemption of all lands requiring more than three Kuvras for their irrigation will prevent the excessive assessment of lands lying at any great distance from the river. If however, on further investigation, it is found that this is not the case the Superintendent can, in his discretion, allow them exemption from the Kuva addition, if it is considered that the advantage is effectively neutralized or seriously diminished on account of the distance. All such cases, however, should be reported by the classers for the orders of the Superintendent and a note made in the classing books to show the grounds on which exemption has been allowed.

(h) *Hill or Dongar classification rules¹ applied to part of the Sâtára Collectorate and to the Kolhápúr Territory.*

52. "1st.—In Kolhápúr it happens that many villages partake of the nature of plain and hill villages, that is, part of the lands are situated down in the valleys and are well calculated for successful superior dry-crop cultivation, while part of the lands more resemble hill villages being situated on elevated spurs. These elevated lands often have separate 'Waris'. From the map it can be generally seen which are the elevated lands on the spurs, but this information all depends on the accuracy of the map, and the exact point of division, between the hill or semi-hill lands, is in some cases somewhat uncertain.

2nd.—When conducting the classification a shera may be written to all numbers which are of the nature of hill lands, that is, are situated on the spurs or tops of the hill ranges, and in this shera and in the register the numbers may be distinguished by the following numbers written in red ink in column 3 of the register :

- (1) For numbers in the valley where dry-crop cultivation flourishes.

¹ *Vide* Survey and Settlement Commissioner's No. 1540, dated 13th November 1874.

- (2) For numbers on minor spurs at no great elevation.
- (3) For numbers situated on elevated spurs of hills, or on the main ranges.
- (4) The acres and gunthas should be entered on the extreme right of column 3.

After making up the general total of the register in the usual manner a separate total must be made for each of the above classes 1, 2, and 3.

Bágáit and Tari need not be included in the above, which should be confined to dry-crop lands.

3rd.—The chief difficulty will be the separation between class 2 and class 3. I should say that class 2 would comprise only high lying lands but situated at no great elevations on the first or second step of the trap. If the first step was of small elevation, which it often is, and also lands situated on the face of the first slope or step. While class 3 would comprise clearly hill lands situated on the face and top of the elevated spurs and ranges.

4th.—The testing officer would verify these sheras as regards the numbers tested, and could examine the general lines of separation of hill and plain lands.

CHAPTER VI.

RULES REGARDING "GENERAL POSITION CLASS" APPLIED TO
THE KHA'NDESH AND SA'TA'RA COLLECTORATES.*Class I.*¹

53. (1) Flat low-lying land in the bottom of valleys and thus most favourably situated for receiving drainage from higher land; or (2) in open plain country, flat land on a level with the banks of nálas having water till the end of December.

Class II.

(1) Land of fairly level surface, in less favourable situation than the above, but deriving benefit from drainage of higher land; or (2) Low-lying open plain country, excluding the flat strips on nála banks, provided for above.

Class III.

Level land in high situation or deriving little or no benefit from drainage of other lands, but flat enough for retainment of the moisture received from rain-fall.

Class IV.

Ridges and steep slopes, where no moisture is retained either from rainfall or drainage.

(1) The above classes must be applied to all lands with the exception of rice. When more than one "chad" falls on the same land the Superintendent or Settlement Officer at the time of rating the number will decide which of the other "chads" is to be super-added to the "General Position Class" chad.

(2) Position classification to be done in the field by the classer visiting each number with the old map (a copy to be given him for this purpose) on which is to be entered the position class of each number, one, two, three, or four shares being made where necessary.

(3) The position class thus obtained to be recorded in annas in the classification book, in the same way as water classification, and the addition to the Bhág annas of the number made in the rains.

¹ *Vid.* Superintendent, Revenue Survey, Southern Marátha Country's letter to Survey and Settlement Commissioner's No. 732, dated 14th May 1884.

54. The scale of increase to be given to the soil classification is shown in the statement given below :—

Soil classification Bhāg annas.	Position Class Annas.							
	1 0	1 6	2 0	2 6	3 0	3 6	4 0	
	Extra Annas to be applied to Numbers.							
From 16-0 to 12 annas ...	3 0	2 6	2 0	1 6	1 0	0 6	0 0	
Do. 11-11 to 9 " ...	2 6	1 6	1 0	1 0	0 6	0 0	0 0	
Do. 8-11 to 6 " ...	2 0	1 6	1 0	0 6	0 0	0 0	0 0	
Do. 5-11 to 3 " ...	1 0	1 0	0 6	0 0	0 0	0 0	0 0	
Below 3 annas ...	0 6	0 6	0 0	0 0	0 0	0 0	0 0	

Example.—Classification for "General Position Class."

S. No.	A. 10-1.	Class.	Share.	Classification Value.
1		1st	1	1
2		2nd	1	2
3		3rd	1	3
4		4th	1	4
			4	10
		Average	...	2.6

Increase to be given to soil classification Bhāg annas 1-6 pies in a field, the Bhāg annas of which range from 16 to 12.

CHAPTER VII.

(a) CHADS OR INCREASE CLASSIFICATION PLACED UPON LAND.

55. 1 Soil "chad".
 2 Alluvial "chad".
 3 "Chad" owing to land being within 5 chains of a ^{uála}.
 4 Well Percolation class.
 5 Kuva bágáit "chad" on dry-crop or rice land applicable to the Sátára Collectorate and Kollápur Territory.
 6 Water class "chad" placed on dry-crop land (Khushki and Jiráit) which is irrigated once or twice a year, applicable to the Sátára Collectorate and Kollápur Territory.
 7 Water class "chad" placed on doubtful Tari in Khushki lands in which rice is grown occasionally, or mixed dry-crop and rice, applicable to the Sátára Collectorate and Kollápur Territory.
 8 Well Position class.
 9 General Position class applied to the Southern Marátha Country, Sátára and Khándesh Collectorates.

"Chads" to be applied to

- | | | | |
|---|--|-----|--|
| 1 | Jiráit, Khushki, and garden lands. | } | In parts where the soil "chad" has already been applied to dry-crop and garden lands. When the land is subject to the 1st and 6th "chads," the 1st is to be abandoned and the 6th applied. |
| 2 | Do. do. | } | When land is subject to both alluvial chad and "Well Position class," the one giving the higher rate only is to be applied. |
| 3 | Jiráit and Khushki lands. | } | When land is subject to two "chads," the one giving the higher rate is to be applied. |
| 4 | Garden lands | ... | In addition to Well Position class. |
| 5 | Jiráit and Khushki with or without alluvial increase, and to rice lands. | | |
| 6 | Jiráit and Khushki lands. | | |
| 7 | Doubtful Tari in Khushki lands in addition to soil "chad". | | |
| 8 | Lands under existing or possible wells. | } | When the alluvial "chad" is also applicable, the one giving the higher rate is to be applied. |
| 9 | Khushki, Jiráit, and garden lands. | | |

(b) Scales to confirm the average rate of the soil and water classification Bhág annas.

56. The "dhar sod" or give-and-take scales to confirm the average rate of soil and water classification are given below.

(1)

"Dhar Sod" Scale for confirming the soil average classification annas.

From			To			Annas to be confirmed.	From			To			Annas to be confirmed.	
As.	ps.		As.	ps.		As.	ps.		As.	ps.		As.	ps.	
15	7		15	11		16	0		7	10		8	3	
15	1		15	6		15	6		7	4		7	9	
14	7		14	11		15	0		6	10		7	3	
14	1		14	6		14	6		6	4		6	9	
13	7		13	11		14	0		6	0		6	3	
13	1		13	6		13	6		5	6		5	11	
12	7		12	11		13	0		5	0		5	5	
12	1		12	6		12	6		4	6		4	11	
11	10		12	0		12	0		4	0		4	5	
11	4		11	9		11	6		3	6		3	11	
10	10		11	3		11	0		3	0		3	5	
10	4		10	9		10	6		2	6		2	11	
9	10		10	3		10	0		2	0		2	5	
9	4		9	9		9	6		1	6		1	11	
8	10		9	3		9	0		1	1		1	5	
8	4		8	9		8	6							

When the average annas exceed 16 a. "dhar sod" of 6 pies is to be observed: from 1 to 6 pies being reckoned as 6 pies and from 7 to 11 pies as one anna.

Note.—When the value of "chads" are added to the Bhág annas of a number and it makes no difference in the "Kaim Bhág annas" by the Dhar Sod scale, the following example will show the manner of determining the "Kaim Bhág annas".

The average soil classification of a number is 0-5-8 and the dhar sod 0-5-6.

Add

Average value of the increase on account of being within 5 chains of a nála ... 0-0-2 do. 0-5-6.

0-5-10

The dhar sod of 0-5-8 and 0-5-10 after adding the "chad" would still be 0-5-6 owing to which the value of the "chad" would be practically nil in such cases the bhág annas after adding the "chad" should be reckoned as 6 annas and not 0-5-6.

(2)

"Dhar Sod Scale" for confirming the average water classification annas of Pôtusthal and Rice lands.

From		To		Annas to be confirmed.	
As.	ps.	As.	ps.	As.	ps.
1	0	1	2	1	0
1	3	1	8	1	6
1	9	2	2	2	0
2	3	2	8	2	6
2	9	3	2	3	0
3	3	3	8	3	6
3	9	4	2	4	0
4	3	4	8	4	6
4	9	5	2	5	0
5	3	5	8	5	6
5	9	6	0	6	0

(3)

Dhar Sod Scale for confirming the average "General Position class" annas.

From		To		Annas to be confirmed.	
As.	ps.	As.	ps.	As.	ps.
1	0	1	3	1	0
1	4	1	9	1	6
1	10	2	3	2	0
2	4	2	9	2	6
2	10	3	3	3	0
3	4	3	9	3	6
3	10	4	0	4	0

(c) *Distance of Numbers from village and hamlet.*

57. The distance in miles of numbers from village should be taken off the map from the centre of each number to the centre of the village, and entered daily in the classer's book for the numbers classified. In case the village has a hamlet the distance of the numbers cultivated by the rayats living in it should be taken both from the village and hamlet and entered accordingly. Distance¹ is not to be entered in the case of uninhabited villages.

(d) *Distance of Numbers from the place at which cattle are watered.*

58. A remark according to the following paragraphs should be made in the classer's book to each number showing its distance in miles from the place at which the cattle are watered, from the end of February to the commencement of the rainy season.

(1) Should the watering place be within a quarter of a mile of the village the distance of the number from the village as entered according to Rule 23, Section XII of the Southern Marátha Country Survey Rules should be entered.

¹ *Vid.* Vernacular No. 867. dated 13th December 1879, from the Survey and Settlement Commissioner to the Superintendent, Revenue Survey, Southern Marátha Country.

(2) When the watering place is not near the village, and there is no well in the number, the distance of the latter from the place at which the cattle are watered, from the end of February to the commencement of the rains, should be entered. If there is more than one watering place the distance to the nearest should be entered.

(3) Should there be no water near the village site, those numbers which have wells in them should have a remark to the effect that the cattle are watered at these wells, but in case the cattle from other numbers, although having no right, are watered at these wells, the distance from the well should not be entered to those numbers,

CHAPTER VIII.

(a) PRACTICAL METHOD OF FIELD CLASSIFICATION.

59. The different kinds of cultivation, *viz.* Dry-crop, Khushki and Jiráit, Garden, Motasthal and Pátasthal, Kuva Bágáit, rice, and the non-continuous cultivation, Tisali and Kumri, have been treated of, and the valuation scales used in classification of both soil and water and the "Chads" to increase the value of soil and water for additional advantages not met by the classification scales have now been given; furthermore, the method of differentiating between lands lying on spurs and hill tops, and those at the bottom of valleys, and the scales used to determine the "Dhar sod" (give-and-take) of the Bhág annas of soil and water have been shown above; it therefore now remains for me to detail the practical operations of a classer in the field and the information he has to furnish.

60. The day previous to commencing his field work a classer pricks off on to his field book as many numbers as he will be able to class from the sketch of the field, given in the measurer's fair field book, showing the mounds and stones demarcating a number. On reaching the field next morning the classer has flags put up at each corner and bend of a number, and then proceeds to inspect with the aid of the village map the mounds and stones entered on it with those actually in the field, noting any that may be wanting or are not according to rule. He then divides the field to be classed into a certain number of equal compartments, in each of which he has a pit dug, and the bar thrown to ascertain the depth of the soil. The bar is thrown to a depth of $1\frac{3}{4}$ cubits, or until a substratum is reached, which may be trap, white, yellow, or dark clay, and in some instances concrete. At each share he takes the depth which he enters on the south-west corner of the compartment, examines the soil and enters the fault or faults on the north-east corner, and the order of soil below them, and then enters the class above the depth. After completing the classification of a number the entries made from the measurer's book, *viz.* survey number, old number, name of Khátadar and area, are verified with those given in Village Form No. 1. After completing the classification and verifying the entries of one number he proceeds to class the second, and so on until all the numbers have been classed.

61. The number of compartments into which a field is to be divided for classification depends upon its area, shape, and uniformity or otherwise of the soil. When the soil is of a uniform texture and the land level a lesser number of shares or compart-

ments is necessary than when the soil suddenly changes from one order into another, and the land slopes or undulates.

62. The number of compartments into which a field is to be divided for classification in the case of dry-crop land may be assumed to be as follows :—

	A. g.	A. g.
From 3 to 5 acres, 5 compartments average...	0 24	to 1 0
Do. 6 to 12 do. 4 to 8 do. do. ...	1 20	
Do. 13 to 20 do. 7 to 10 do. do. ...	1 34	to 2 0
Do. 21 to 30 do. 9 to 12 do. do. ...	2 13	to 2 20

63. Rice and garden land fields are sometimes very small; when such is the case a greater number of compartments should be taken, about 2 or 3 in an acre of land. However small a field may be, it should at least be classed by taking two compartments.

(b) PREPARATION OF PAHANI SÚD AND OTHER PAPERS.

64. After the completion of the recess examination the following statements are prepared by a classer for each village :—

- 1 "Pahani¹ Súd."
- 2 "Register²" of numbers.
- 3 "Dharwari³" of numbers.

65. Twelve examples⁴ are given for the different kinds of cultivation together with the classification and the "Chads" or increase applied for additional advantages not met by the classification scales. From these the working out of the Bhág annas will be clearly understood. The form of classer's book is given in the case of the first example which gives all details to be furnished by a classer.

(c) CONCLUDING REMARKS.

66. As a general remark it would be as well to add that the relative natural fertility of soils is the point sought to be arrived at in classing, and this point must never be lost sight of. The rules given must be worked so as to produce a classification in accordance with natural productiveness, and the effect of the rules must be carefully watched lest a literal adherence to them should produce a classification not in accordance with the productive power of the soil. Depths should be taken and faults given so as to ensure in every case a suitable valuation of the soil.

67. The classification rules and the method of working them herein given apply to all tracts of country with the exception of the Konkan Collectorates, Gujarát Collectorates, and the Kánara Collectorate.

¹ Vide Appendix L. ² Vide Appendix M. ³ Vide Appendix N. ⁴ Vide Appendices O to Z.

SECTION II.

KA'NARA CLASSIFICATION.

*North Kánara.*¹

This district formerly belonged to the Madras Presidency. It was transferred to Bombay in 1862, and soon after survey operations were commenced there by the Southern Marátha Country Survey under the general supervision of the Survey Commissioner, S. D., Colonel Anderson.

2. For the purposes of classification the lands in this district were divided under the following six heads, viz. :—

- (1) Khuski (dry-crop).
- (2) Pulan.
- (3) Tari (rice).
- (4) Guzni (Khári or salt bhatty land).
- (5) Mithágar.
- (6) Bágáyet (garden).

3. The classification of these lands was done according to the rules summarised below :—

- (1) *Khuski*, (2) *Pulan*,² and (3) *Tari (Rice) lands*.

¹ For the purposes of section 106 of the Land Revenue Code, the original classification in this district has been declared final as will be seen from the following extract :—

“ Moreover, as the revised survey record is sufficiently correct for the purposes of a standard, His Excellency the Governor in Council has resolved that it shall be accepted as final and not subject to any future general revision. This resolution secures from any further general alteration of the valuation of land for revenue purposes the whole of the Southern Marátha Districts, except a few talukas, and the greater portion of the Deccan. In the districts of Ratnágiri and Kánara, in which original settlements are still in progress, the work of the survey is sufficiently accurate to admit of the extension of the same guarantee to them. The power of Government to direct a revaluation of soils will therefore be exercised almost solely in the province of Gujarát, the districts of Thána and Koláha, and in Khándesh and Sátara; and in these it is believed that a partial re-survey will suffice.” (Paragraph 15 of Government Resolution No. 2619, dated 26th March 1884.)

² The term “ Pulan ” is applied to the soil of such level sandy plains as are in the immediate neighbourhood of the sea and to the earthy soil of land formed by alluvial deposit, such as flat level plains in the vicinity of rivers, or islands in rivers. “ Pulan ” land—being of such a nature that it is easily convertible into rice land—was classed as Tari with sixth water class.

4. Lands of these descriptions were first divided into two orders, namely :—

1st Order.—Comprised lands on the sea-shore, on river banks, in valleys and plains below the hills.

2nd Order.—Comprised lands on hill-sides or in more or less elevated situations.

First order of Soil.

5. For the purpose of valuation, the lands of the first order were divided into 5 classes as shown below :—

1st Class.—Soil pure earth, there being so slight an admixture of sand in it that it is not plainly perceptible.

2nd Class.—Soil consisting chiefly of earth, but having a slight admixture of sand.

3rd Class.—Soil consisting of earth and sand in about equal proportions, the proportion of sand being so great that the soil cannot be turned up in clods.

4th Class.—Soil consisting of very little earth with a great deal of sand, the portion of sand being so great that the soil when taken up in the hand feels as if it is of pure sand, but there being a slight admixture of earth in the soil gives it a reddish or yellowish colour.

5th Class.—Soil consisting chiefly of sand in which there is so little admixture of earth that it is not perceptible. This class applies only to the soil along the sea-shore.

6. For the above five classes $1\frac{1}{4}$ háť (cubit) was considered full depth. In the case of soil of less depth which was rarely met with in level fields, the classification was reduced by one class for every quarter háť of short depth by which it was possible for a soil of this order to class as low as 7th class. In classing the soil according to the above 5 classes a fault for “wálsur” was given in cases where the productive quality of the soil was affected by the presence of coarse gravel or grit besides sand, and the classification was proportionately reduced. No other faults were given for in lands of this order.

Second order of Soil.

7. Land of good and fine quality, composed of pure earth and free from deteriorating faults and of full depth, that is $1\frac{1}{4}$ háť, was considered as 1st class of the 2nd order and valued at annas 14.¹

¹ The first class of the second order was rarely met with. It applied to such a soil as resembled that of the 1st class of the first order, and differed only from it in being in an elevated situation, in or on the slope of hills. These soils of the 2nd order generally ranged from 12 to 8 annas classification according to depth and quality.

8. Lands falling under this order were ranged into different classes on a consideration of their depth and deteriorating faults, according to the following principles.

Reduction for short depth.

9. For every quarter há of short depth the classification was to be reduced one class.

Reduction for faults.

10. For each of the following deteriorating faults the classification was to be reduced half or a whole class.

Deteriorating faults.

- (1) Excessive sand "Reswat."
 (2) Grit or coarse gravel "Wálsur."
 (3) Very high "halias," narrow
 pieces of land, difficult to
 cultivate "Uturwut."

11. The relative values of the several classes of lands of the two orders (1st and 2nd) were fixed according to the following scale :—

Soil Class.	1ST ORDER.	2ND ORDER.
	Value Annas.	Value Annas.
1st	16	14
2nd	14	12
3rd	12	10
4th	10	8
5th	8	6
6th	6	4½
7th	4½	3

12. The following examples will show how the values of the different classes were fixed and reductions made on account of short depths and faults.

Order.	Class of Soil.	Depth in cabit.	FAULTS.		Class finally fixed.	Value.	Remarks.
			Depth.	Others.			
						Annas.	
1st	3rd	$\frac{1}{2}$ hát	2	Reswat.	6th	6	In this case the soil is of the 3rd class of the 1st order, but there being 3 faults, 2 of short depths (at 1 fault for every short depth of $\frac{1}{2}$ hát) and 1 of "Reswat," it is reduced by 3 classes and put into the 6th class valued at annas 6. If the depth were 1 hát and no fault of "Reswat," the soil would be reduced one class for short depth and put into the 4th class valued at annas 10.
2nd	1st	$\frac{1}{2}$	3	1 Grit. 1 Ut- urwnt.	6th	4 $\frac{1}{2}$	In this case the soil is of the 1st class, 2nd order, but there being 5 faults, it is reduced to the 6th class and valued at 4 $\frac{1}{2}$ annas. If the soil were of full depth and there were no other faults, the soil would be of the 1st class, 2nd order, and valued at annas 14.

(1) *Khushi Lands.*

13. All Khushi lands were classed as 2nd order of soil according to the above principles and scale.

WATER CLASSIFICATION OF TARI (RICE) LANDS.

1st Water class = 1 anna.

14. Water received by natural flow from a nulla or tank, the supply of water lasting throughout the year, so that good sugarcane crops, or two rice crops, could be grown the same year.

Exceptions or faults to 1st water class.

15. (1) Where the supply of water was 1st class as shown above but received from a nulla or tank by a lift not exceeding $1\frac{1}{2}$ yards in height, the water class was reduced by $\frac{1}{2}$ a class.

(2) When received by a lift exceeding $1\frac{1}{2}$ yards in height it was reduced by one class.

(3) Where the land being adjacent to Guzni land, was liable to be injured by salt water, the water class was reduced by one class.

2nd water class = 2 annas.

16. Water received by natural flow from a nulla or tank, the supply of water lasting only to the end of January and admitting of one crop of rice followed by a crop of grain or vegetables, but not a second crop of rice, or when in consequence of there being sufficient moisture in the ground a second green crop could be obtained after the rice crop.

Exceptions or faults to 2nd water class.

17. As in the case of the 1st class water, reduction for faults in this class was made as shown below :—

(1) Water supply where received by a lift not exceeding $1\frac{1}{2}$ yards, $\frac{1}{2}$ class reduced.

(2) Water supply where received by a lift exceeding $1\frac{1}{2}$ yards in height, one class was reduced.

(3) Where land being adjacent to Guzni, was liable to injury by salt-water, one class was reduced.

3rd water class = 3 annas.

18. (1) Low-lying land producing one good and certain rice crop without irrigation from tank or stream, the supply of water being derived from higher ground.

(2) Lands where the water being close to the surface¹ was easily obtainable from dug-out holes, and, therefore, sugarcane crops could be occasionally grown.

Exception or fault to 3rd water class.

19. A reduction of half a class was made in this water class if the land under it was liable to be injured by salt water from the adjacent "Guzni."

4th water class = 4 annas.

20. Land producing only one rice crop without irrigation and in rather an elevated situation but still under the advantage of having higher ground above it from which surface rain water could drain on to it.

5th water class = 5 annas.

21. Land producing only one rice crop without irrigation and that with great uncertainty in consequence of its lying in an elevated situation without the advantage of higher ground above from which surface rain water could drain on to it.

¹ Existing wells in the neighbouring fields afforded a means of judging whether or not water was close to the surface.

6th water class = 6 annas.

22. This class was intended for and applied to "Pulan" lands only. All Pulan lands easily convertible into rice land were classed as Tari (rice) with 6th water class.

Well Water class.

23. When the supply of water as described under the 1st and 2nd water classes (*vide* paragraphs 14 to 17 above) was derived from a pakka well and not from a nulla or tank, a further reduction of half a class from that laid down under those classes was made.

Water class of "Waingan" land.

24. Land producing "waingan" or hot weather rice crop only, without any monsoon crop owing to the difficulty of draining the land during the rains, was classed as 3rd water class.

(4) *Guzni lands.*¹

25. Guzni land is that which is more or less overflowed by salt water and on which particular kinds of rice are grown which are not grown on sweet rice land such as "Kagha" and "Kungha."

26. Lands of this description were classed for soil and water (on a scale ranging from 4th to 6th class) in the manner explained below :—

(1) Guzni land, which was far up rivers and creeks, where the water was but little brackish, and where on account of the distance from the sea, the embankments protecting the land from being inundated by brackish water during the rise of the tides, were seldom injured, was put into 4th soil class.

(2) Guzni land which was liable during the rise of the ordinary high tides to be inundated by salt water, but on account of its favourable situation was quickly left bare, and the embankments protecting such Guzni land from being inundated by salt water during the rise of the tide, were often liable to injury, was classed into 5th soil class.

(3) Such Guzni land as on account of its proximity to the sea was liable to be quickly inundated by salt water, during the rise of the tide, and on account of its exposed situation the embankments protecting it from salt water were very liable to much injury, was classed into 6th soil class.

¹ These lands resemble the "Kharapat" or salt Bhatti lands in the Konkan.

Faults in Guzni lands.

27. In Guzni lands where no "kharab" deduction had been made at the measurement on account of small streams and running water, a fault was given in the soil as well as water classification, of one or half a class, and the proportionate reduction made in the classification value.

Guzni Water class.

28. Guzni lands coming under the 4th soil class were classed as 4th "water class," those coming under 5th soil class were classed as 5th "water class," while those coming under 6th soil class were classed as "6th water class."

29. The values of the soil and water classes were shown as below:—

Soil class.		Water class.	
4th = 10 Annas	...	4th = 4 Annas.	
5th = 8 "	...	5th = 5 "	
6th = 6 "	...	6th = 6 "	

(5) Mitâgar lands.

30. The "Mitâgar" lands or "salt pans" were dealt with under the following rule:—

"Whereas in Mitâgar numbers the land is now prepared for the production of salt, it cannot be classed as soil, but as it is necessary to ascertain the value of the land as it would be if it was not Mitâgar, the classification of soil and water must be entered from an average taken of the classification of surrounding numbers. These numbers should be entered in the Registers under a separate heading as Mitâgar numbers."

(6) Garden lands.

31. The scale of valuation applied to Garden lands was as follows:—

Soil class.	Annas.
1st ...	16
2nd ...	14
3rd ...	12
4th ...	10

32. The manner in which these classes were applied is explained below:—

Note 1.—The first two classes applied to garden land in plains or valleys or where rising ground was slight and the surface even.

Note 2.—The 3rd and 4th classes applied to garden lands on the slope of hills or rocky uneven places.

Garden Soil Classes.

33. Description of—

1st Class garden ... Depth $1\frac{1}{4}$ hát, soil pure earth or a mixture of sand and earth in equal proportions.

2nd Class garden ... (1) Depth $1\frac{1}{4}$ hát; soil consisting of earth and sand but in which the proportion of earth is so small that it cannot be noticed except for the reddish or yellowish tinge imparted to the soil by the existence of earth.

(2) Soil on the sea-shore consisting of pure sand.

3rd Class garden ... Lands on the slopes of hills, but the slopes moderate, or if steep, cut into well-defined terraces under the trees.

4th Class garden ... Lands on slopes of hills not cut into terraces, the cocoanut trees growing directly on the natural slope of the hill.

Faults and reduction. In the first two classes where the depth was less than $1\frac{1}{4}$ hát, and the subsoil being hard would not easily admit of the roots of trees penetrating below the depth of the superficial soil, the classification was reduced by one class.

Water classes of Garden lands.

34. (1) Water received by natural flow from a nulla or tank

1st Garden Water class = the supply being sufficient to last
1 anna. throughout the year.

(2) Lands in such moist situations that supari or cocoanut trees grow well without irrigation.

(1) In the case of 1st water class where the supply was
Faults and reduction in 1st
water class, received by a lift not exceeding $1\frac{1}{2}$
yards in height the classification was
reduced by half a class.

(2) Where the supply of water was received by a lift exceeding $1\frac{1}{2}$ yards in height, the classification was reduced by one class.

(1) Water received by natural flow from a nulla or tank the
2nd Water class = 2 as. supply lasting till the end of February.

(2) Lands in such moist situations that supari or cocoanut trees grow well on them without irrigation but situated on elevated places or very inaccessible situations among the hills.

(1) Where the water supply being of the nature described in
Faults and reduction 2nd
class water, clause 1 of the above rule was received
by a lift not exceeding $1\frac{1}{2}$ yards in
height, a reduction of half a class was
made.

(2) When received by a lift exceeding $1\frac{1}{2}$ yards in height, the water class was reduced by one class.

Water classes of Garden lands which derived their water supply from wells.

35. The "water classes" of garden lands which derived their water-supply from wells were fixed according to the following table:—

Depth of Well in yards.	DISTANCE IN CHAINS OF WELL FROM LAND UNDER IRRIGATION.		
	Under 5 chains.	Under 10 chains.	Over 10 chains.
Under 5 yards	4th	5th	6th
Over 5 yards	5th	6th	7th

36. In cases where water had to be conveyed up a steep hill the class by the above table was reduced by one class in all classes except the 7th.

Where the water-supply as described under the heads 1st or 2nd class was derived from a pakka well and not from a nulla or a tank, a reduction of half a class lower than that laid down under those classes was made. For the purposes of determining the well water classes according to the above table the depth of such wells as had parapets or ledges round them was taken from the place where the water was poured out. The water classes were entered in the Bāgāyet Takta in the same way as water classes for Pātasthal Bāgāyet in the Southern Marāthā Survey. [*Vide* Section I. "Deccan and Southern Maratha Country—Classification."]

37. In the Appendices A to H will be found detailed rules regarding the following subjects:—

- (A) Counting of trees.
- (B) Addition to be made in classification on account of cocoanut trees.
- (C) Information to be recorded in the Classification Book and Taktas.
- (D) Recording the natural moisture class in the case of garden lands.
- (E) Distance from village site.
- (F) Dharsod to be made in fixing the area of numbers.
- (G) Recording the area of survey numbers according to Pôt numbers.
- (H) Preparation of Registers and Pahani Sûds.

SECTION III.

GUJARAT CLASSIFICATION.

A.—Original Survey.

The different descriptions of lands dealt with in Gujarát may be divided into the following six classes :—

1. Dry-crop.	5. Bhatta.
2. Rice.	6. Superior order
3. Bágáit.	or
4. Dhekudiat.	Uttam Bágáit.

2. In the Dholka Táluka of the Ahmedabad District, where the Survey first broke ground, and in all other tálukas subsequently dealt with, including the Mátar Táluka of the Kaira District, the soil classification was carried out on the principles of the Joint Report. For the purpose of valuation the soils¹ were ranged under three orders, which were again distributed among nine classes according to their depth as shown in the following table :—

¹ The soil of Gujarát being very unlike that of the Deccan and Southern Marátha Country, where the classes had been accustomed to work, it was found necessary to arrange a new system of classification. It may be said roughly that all the soil of the Province is of alluvial or diluvial origin, there being rarely any rock from the wearing down of which soil could be formed. Its two main divisions are the black (*kali*) and the light coloured (*goraru* or *gorát*), the former having probably been formed in the estuaries of the great rivers running into the Gulf of Cambay, the Tápti, the Narbada, the Myhi, and the Sábarmati and smaller streams, and the latter farther inland and away from those estuaries; the former is diluvial, the latter alluvial. In the estimation of the people the light soil was, as a rule, the more valuable; and it is an undoubted fact that the parts of the country where it prevails show more outward signs of prosperity than black soil regions. On looking closely into the matter, it was evident that this was to be attributed more chiefly to the greater industry and agricultural skill of the people than to the intrinsic superiority of the light soil to that of the black. The latter was clearly by nature the more fertile of the two, and required less labour and manure, although the former, when better tilled and manured, produced the more valuable crops. In the new Classification scale, accordingly, black was reckoned the best, or 16 anna soil, while *goraru* was put down as 12 or 14. A scale of faults, according to which the value of the soil deteriorated, was arranged on the same principles as in the original method pursued elsewhere, but differing materially from those. Want of depth, for instance, which counted for much in a rocky country like the Deccan, was practically never found in Gujarát; while in the latter an excess of sand tending to loosen the particles of soil too much, and impregnations with salt, were elements affecting the value of the soil unknown in the former country. [Page 37, "Bombay Land Revenue," by A. Rogers, Vol. I.]

(Scale No. 1.)

Kind of Land.	Class.	Bhāg Aanas.	SOILS OF THE		
			1st Order.	2nd Order.	3rd Order.
			Black soil Bhatta Besar.	Gorara or soil of reddish colour.	Maradi, yellowish inferior soil.
1	2	3	4	5	6
			Depth in cubits.	Depth in cubits.	Depth in cubits.
Jirāt and Bāgāt.	1	16	13 $\frac{1}{4}$	...	...
	2	14	11 $\frac{1}{2}$	13 $\frac{1}{4}$	...
	3	12	11 $\frac{1}{4}$	11 $\frac{1}{2}$	...
	4	10	11	11 $\frac{1}{4}$	...
	5	8	10	11	...
	6	6	10 $\frac{1}{2}$	11	1
	7	4 $\frac{1}{2}$	10	11	3 $\frac{1}{4}$
	8	3	10	11	4 $\frac{1}{2}$
	9	2	10	11	4 $\frac{1}{2}$

3. The recognized deteriorating ingredients or "faults" were nine in all. These were represented in the Classifier's Book by the conventional marks shown below:—

- ∴ Choon khud.
- 7 Gochu.
- / Utarwat.
- ∨ Vālsar.
- + Reswat.
- Dhupan.
- Upalwat.
- Λ Karal.
- ⊥ Khār = salt efflorescence, impregnation with salt.

For explanation, see paragraph 3, Section 1, "Deccan and Southern Marātha Country Classification."

For each of the above faults, the classification was reduced one class.

4. For the district of Kaira, with the exception of the Mātar Taluka, where the rich "Gorara"¹ or the light coloured

¹ It differs from the *kili* or black cotton soil of more southern districts, especially in its power of retaining moisture, being far inferior to that of the latter, and thus almost all the crops which are raised in it without artificial irrigation are kharif and reaped immediately after the monsoon, whereas good black land often produces rabi crops of wheat, jowāri, &c., as well as of cotton without irrigation. It requires also frequent and copious manuring to prevent its productive power from becoming exhausted, and thus from its demanding a greater amount of labour and capital to elicit its full capabilities, it must, on the whole, be considered inferior to black soil. But to skilful and assiduous husbandry it yields returns inferior to none. [Extract from paragraph 10 of Captain Prescott's letter No. 128 of 14th December 1860. Daskroi Revision Settlement Selection, page 84.]

soil prevails, the following scale based on the Joint Report scale was adopted for the purpose of soil valuation.

Scale No. 2.

Joint Report Valuations.	Classes and Half Classes.	Relative value in annas, or fractions of a rupee.	1ST ORDER.	2ND ORDER.
			Black-Besur, Goráru-Besur, and Bhatta.	Goráru.
1	2	3	4	5
			Cubits.	Cubits.
16	{ 1 1½	16 15½	} 1¾	...
14	{ 2 2½	15 13½	} 1½	1¾
12	{ 3 3½	12 10	} 1¼	1½
10	{ 4 4½	8 7½	} 1	1¼
8	{ 5 5½	7 6	} ¾	1½
6	{ 6 6½	5 4½	} ½	¾
4½	{ 7 7½	4 3½	} ¼	
3	{ 8 8½	3 2½	} ...	¼
2	9	2	...	...

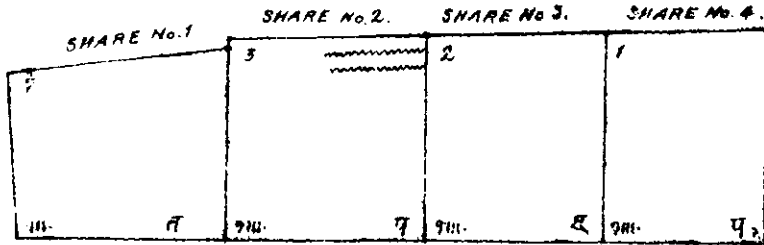
5. In the Classification books the soils of different orders were represented by vernacular letters thus—

ॠ denoted soil of the 1st order.
 ॡ " " 2nd "
 ॢ " " 3rd "

The procedure followed in effecting the classification of a field and making entries in the field book was the same as in the Deccan and Southern Marátha Country Survey, which will be found explained in paragraphs 60 to 67, Section I, "Deccan and S. M. C. Classification."

6. The following examples will show how the entries in the Classifier's book were made:—

Field No. 1, divided into 4 shares for the purpose of classification.



EXPLANATION.

Share No. 1:—The vernacular letter \bar{a} in the right hand lower corner shows that the soil belongs to the 3rd order. The sign η which means $\frac{1}{2}$ this indicates the depth. There is no deteriorating ingredient or fault. According to scale No. 1, the soil belongs to the 7th class, which is shown by the figure 7 in the left hand upper corner.

Share No. 2:—The vernacular letter \bar{a} in the right hand lower corner represents the soil to be of the 1st order. The figure in the left hand lower corner η = $1\frac{1}{2}$ represents the depth. According to the scale above referred to the depth $1\frac{1}{2}$ th and order 1st show that the soil belongs to the 1st class, but as there are two faults shown by the signs thus η in the right hand upper corner, the soil is reduced by two classes, viz. to the 3rd class, which is shown by the figure 3 in the left hand upper corner.

Share No. 3:—This share belongs to the 2nd order, as shown by letter \bar{a} in the right hand lower corner and its depth is $1\frac{1}{2}$ as shown by the figure η in the left hand corner. The depth and order show that the share belongs to the 2nd class, and as there are no faults reducing the fertility of the soil, this class is finally confirmed as shown by the figure 2 in the left hand upper corner.

Share No. 4:—This share belongs to the 1st order as shown by letter \bar{a} in the right hand lower corner, and its depth is $1\frac{1}{2}$ as shown by the figure η in the left hand corner. The depth and order show that the share belongs to the 1st class, and as there are no faults reducing the fertility of the soil, this class is finally confirmed as shown by the figure 1 in the left hand upper corner.

From the entries thus made the average valuation of the number was calculated as shown below:—

Class.	Share.	Valuation.	
		As. p.	
1	1	15 0	
2	1	14 0	
3	1	12 0	
7	1	4 6	
Total ...	4	46 6	÷ 4

Average value of the number... = 11 $\frac{1}{2}$

7. The soil valuation under the above rules and scale was sometimes increased, under the circumstances explained in the following extract¹ :—

“When, in consequence of soil possessing some advantage, it appears necessary to enter it in a higher class than is indicated by the depth mentioned in the table, it may be so entered; but a remark should be made in the Classifier’s book, plainly showing the reason for so doing.

Soil along the banks of a large river is often much increased in fertility in consequence of the river flowing over it during the rains. When this is the case, the soil should be entered one or two classes higher than it otherwise would be.”

In such cases a figure showing how many classes the soil was raised was written on the right hand side of the figure denoting the ordinary class of the soil, thus :—

3·2		1·2		Class.	Share,	Value.	
				1·2	1	Ordinary	As. ... 16
						Increase	... 4
1½	¶	1½	¶	3·2	1	Ordinary	... 12
						Increase	... 4
Total ... 2						36 ÷ 2	
						Average value, annas = 18	

8. When any error occurred in making a mark to show fault, it was corrected not by a line drawn across or under the incorrect mark, but by a line drawn round it with the correct mark shown below, thus :—



*Rice-land.*²

9. Rice-land was classed for soil and for water. The soil classification was fixed by the following scale :—

Kind.	Class.	Valuation.	SOILS OF THE		
			Ist Order.	2nd Order.	3rd Order.
			Bhatta, Black, and Beear.	Gerahu or reddish soil.	Maraki or yellowish soil.
		As.	Depth in cubits.	Depth in cubits.	Depth in cubits.
Kyari (Rice) ... }	1	8	1	...	...
	2	6	¾	1	...
	3	4	½	¾	1
	4	2	¼	½	¾

¹ Extract from Capt. Wingate’s Southern Marátha Country Rules, page 106.

² (1) Rice being an aquatic plant is less particular as to the soil in which it grows than any other Kharif or Rabi crop. The deteriorating ingredients,

which are recognized as faults in the classification of soils, have therefore considerably smaller allowances made for them in rice than in Jiráyat land classification, the main point to be looked to being the power of retention of water by the soil. Owing to this circumstance, the classification of rice soil is a much simpler matter than that of Jiráyat, hence the practice of this Survey has been to enter in the Sketch of the Survey number only half the actual valuation according to the ordinary soil scale. The rice scale is as follows:—

Class.	Value in Annas.	1st order of Soil, Black and Besar.	2nd order of Soil, Goradu.	3rd order of Soil, Yellow or whitish soil.
1	2	3	4	5
		Depth in cubits.	Depth in cubits.	Depth in cubits.
1	8	1	...	...
Δ	7	...	...	...
2	6	$\frac{3}{4}$	1	...
Δ	5	...	...	...
3	4	$\frac{1}{2}$	$\frac{3}{4}$	1
Δ	3	...	...	...
4	2	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$
Δ	1	...	...	...

Explanation.—Δ or triconia is the conventional sign for half fault, signifying general inferiority, or in other words the value of pure black or 'besar' soil of 1 cubit depth is 8 annas, which is reduced to 7 annas in case of the existence of a fault or faults, no further reduction being allowed except for short depth.

Note.—In the 'Dar' taktās and other classification records the soil classification annas are entered as double of the annas recorded in the classification books. [Depnty Superintendent, Gujarāt Survey's memorandum No. 433, dated 24th April 1894.]

(2) Rice land is classed for soil and water. For soil up to 8 annas and for water up to 16 annas though by "chads" or "advantages," *e. g.*, the subsoil water advantage, the soil annas can be raised above 8 annas, and when the water-supply from a tank is good enough to irrigate a crop after rice, an addition to the water annas of as much as 8 annas is allowed. Of the normal water, annas 8 are allotted to "akasia" or rainfall water, or the supply which is obtained by drainage from higher lands, and 8 annas to tank supply. The normal annas for soil are doubled before the maximum soil rate is applied. This peculiar rule of classing only up to 8 annas and then doubling the valuation, while it makes the soil factor as important as the water factor in classification, was intended to give effect to the acknowledged absence of need of too great differentiation in soil valuation in rice-land. It had the effect too of ensuring greater attention to the water factor. In rain crop (*akasia*) rice, *i. e.* rice dependant solely on rainfall, the maximum water classification was 8 annas. In "akasia" rice-land then the soil takes $\frac{2}{3}$ of the whole assessment and the water $\frac{1}{3}$ if the soil and water maxima are equal. It was at the time of the Dholka Settlement that these two maxima were separated. Mr. Rogers may be allowed to explain this in his own words, page 41, of "The Land Revenue of Bombay," Vol. I:—"Another difficulty arose in the assessment of the greater portion of the rice-lands. These generally had no source of water-supply but that derived from the particular tanks under which they were situated, and when that supply failed from deficiency of rain, lay altogether waste and unprofitable, there being no means by which the cultivators could recoup themselves for

10. The water classification of the rice-lands was done according to the principles explained below :—

Class.	Inter-mediate Classes.	Valuation Annas.	Description of Water-supply.
<i>1st Water Class.</i>			
I	1	24	Water-supply received from river, nála, or tank by easy flow, sufficient to raise two crops (one of Kharif and the other of Rabi).
	1½	22	Water-supply same as above, but required to be supplemented by well-water later in the season especially in the years of insufficient rainfall, sufficient to raise two crops (one of Pankhali-Kanod rice and the other of Rabi).
	1½	20	Water-supply same as above, but obtained by a lift from the beginning for rice crop and afterwards supplemented by well water, sweet or drinkable brackish, for Rabi crops.
	1¾	18	Lands situated in a low situation water-supply same as that mentioned in Class I.—Intermediate Class 1½ and valued at 22 annas,—supplemented by brackish well water.
<i>2nd Water Class.</i>			
II	2	16	Water-supply received from river, tank or nála, but partly by flow and partly by lift, sufficient to raise one superior crop of Dangar rice with the assistance of brackish well water, but insufficient for an after-crop of Rabi.
	2½	14	Water-supply same as above, but having to be conveyed at a distance entailed more labour.
	2½	12	Water-supply less than that mentioned in the above rule, but sufficient with the assistance of drinkable brackish well water to raise Elaichi or Sutar-sal Dangar rice crop.
	2¾	10	Water-supply less than that mentioned in the above rule, and only sufficient to raise an inferior crop of Sutar-sal Dangar rice.

their loss. This to the system of permanent assessment on such lands, practicable in th nkan and elsewhere, being abandoned, and separate water and soil assessments being fixed on rice cultivation, the former under certain rules not being leviable when the water-supply failed." [Extract from paragraph 10, page 37, Mehmadaabad Revision Settlement, Selection No. CCLXXXVIII, New Series.]

(3) See also Original Settlement Report on the Old Jettalpur Pargana. Daskroi Settlement Selection No. CCXIV, New Series, pages 138-1 to 138-60.]

Class —contd.	Inter- mediate Class.	Valuation annas.	Description of Water-supply.
			<i>3rd Water Class.</i>
III ...	3	8	[Akasia—rain water—rice land.] Lands in low situations and well embanked retaining water-supply sufficient to raise one good Sutar-sál Dangar rice crop with certainty. <i>Note.</i> —[In some cases where the situation was more advantageous than that described above, the classification was raised by (½) half a class and the land valued at 9 or 10 annas.]
	3½	7	Land less favourably situated than that mentioned in the above rule, retaining water-supply sufficient only to raise Sathi Wari, or in years of good rainfall inferior rice such as Sutar-sál, was classed at 7 or 6 annas according to its advantages.
	3¾	6	
			<i>4th Water Class.</i>
IV ...	4	4	Owing to the embankments not being in good order, no rice crop could be grown with certainty in years of insufficient rainfall.

11. In the case of rice-lands which in addition to rain-water, received water from wells, the valuation of the two factors was ascertained by the following table and separately recorded¹ in accordance with the principle followed in the case of Bágáit land.

¹ *Note 1.*—In all cases hereafter the Bágáit and Jiráyat assessment should be shown separately in the Survey records, and the Bágáit rate or Kasar fixed, with as few exceptions as practicable, on the field in which the well is situated, and leviable from the cultivator who has the largest share in the well. (Extract from paragraph 2 of Revenue Commissioner N. D.'s letter dated 11th April 1861, page 138—22. Daskroi Revision Settlement compilation.)

Note 2.—In all lands irrigated from permanent wells the dry-crop assessment of the land calculated on the classer's annas should be kept distinct from the increase leviable on account of the capability of irrigation, and that these two items of revenue should be shown in separate columns of the assessment register (Akárband)—the first as dry-crop assessment of the field, the second as a Bágáit Kasar upon it. The adoption of this principle is desirable for several reasons, the principal one being that it will facilitate the future administration of a surveyed district. (Extract from paragraph 38 of Superintendent Gujarát Survey's letter No. 78, dated 14th February 1863, page 138—56, Daskroi Revision Settlement Selection.)

Rain-water annas.	Well-water sweet.	Total of columns 1 and 2.	Well-water drinkable brackish.	Total of columns 1 and 4.	Well brackish, not drinkable or salt.	Total of columns 1 and 6.
1	2	3	4	5	6	7
Sufficient to raise two crops.						
8	12	20	8	16	4	12
6	12	18	8	14	4	10
4	12	16	8	12	4	8
Sufficient to raise only one crop.						
8	8	16	4	12	2	10
6	8	14	4	10	2	8
4	8	12	4	8	2	6

12. Water drawn by one koss (môt) or water bag was considered sufficient to raise two crops in an area of 3 acres or one crop in an area of 8 acres. At this rate, the average classification Bhág annas of the well-watered rice numbers was ascertained by rule of three as shown in the following examples:—

Suppose a field of 10 acres valued for Akasia at 8 annas received its water-supply from a well—sweet water—worked with one koss. The water supply was valued at 20 annas according to the above scale. In this case the average Bhág annas were worked out thus :

	Acres.	Water valuation according to above scale, including Akasia.	Total Annas.
Area confirmed for double crop according to the above rule	3	20	60
Maximum area irrigable by 1 koss = 8			
Area confirmed for double crop as above	3		
Balance—			
Confirmed for one crop	5	16	80
Surplus area dependent on rain-water only	2	8	16
	10		156 ÷ 10
			As. p. Average annas = 15 7

Thus in this case the average Bhág annas for the whole water-supply (including well-water and Akasia) were confirmed at 15-7. Where the Akasia value varied, the distribution of the water valuation was first effected by rule of three, the average well-water valuation per acre thus ascertained was then added to the Akasia annas as shown in the following example:—

Suppose in the instance above given the Akasia valuation varies thus—

Acres.	As.	
3	8	
5	8	
2	6	
then the well-water valuation which was for		
3	12	or total 36
5	8	40
2	...	...
<hr style="width: 20%; margin: 0 auto;"/>		
10		$76 \div 10 = 7.7$

gave 0-7-7 per acre. This added to the Akasia annas gave total valuation thus:—

Acres.	Akasia.	Well-water valuation.		Total valuation.
		As. p.		As. p.
3	8	7 7	=	15 7
5	8	7 7	=	15 7
2	6	7 7	=	13 7

13. In rice (Kyarda) land only one fault called Tikonia was given and for which the classification was reduced by one anna.

14. In the classification book the entries were made thus:—

Pátasthal and Motasthal Rice.

	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: none;"></td> <td style="text-align: center;">1</td> <td style="text-align: center;">8</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;">Example</td> <td style="text-align: center;">A (Akasia)</td> <td style="text-align: center;">8</td> <td style="border: none;">20 annas,</td> </tr> <tr> <td style="border: none;">No. 1.</td> <td style="text-align: center;">T (Tank)</td> <td style="text-align: center;">8</td> <td style="border: none;">water class.</td> </tr> <tr> <td style="border: none;"></td> <td style="text-align: center;">S (Sweet-water)</td> <td style="text-align: center;">4</td> <td style="border: none;"></td> </tr> </table>		1	8		Example	A (Akasia)	8	20 annas,	No. 1.	T (Tank)	8	water class.		S (Sweet-water)	4		
	1	8																
Example	A (Akasia)	8	20 annas,															
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	S (Sweet-water)	4																

	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: none;"></td> <td style="text-align: center;">1</td> <td style="text-align: center;">8</td> <td style="border: none;">1 Δ fault</td> <td style="text-align: center;">7</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;">Example</td> <td style="text-align: center;">A</td> <td style="text-align: center;">8</td> <td style="border: none;">A</td> <td style="text-align: center;">8</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;">No. 2.</td> <td style="text-align: center;">R (River)</td> <td style="text-align: center;">6</td> <td style="border: none;">R</td> <td style="text-align: center;">8</td> <td style="border: none;">16 annas,</td> </tr> <tr> <td style="border: none;"></td> <td style="text-align: center;">B (Brackish well-water)</td> <td style="text-align: center;">2</td> <td style="border: none;"></td> <td style="text-align: center;">—</td> <td style="border: none;">water class.</td> </tr> <tr> <td style="border: none;"></td> <td style="text-align: center;"></td> <td style="text-align: center;"><hr style="width: 20%; margin: 0 auto;"/></td> <td style="border: none;"></td> <td style="text-align: center;"><hr style="width: 20%; margin: 0 auto;"/></td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;"></td> <td style="text-align: center;"></td> <td style="text-align: center;">24</td> <td style="border: none;"></td> <td style="text-align: center;">23</td> <td style="border: none;"></td> </tr> </table>		1	8	1 Δ fault	7		Example	A	8	A	8		No. 2.	R (River)	6	R	8	16 annas,		B (Brackish well-water)	2		—	water class.			<hr style="width: 20%; margin: 0 auto;"/>		<hr style="width: 20%; margin: 0 auto;"/>				24		23		
	1	8	1 Δ fault	7																																		
Example	A	8	A	8																																		
No. 2.	R (River)	6	R	8	16 annas,																																	
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		<hr style="width: 20%; margin: 0 auto;"/>		<hr style="width: 20%; margin: 0 auto;"/>																																		
		24		23																																		

Motasthal Rice (watered by wells only).

Example No. 3.	I	^	7
	A		8
	Sweet		12

In the case of Motasthal rice lands the average water annas were afterwards fixed according to the table and rules given above.

The maximum water valuation for (1) tank or river, (2) Akasia, and (3) well-water, was fixed at 24 annas.

Pâtasthal Bâgâit.

15. Lands other than rice lands which received water-supply from a river or tank by a "pât" were classed for water according to the following scale:—

Class.	First Class supply, value.	Class.	Second Class supply, value.
1	24	2	16
$1\frac{1}{4}$	22	$2\frac{1}{4}$	14
$1\frac{1}{2}$	20	$2\frac{1}{2}$	12
$1\frac{3}{4}$	18	$2\frac{3}{4}$	10

Water-supply sufficient to raise two Bâgâit crops, or one superior kind of crop, such as sugarcane, was considered first class water-supply.

Water-supply lasting till the end of February was considered sufficient to raise two crops and classed as first class.

Water-supply which did not last till the end of February or which was not sufficient to raise two crops, or one superior kind of crop, was classed as second class supply.

The different classes of water-supply were fixed on considerations of sufficiency, or otherwise, of the water-supply, the difficulty or labour involved in carrying water to the field, the duration of the supply and the cost of aqueducts, &c.

Natural Garden or Uttam Bâgâit.

16. Natural garden (or Uttam Bâgâit) soil is generally of extraordinary depth, and good water is always found from 22 to 35 feet beneath the surface. The soil is both Jirâyet Bâgâit and Rice Bâgâit. The very best crops of rice of the description

known as Manjurwel followed by Maithi, Túr, or Wál are produced yearly and every fourth year sugarcane, if the soil is well manured.

17. Both the Jirávet Bágáit and Rice Bágáit soils were classed according to the scale given below:—

Class.	Value.
1	16
1½	15
2	14
2½	13
3	12
3½	11
4	10

The maximum scale valuation was 16 annas. It was reduced by faults up to annas 10,¹ which was the lowest valuation for this description of soil. Survey numbers of which the classification was reduced by faults below 10 annas were not dealt with as Natural Garden. Depth of water from the surface did not affect the valuation of the soil though it was noted in the Prati book as shown below:—

Natural Garden Jiráyat.

३३	Water sweet 15 feet.	६ (N. B.)
३३		

18. Natural Garden (Karyari), *i.e.* Rice, was classed for soil according to the above scale. Such lands were not classed for Akásia or rain-water, but if they were found capable of producing superior garden-crops, such as sugarcane, plantains, &c., by rotation, with the assistance of a Pakka or Kacha well, or Dhekudi, the classification valuation was increased by the addition of 2 or 3 Gúns, *i. e.* 4 or 6 annas, 1 Gún being taken as equal to annas 2. The entries in the classification book were made thus:—

¹ It is only lately that the actual rules under which the original classification of these soils was done have been discovered, though the principles have been apparent enough all along. These rules practically amount to this, that wherever sugarcane was grown the soil was to be classed as ordinary Jiráyat or Kyari and the letter (३) (standing for *utyam*) to be entered in the Prati book. No account was to be taken of the depth or class of water. The limit of classification was first fixed at 10 annas, but was afterwards reduced to 6. In the case of rice soils instead of the ordinary Akásia and Himáyat classification, *gúns* up to 6 annas and 8 annas, respectively, were to be added. In ordinary Jiráyat Bágáyat villages a well-kasar was imposed varying from Rs. 24 to Rs. 18 per kos. [Extract from paragraph 43 (111) of Mr. Maconochie's Revision Settlement Report of Chikhli Taluka, page 15, Chikhli Selection.]

Natural Garden (Uttam Bágáit) Kyari—Rice.

$8 \times 2 = 16 ; + 6$ $= 22$ <p>Water sweet 25 feet.</p> <p>३ (N. B.)</p>

19. Where the Natural Bágáit Kyari had, besides well water, the assistance of tank, the classification was increased up to "gün," the entries in the classification book being made thus:—

$8 \times 2 = 16 + 6 + 2$ $= 24$ <p>Water sweet 24 feet.</p> <p>३ (N. B.)</p>

20. All Natural Garden—Bágáit—lands, whether Jiráyat or Kyari, were entered as "Garden" in the Survey records.

Bhatta Lands.

21. Bhatta is alluvial deposit which contains in itself sufficient water or rather moisture for producing valuable crops, or the water is so near the surface that it can always be obtained in any quantity by digging holes.

22. Lands of this description were divided into three orders as follows:—

1st Order Bhatta.

Bhatta land lying either above the high flood level or sufficiently high to make it permanent and which could be defined by permanent boundary marks. Land of this order was recorded as "permanent Bhatta."

2nd Order Bhatta.

Bhatta land so situated that although it could not be defined by permanent boundary marks it was sufficiently permanent at the time of classification on account of being occupied or from other causes to enable it being classed according to its present value. Land of this order was recorded as Na Kaim Akár, but its value was entered in the register and its Dar in the Akárband and it was yearly assessed at the Kaim Dar according to the area cultivated which was ascertained by annual measurement.

23. The soil of the above two orders of Bhatta was classed both for soil and water according to the scale given below :—

Soil Anna value "Gāns" inclusive.	INCREASE TO SOIL CLASSIFICATION ON ACCOUNT OF DEPTH OF WATER FROM THE SURFACE.			Above 20 feet, only the soil annas.
	Within 8 feet, increase 8 annas.	Within 14 feet, increase 6 annas.	Within 20 feet, increase 2 annas.	
1	2	3	4	5
20	28	26	22	20
19	27	25	21	19
18	26	24	20	18
17	25	23	19	17
16	24	22	18	16
15	23	21	17	15
14	22	20	16	14
13	21	19	15	13
12	20	18	14	12
11	19	17	13	11
10	18	16	12	10
9	17	15	11	9
8	16	14	10	8

The depth of water from the surface was ascertained by the classers by enquiry from the cultivators by inspection, and by measuring the depth of Kacha wells on adjoining lands of the same level.

3rd Order Bhatta.

Bhatta land liable to be swept away by floods and which it was the custom to sell by auction in consequence was recorded as "Bin A'kari."

The entries in the classification book in the case of the 1st and 2nd order Bhatta lands were made as shown below :—

2½	+
1¼ (First order)	2
Bh. 1	
Water 10 feet.	

Lands watered by Dhekudis.¹

24. Lands capable of being irrigated from a river or tank

¹ (1) See Dhekudiat classification scale given in Appendix D to Chapter XII—Part III—Settlement, Vol. III.

(2) All lands capable of being irrigated from rivers, whether the "dhekudis"

by Dhekudis—but the water advantage of which was not classable under any other rules—had their water advantage classed by a scale of values varying from 2 to 16 annas according to the facility or difficulty in getting the water, and on considerations¹ of the distance the water was taken and the cost of the aqueducts.

B.—Revision Classification.

25. In Gujarát, Dholka was the first táluka that was brought under the regular Revision Settlement in 1887. The nature and scope of the revision classification operations—which were carried out on the Partial System—may be explained thus :—

(1) A verifying inspection and test of the original soil classification of all new Survey and P&T numbers of both dry-crop and rice was made simultaneously with a valuation² of the existing subsoil water advantages possessed by every field.

(2) The original classification was confirmed in all cases in which the verification *in situ* established its correctness *within a prescribed margin of difference*.

(3) In cases where the original classification “was found to be not satisfactory enough to confirm or adjust³,” it was done entirely *de novo*, the scale adopted being the existing, *i. e.* the original classification scale (given under paragraph 2 above.)

(4) The water-supply of the old rice lands was dealt with as shown below :—

(a) “Akásia” or rain-water, and

actually exist or not, have been first assessed at dry-crop rates, and a separate water rate added, varying with the distance of each field from the source of supply and according to the difficulty and expense of constructing the “dhekudis.” This rate can be immediately struck off in case the river should change its course. [Rule 3 under paragraph 11 of Colonel Prescott’s letter No. 542 of 31st December 1862—Original Settlement Report—Mátar.]

¹ This “Kasar” has been calculated on the following considerations, viz. :—

1st.—The duration of fallows between hágait crops.

2nd.—The quality of the water.

3rd.—The number of acres irrigable.

4th.—The supply of water in each well; and the strength and velocity of the spring.

By this scale the highest rate imposable per ‘Kas’ on the best wells in the best villages is Rs. 24, and on the worst Rs. 1-8-0 [para. 104, Chikhli Old Settlement Report—*vide* page 60, Chikhli Selection.]

² The rules and the valuation scale according to which this operation was carried out will be found in Appendix B to Chapter XII. Well Assessment—Part III—Settlement, Vol. III.

³ The scale according to which the adjustment was made was as follows :—

From 14 annas to 12 annas—was raised 1 anna and 6 pies.

From under 12 annas to 10 annas—was raised 1 anna.

From under 10 annas to 8 annas—was raised 6 pies.

No adjustment was made in the case of numbers of which the classification was under eight annas

(b) Water obtainable from other sources than wells were classed *de novo* under the existing rules and scales (paragraphs 9 and 10 above).

(c) The existing valuation of the water-supply from wells was in accordance with the policy sanctioned by Government,¹ eliminated altogether, and in lieu thereof a small addition on account of subsoil water advantage was made to the soil classification in accordance with the subsoil water classification rules and scale.²

(5) Lands capable of irrigation by Dhakadis had their water-supply classified in accordance with the rules and scale given in Appendix A. to this section.

(6) Alluvial or Bháta lands were dealt with in the manner described below :—

(a) Bháta lands in permanent occupation at the revision survey were re-classed *de novo* according to the existing rules and scale (paragraph 22 above).

(b) In the case of permanently occupied Bháta lands which at the revision survey were submerged in the bed of the Sábarmati river and were in consequence not capable of identification and re-classification, the original classification annas were confirmed for the purpose of their revised assessment.

(c) Bháta lands not found to be permanently occupied were not classed.

(7) New rice, *i. e.* dry-crop lands converted into rice during the original settlement, were not re-classed, but an addition was made to their soil classification annas according to the following rules :—

Class I.—Where the land lay below the level of existing rice land or of the dry-crop land in the vicinity, and nothing had to be done but to build the embankments in order to catch the rainfall and drainage waters, an addition of four annas was made.

Class II.—Where the land lay on the same level as that of the existing rice land or dry-crop in the vicinity, and nothing had to be done but to build the embankments to impound the rainfall, an addition of three annas was made.

Class III.—Where the land lay slightly above the level of the existing rice land and dry-crop land in the vicinity, and some excavation had to be made, an addition of one anna was made.

Class IV.—Where the land had to be converted by terracing, no addition was made.

26. The principles above described were *mutatis mutandis* followed in revising the original classification of all the tálukas of the Ahmedabad and Kaira Districts, with the exception that while in all the tálukas revised before the Mehmabad Táluka of Kaira, the Dhakudiat lands were classed both for Dhakudiat water and also for subsoil water advantage, in Mehmabad and the other

¹ Government Resolution No. 2619, dated 26th March 1884, printed as Appendix A. to Chapter XXII. Exemption from taxation of improvements &c., Vol. III.

² These rules and scale will be found in Appendix B. to Chapter XII. Well Assessment—Part III. Settlement. Vol. III.

talukas of Kaira revised after it, such lands were only classed for the latter.¹

Surat District.

27. The nature and extent of the revision classification carried out in this district may be described thus :—

() —*Ordinary Jirayat.*

In the following cases the classification was done entirely *de novo*—

- (a) Numbers measured at the revision measurement.
- (b) Numbers broken up at the revision measurement.
- (c) Numbers measuring one acre and less.

The scale adopted was the original jirayat classification scale (given under paragraph 2 above).

(d) The original classification of all numbers not falling under either (a), (b), or (c) was confirmed.

(e) In all cases (a) to (d), the subsoil water advantages, wherever they existed, were classed according to the following scale :—

Soil Annas.	Order I. Sweet throughout the year.			Order II. Slightly brackish but drinkable.			Order III. Brackish, undrinkable.			Order IV. Brackish and undrinkable and becoming salt.		
	A	B	C	A	B	C	A	B	C	A	B	C
	10 feet and less.	Over 10 and up to 20.	Over 20 and under 40.	10 feet and less.	Over 10 and up to 20.	Over 20 and under 40.	10 feet and less.	Over 10 and up to 20.	Over 20 and under 40.	10 feet and less.	Over 10 and up to 20.	Over 20 and under 40.
20 annas and above.	6	5	4	5	4	3	4	3	2	1	$\frac{1}{2}$	...
16 annas and under 20	5	4	3	4	3	2	3	2	1 $\frac{1}{2}$	1	$\frac{1}{2}$	...
12 annas and under 16	4	3	2	3 $\frac{1}{2}$	2 $\frac{1}{2}$	1 $\frac{1}{2}$	2	1 $\frac{1}{2}$	1	1	$\frac{1}{2}$	...
8 annas and under 12	3 $\frac{1}{2}$	2	1 $\frac{1}{2}$	2 $\frac{1}{2}$	1 $\frac{1}{2}$	1	1 $\frac{1}{2}$	1	$\frac{1}{2}$	1	$\frac{1}{2}$	...
5 annas and under 8	2 $\frac{1}{2}$	1 $\frac{1}{2}$	1	1 $\frac{1}{2}$	1	$\frac{1}{2}$	1	$\frac{1}{2}$	...	...	...	...

Note. 1. A fault (half the addition) to be given to rocky substratum or other obstacle to construction of well and a similar fault for deficiency in supply.

2. Order IV. to be applicable to rice lands only.

3. In rice land the addition required by the above scale is that which is applicable to the soil classification annas doubled.

4. If water is slightly Chopdu or Bhandaru, but still used for irrigation, the annas of the next lower order shall be applied.

¹ Vide Section 3, Dhokudiat, to Chapter XII. on Well Assessment—Part III. Settlement. Vol. III.

Old Rice.

28. The soil classification in the following cases was re-done:—

- (1) All numbers of which the original classification records were lost.
- (2) All broken-up or re-measured numbers.
- (3) All numbers measuring one acre or less.

An addition was made to soil classification annas of all lands growing a second crop.¹

The water advantages were re-classed as shown below:—

- (1) Akasia (supply from direct rainfall); and
- (2) Himayat (supply from tank or river). These two were re-classed under rules given in Appendix B to this section;
- (3) Subsoil water advantage.

Natural Bāgāyat (Uttam Bāgāyat) lands.

29. At the revision survey only those lands were classed² as natural (Uttam) Bāgāyat which were found to fulfil the following two conditions, viz.:—

- (1) The soil must be superior order soil, *i. e.* fine rich, reddish, and occasionally reddish brown, loamy mould found both inland and on the banks of rivers which grows with irrigation sugarcane, in rotation with plantains, ginger, turmeric, yams, &c.

¹ At the original settlement a specially high maximum rate was imposed on rice lands in villages where a second crop was usually grown. The result was that though a distinction was made between villages, no such distinction was made between individual fields whether they grew a second crop or not. Moreover, as the advantage was allowed for in the maximum rate and not in the classification annas, those advantages which were allowed for in classification, such as Akasia and Himayat, were subjected to a double charge. The facility for growing a second crop has now been included as a factor in the soil classification. The number of times in which a second crop has been grown in 15 years is ascertained from the Pabāni Patraks and *gāns* are added accordingly. [Extract from Clause II under paragraph 43 of Mr. Maconochie's report on Chikhli—*vide* page 15, Chikhli Revision Settlement Selection No. CCCLXXXI, New Series.]

² The object of the revision classification has been to eliminate from the natural Bāgāyat class all lands except those in which superior garden soil is found together with unusual facilities for irrigation. With this view it is provided in the rules that (1) land of this class fulfilling both conditions is to be designated "Uttam Bāgāyat" and is to be classed as such whether or no it was so classed at the original survey; (2) Uttam Bāgāyat soil is to be classed on a scale rising to 24 annas by the addition of *gāns*, and the special irrigational facilities are to be met by a special subsoil water scale; (3) where water is obtainable only below 30 feet or is not perfectly sweet throughout the year, the land cannot be treated as Uttam Bāgāyat though the soil may be treated as superior order, if it can be properly so classed. [Extract from clause III, paragraph 43, of Mr. Maconochie's report, Chikhli Revision Settlement Selection, page 15.]

(2) There must be easy facilities for irrigation with perfectly sweet water from kachha or pakka wells. Only where both these conditions are satisfied shall any land be dealt with as natural Bágáit.

30. These lands were classed for soil on a scale rising to 24 annas (see scale given under paragraph 17 above) by the addition of "gũns," the lowest valuation being annas 16. In case of faults the valuation was reduced up to 14 annas, but where by faults it was reduced below 14 annas, the soil was treated not as superior order, but as ordinary Gorat, and not classed as Uttam Bágáyat.

31. Natural Bágáyat (Kyari) rice was, in addition to soil classification, classed for water, *i. e.* for Akasia up to 8 annas and for tank Himayat up to 8 annas as in the case of ordinary rice, except that no addition was made on account of tank himayat for the growth of a second crop after rice.

32. The special water facilities of these lands were classed by the following subsoil water classification scale :—

Soil Annas.	ORDER I.		
	Sweet throughout the year.		
	A	B	C
	10 feet and less.	Over 10 and up to 20 feet.	Over 20 and up to 30 feet.
20 annas and above	12	9	6
16 annas and under 20 annas ...	8	6	4
14 annas and under 16 annas ...	6	4½	3

33. Lands which did not fulfil the second of the two conditions above referred to, *i. e.* in which water was obtainable only below 30 feet or was not perfectly sweet throughout the year, the land was treated as Uttam Prakár, and was classed up to 24 annas for soil and for water facilities at the ordinary subsoil water classification scale.¹

Bhátá Lands.

34. Where the original classification Bhág annas were in existence or deducible, those annas were confirmed. Where re-

¹ See scale given under paragraph 27 (e).

classification was necessary it was done according to the ordinary soil classification scale¹ with additions or *gúns* for silt deposits up to 4 annas.

35. The water facilities of Bháta were classed at double the subsoil water classification scale for ordinary jiráyat.

Lands watered by Dhekudis.²

36. Lands irrigated by Dhekudis were, besides their soil valuation, classed for water according to the scale given below :—

Soil Annas.	Distance of land from site of Dhekudi.	Depth of water in the Dhekudi or to water level in the stream on 1st February.		
		Under 10 feet.	10 feet to under 25 feet.	25 feet to under 35 feet.
		Annas.	Annas.	Annas.
16 annas and over ...	Under 10 chains	16	12	8
	From 10 to under 20 chains ...	12	8	6
	From 20 chains and over ...	6	4	2
10 annas to under 16...	Under 10 chains	12	9	6
	From 10 to under 20 chains ...	9	6	4½
	From 20 chains and over ...	4½	3	1½
5 annas to under 10 ...	Under 10 chains	9	6½	4½
	From 10 to under 20 chains ...	6½	4½	3
	From 20 chains and over ...	3	2	1

¹ See scale given under paragraph 2 above.

² Colonel Prescott found that in the natural Bágáyat tracts the water obtained direct from rivers made this superior order soil yield better crops of sugarcane than when it was taken from kacha wells, and he therefore imposed the fixed Bágáyat assessment. In ordinary Jiráyat tracts he imposed an extra water rate with a maximum of Rs. 6 per acre determined by a special water scale varying from 2 annas to 16 annas per acre according to the facility or difficulty of getting the water, and on a consideration of the distances the water was taken and the cost of aqueducts. When revision operations were undertaken in Gujarát lands were assessed for Dhekudiat as at the previous settlement. When the settlement of the Mátar Táluka of Kaira was under consideration, however, Government came to the conclusion that "it would be better policy to forego" this revenue "altogether than either (1) to maintain the Dhekudiat assessment in its present form at the cost of constant trouble and watchfulness, if it is to be written off as it should be, as often as, owing to changes in the river and other causes water is no longer available or at the risk of hardship to the occupants if that duty is neglected, or

Government Resolution
No. 5870 of the 10th July
1894.

(2) to substitute a bag rate." It was ordered accordingly that Dhekudiat assessment was to be foregone in the Ahmedabad and Kaira Districts. In the Surat District the three first tálukas dealt with—Chorási, Olpad, and Bárdoli—were found to contain very little land watered from Dhekudis, and the

37. The classification of the Broach District has been revised in accordance with the principles explained in paragraphs 27 to 36 above.

38. In the Panch Maháls three tálukas have been revised and two (Godhra and Kálol) are under the original settlement. In the former, with the exception of the subsoil classification, the whole of the original classification which had been carried out on the system applied to the Kaira District was confirmed. The subsoil water classification in these tálukas was carried out in accordance with the rules and scales given in Appendix B. to Chapter XII. on Well Assessment—Part III. Settlement. Vol. III.

Pôt Kharáb.

39. The general principles which regulated the deduction on account of Pôt Kharáb, called "Peta Kharábo," were the same as in the Deccan Survey. These will be found described in Section I. Deccan Classification, and also in Chapter IX. Pôt Kharáb, Part III. Settlement.

Records prepared in the course of the classing Barsát Tapásni.

40. The various statements and memos (*vide* paragraphs 64 and 65, Section I. Deccan and S. M. C. Classification) prepared in the course of the classification Barsát Tapásni may be roughly divided under two heads as shown below :—

(a) Statements showing the results of the field operations, measurement and classification, which form the basis of the final operation of the survey, *viz.* the settlement.

(b) Statements prepared with the object of checking or verifying the details entered in the measurement and classification field books and other papers connected with those operations.

41. The statements and memos falling under (b) are of a temporary character and are destroyed after the táluka to which they relate has been settled. Those falling under (a) are of a permanent character and are handed over to the Revenue

Deputy Superintendent assumed that the orders given in the case of Ahmedabad and Kaira would apply to them. The Survey Commissioner pointed out, however, that the circumstances in the Surat District, where the beds of the rivers are unchangeable, and Dhokudis once erected last for ever, were different to those of Kaira and Ahmedabad, with their river beds of shifting sand liable to violent alterations with the floods of each monsoon. He therefore drew up new Dhokudiar Rules which were sanctioned by Government Resolution No. 2384 of 26th March 1897 for application to Dhokudiar lands in Surat." [Extract from clause V. page 16, Chikhli Revision Settlement Selection.]

Department after the settlement of the taluka to which they relate is completed. In the Gujarát Survey, the records falling under this head (a) comprise, among others, the following final papers on which the settlement is based :—

- (1) Paháni Súd—showing the result of the measurement operations.
- (2) Darwári do. of classification.
- (3) Register (Akaband) do. of measurement and classification operations.

The forms in which these papers are prepared are appended with explanatory notes given at the foot of each.

— SURVEY.

PAHANI SUD. (FORM No. 1.)

Manje , *Taluka* , *District* , *Year 19* ,

Number.	According to Old Muzi Pakhat.		Name of Field.	Tenure.	Name of occupant, or in the case of alienated land, the name of the holder and also the name of the Valhaskdar, if any, of such holder.	AREA ACCORDING TO MEASUREMENT									
	Pat Survey Number.	Pat Num- ber.				Total area.	Kharab.	Jira- yat.	Remaining culturable area.				Total culturable area.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14		
1	...	2	2	Talavala	Government	Ichharam Lalubhai	3 20	0 20	3 0	...	...	...	A. G.
2	...	1	5	Dongarwala	Do.	Chimantal Harderam	6 30	0 10	4 10	...	2 10	...	A. G.		
3	...	3	5	Talavala	Barkhali	Vallabhram Chaganlal	2 10	...	2 10	...	...	...	...
4	1	4	6	Pimpalvalu	Government	Harjivan Jaykisan	8 0	...	8 0	...	...	...	8 0
..	2	5	14	Nadipasinu	Do.	Do.	2 10	0 10	2 0	...	...	...	2 0

PA'HANI SU'D (FORM No. 1.)

Explanatory Notes.

In this paper are brought together the results of the measurement operations after they have been verified during the classing operations by the classer. The paper is prepared by the classer in the course of the classing Barsát Tapásni after the entries in the measurement records have been carefully examined, and corrected where necessary. It is in fact a transcript of the measurement field book as finally examined by the classer in the course of the Barsát Tapásni. It shows the details of each survey sub-division (survey number or pôt number) separately.

2. Column 1 shows the Chálta number, *i. e.* the consecutive number in the order in which the several fields in the village are measured by the measurer. Column 2 shows the numbering finally adopted, *i. e.* the numbering given to the several fields in the Pakka map. The entries in columns 4, 5, and 6 are taken from the Mâji Dâkhla, *i. e.* the existing records of the village. Those in column 7 are taken from the measurer's field book after it has been examined by the classer in the course of the field operation and the Barsát Tapásni. The remaining columns explain themselves.

GUJARAT SURVEY.

DARWARI (FORM No. 2.)

Mauje , *Taluka* , *District* , *Year 19* .

Rate (Valua- tion)	Government.						Narwa and Bhagdari.			Government Haidi.			Alienated land of all other kinds.			Total.	
	Occupied.			Unoccupied.			Num- ber.	Acres.	Total Asses- ment.	Num- ber.	Acres.	Total Asses- ment.	Num- ber.	Acres.	Total Asses- ment.	Total of Columns 3, 6, 9, 12 and 15.	Total of Columns 7, 10, 13 and 16.
	Number.	Acres and Gunthas.	Total Asses- ment.	Number.	Acres.	Total Asses- ment.											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Acres. 20		A. g. ...	Rs. a. p. ...	...	A. g. ...	Rs. a. p. ...	...	<i>Dry crop.</i> ...	...	...	...	...	3	A. g. 2 10	Rs. a. p. 8 0 0	A. g. 2 10	Rs. a. p. 8 0 0
16	1	3 0	9 0 0	1	0 20	1 8 0	...	...	...	...	...	...	...	...	...	3 20	10 8 0
"	4 (1)	8 0	24 0 0	...	...	...	...	...	...	...	...	...	...	...	...	8 0	24 0 0
		11 0	33 0 0	...	0 20	1 8 0	...	...	...	...	...	...	...	...	...	11 20	34 8 0
12	2	4 10	9 9 0	2	0 10	0 9 0	...	...	...	...	...	...	...	...	...	4 20	10 2 0
"	4 (2)	2 0	4 8 0	Pot 4 (2)	0 10	0 9 0	...	...	...	...	...	...	...	...	...	2 10	5 1 0
		6 10	14 1 0	...	0 20	1 2 0	...	...	...	...	...	...	...	...	...	6 30	15 3 0
Total Dry-crop ...																20 20	58 2 0

GUJARÁT SURVEY.

DARWARI (FORM No. 2.)

Explanatory Remarks.

This is a statement or memorandum of the assessment of numbers arranged according to their valuation annas taken from the classer's book. The manner in which the entries are made will be seen from the above form. All numbers bearing the same valuation are shown in their consecutive order and the total of all the numbers coming under each rate is then made.

2. Lands held on different tenures such as Narwa, Alienated, &c., are shown separately. Separate Darwaris are prepared for different kinds of lands such as rice, bágáit, bháta, &c.

3. The rate entered in column 1 represents the Pakka Bhág annas (*i.e.* classification valuation with fractions eliminated according to the classification Dharsod scale—*vide* paragraph 56, Section I, Deccan and S. M. C. classification).

4. The details regarding the area are taken from the Paháni Súd.

REGISTER FORM No. 3.

REGISTER

Mouje

Taluka

Details of land shown

No.	Survey No.	Pât No.	Description of land and tenure.	Area.			Distance from the village site.	Details of land shown							
				Total area	Deduct Pât kharâb.	Remaining culturable.		Jindâr.				New Kajârî.			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1	...	...	Government	3 20	0 20	3 0	Miles.	A. G.		Ras. a. p.	18. S. p.	...	...	...
2	...	...	Do.	6 30	0 10	6 20	4	3 0	16	3 0 0	9 0 0	...	...	...
3	...	...	Hâkhal	2 10	...	2 10	4	4 10	12	2 4 0	9 9 0	...	...	...
4	1	...	Government	8 0	...	8 0	4	2 10	20	4 1 6	9 3 4	...	...	...
5	2	...	Do.	2 10	...	2 0	4	8 0	16	3 0 0	24 0 0	...	...	...

Bagan,

Koach,

Old Kajari,

Water.

Kayandar of rate of assessment

Assesment according to the Kayandar.

Area.

Classification areas.

Kayandar of rate of assessment.

Assesment according to the Kayandar.

Classification areas.

Kayandar of rate of assessment.

Assesment according to the Kayandar.

Total of columns 47 and 50.

Total of columns 11, 15, 19, 23, 27, 35, 39, 43, 47 and 50.

Assesment on Pachadiat among Subsoil.

Amount of assessment as per column 52 after making *Tharod*.

Amount of assessment as per column 53 after making *Tharod*.

Total of each row 54 and 55.

42

43

44

45

46

47

48

49

50

51

52

53

54

55

56

Rs. a. p.

9 0 0

25 9 6

9 2 4

24 0 0

4 8 0

Rs. a. p.

9 0 0

26 0 0

9 0 0

24 0 0

4 0 0

Rs. a. p.

9 0 0

26 0 0

9 0 0

24 0 0

4 0 0

REGISTER (FORM No. 3.)

Explanatory Remarks.

This paper is called the Register and is prepared from the Paháni Súd and Darwari. It contains all the information required for the Land Register, Village Form No. 1.

2. The entries as to area (columns 8, 12, 16, 24 &c.) are taken from the Paháni Súd, while those relating to classification (column 9, 13, 17, 20, 25 &c.) are taken from the Darwari. By Káyamdár or rate of assessment (columns 10, 14, 18, 21 &c.) is meant the rate of assessment arrived at by the multiplication (or by the application of the rate jantri—*vide* Chapter III.—Calculation of rates and assessment) of the maximum rate sanctioned by Government and the classification valuation. Thus in the case of No. 3 the valuation is annas 20, and as the maximum rate sanctioned for the village is Rs. 3, the rate of assessment comes to Rs. 4-1-6 (the number being within $\frac{1}{4}$ of a mil.) which is entered in column 10. The rates entered in all the Káyamdár columns are calculated in this way.

3. By "Assessment according to the Káyamdár" (columns 11, 15, 19, 22 &c.) is meant the Pakka Akár (*vide* Chapter III. Calculation of rates and assessment), which is the product of the káyamdár and the area of the number. Thus in the case of No. 3, the Káyamdár is Rs. 4-1-6 and the area of the number is 2 acres 10 gunthas. The Pakka Akár is therefore (Rs. 4-1-6 \times 2 acres 10 gunthas=) Rs. 9-3-4, *i.e.* Rs. 9, exclusive of fractions, which is entered in column 11.

4. In the Gujarát Survey this Register is prepared by the classing establishment with the exception of the *Káyamdár* and Assessment columns, which are filled in in the Survey Daftardár's office after the settlement proposals (maximum rates) have been sanctioned by Government. (*Vide* remarks on Akarband—Paper No. 11, Chapter XXV, Survey Records, Vol. III.)

SECTION IV.

KONKAN CLASSIFICATION.

A.—Original Survey.

The term Konkan is applied to the three districts of Thána, Kolába, and Ratnágiri. Cultivation in these districts is of four kinds, rice, rabi, garden, and varkas. Rice is the staple crop, the rainfall being too heavy for good dry-crop.

2. The first sub-division in the Konkan that was brought under the Bombay system of survey settlement (in 1854-55) was the Khálápur Petta of the old Nasrápur (now Karjat) Táluka, which then belonged to the Thána District.

3. The scale adopted for the soil classification of rice lands¹

¹ With regard to the classification of rice lands, a great many varieties or different kinds of rice are produced in the Nasrápur Táluka, but the cultivators generally class them under the two denominations of 'hulwa' and 'gurwa.' The former includes the early crops of rice, which are almost all the coarse and inferior descriptions of grain, commanding, comparatively speaking, a small marketable value. 'Panwell putnee' is the finest kind coming under this head, but it does not fetch the same price in the bazár as the gurwa sorts. The coarsest kinds are the 'panpeek,' so called from the circumstance of their being harvested during the monsoon, about the end of September being the time that the cutting of this kind of crop is commenced. All other descriptions of 'hulwa' are usually harvested during the month of October.

'Gurwa' is the term applied to the late crops. All the fine kinds of rice come under that denomination. They are longer in the ground than the hulwa, and as their cutting season does not commence until the beginning of November, they necessarily require a situation where there is a good command of water, or some internal spring to afford moisture after the earlier monsoon rains are over. These descriptions always fetch from Rs. 2 to 3 a candy more than the hulwa.

I propose to take advantage of the above-mentioned classification of the crops, which is familiar to the cultivators, classes throughout the Konkan, not on that account merely, but because it affords a good standard of comparison by which we may estimate the relative value of the productive properties of each kind of rice lands, and moreover will form, I anticipate, a good guide for our classes, as 'hulwa' and 'gurwa' fields are readily distinguished from each other.

I have endeavoured to obtain an estimate of the produce of the different kinds of rice, and thence to deduce the value of the crop according to the market price of each. I find that my Assistant, Lieutenant Day, has also made enquiries on this subject. His estimate of the proportionate value of the crop of each kind of rice agrees very nearly with that I had prepared from my own enquiries. I am, however, of opinion that one candy per beegha, which he gives as the probable yield for the best rice lands, is considerably less than their actual bulk of produce, and that if half as much again were assumed, it would be a nearer approximation to the truth; but putting aside this difficult question, I am inclined to think that our estimates of the proportionate value of the crop of each kind of rice may be taken as the standard of valuation by which our classification should be regulated.

With this view I have prepared the following statement, in which the estimated

REGISTER (FORM No. 3.)

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4. In the Gujarát Survey this Register is prepared by the classing establishment with the exception of the *Káyamdár* and Assessment columns, which are filled in in the Survey Daftardár's office after the settlement proposals (maximum rates) have been sanctioned by Government. (*Vide* remarks on Akarband—Paper No. 11, Chapter XXV, Survey Records, Vol. III.)

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'Gurwa' is the term applied to the late crops. All the fine kinds of rice come under that denomination. They are longer in the grounds than the hulwa, and as their cutting season does not commence until the beginning of November, they necessarily require a situation where there is a good command of water, or some internal spring to afford moisture after the regular monsoon rains are over. These descriptions always fetch from Rs. 2 to Rs. 4 a candy more than the hulwa.

I propose to take advantage of the abovementioned classification of the crops, which is familiar to the cultivating classes throughout the Konkan, not on that account merely, but because it affords a good standard of comparison by which we may estimate the relative value of the productive properties of each kind of rice lands, and moreover will form, I anticipate, a good guide for our classers, as 'hulwa' and 'gurwa' fields are readily distinguished from each other.

I have endeavoured to obtain an estimate of the produce per beegha of the different kinds of rice, and thence to deduce the value of the crop according to the market price of each. I find that my Assistant, Lieutenant Day, has also made enquiries on this subject. His estimate of the proportionate value of the crop of each kind of rice agrees very nearly with that I had prepared from my own enquiries. I am, however, of opinion that one candy per beegha, which he gives as the probable yield for the best rice lands, is considerably less than their actual bulk of produce, and that if half as much again were assumed, it would be a nearer approximation to the truth; but putting aside this difficult question, I am inclined to think that our estimates of the proportionate value of the crop of each kind of rice may be taken as the standard of valuation by which our classification should be regulated.

With this view I have prepared the following statement, in which the estimated

in this petta as well as in the whole of the Nasrápur Táluka and

yield of the chief kinds of rice, and the value of the crop are shown, one candy to the beegha being assumed as the maximum yield for the best lands:—

Names of Rice.	Description of Crop.	Produce per Beegha.		Marketable price per Candy.			Value of the Crop.			Classification, Rate, Soil, and Water combined.			
		Cd.	Md.	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.	
Ambchmore	... Gurwa ...	1	...	16	0	0	16	0	0	}	0	16	0
Kolamba	... Do. ...	1	...	15	0	0	15	0	0				
Putnee	... Do. ...	1	...	14	0	0	14	0	0	}	0	13	10
Do.	... Hulwa ...	1	...	13	0	0	13	0	0				
Kolamba	... Do. ...	...	18	12	8	0	11	4	0	0	12	0	
Marree	... Panpeek...	...	16	11	8	0	9	3	2	0	9	9	
Yelchee	... Do. ...	...	15	11	0	0	8	4	0	0	8	9	
Booreh	... Do. ...	...	15	10	8	0	7	14	0	0	8	5	

From the above table it will be seen that assuming 16 annas for classification purposes as the value of the 'gurwa' kinds, from 14 to 12 annas will be the proportionate value of the hulwa, and about 9 or 10 annas that of the panpeek crops. These are the three principal kinds of rice, and you will find by referring

to the accompanying Maráthi papers,* that the rules I have drawn up for classification are calculated to work out the result given in the statement. For instance, take the case of a hulwa field falling into the 2nd water class, its rate will be 6 annas, and if we say 7 or 8 annas for the soil, it will give 13 and 14 as the value found by the classification scale, and in the same manner the 4th class water rate and 3rd order of soils will give 10 annas for the best 'panpeek' crops, which is about their estimated value according to the foregoing table.

The above valuation is calculated for a full crop of each kind, but you will observe from the Rules that there are two classes of water which can be applied to each, so that when position, command of water, or any other circumstances may indicate that the field is not capable of producing a full crop of the particular kind of rice, it will be entered under a lower valuation by the water rate. There are some extraneous circumstances connected with the rice cultivation of the Konkan, in consideration of which it seems advisable to increase the water rate one class above that found by the rules, as in the case of fields surrounding the site of the village, and receiving the drainage from it—the fertilising qualities of which must ensure a not inconsiderable increase of produce beyond that of ordinary situations. Detailed instructions on these heads are given in the Rules, to which I must beg to refer you.

The above is the same system of classification which, with your approval, was introduced in my department last season, and according to which the rice lands of Mawul Táluka have been classified. There is, as may be supposed, a considerable similarity in the rice cultivation of the above and below ghaut districts. The Deccan lands are better suited than the Konkan to the cultivation of the fine descriptions of rice, and produce a superior quality of the same kind of grain, but the yield of the latter is certainly considerably greater. It is in the relative productiveness of the superior and inferior descriptions of lands that the Konkan cultivation differs from the Deccan. Climate is, I think, the influence to which this is to be mainly ascribed, for undoubtedly a regular supply of moisture is the main stay of a rice crop. The certainty attending the falls of rain in the Konkan has therefore the effect of bringing the yield of the superior and inferior kinds of land in closer

part of Panvel, which were next taken up, was as follows:—

scale

Soil Valuation Scale.

Class.	Depth.	Valuation.
1st	1½	8
2nd	1	7
3rd	¾	6
4th	½	5
5th	¼	4

4. In addition to their soil valuation rice lands were classed for water advantages according to the following principles:—

Class.	Water Valuation.	Description.
1st ...	8	First class water applied to fields which were well embanked, which received drainage from higher grounds and produced a full crop of rice of superior (gurwa) kind, such as Ambelmore, Patnee, &c., which were not liable to injury from cessation of rain.
2nd ...	7	Position and water supply a little inferior to the above and therefore not quite sufficient for producing a full crop of superior kind of rice.
3rd ...	6	Fields well embanked but the supply not sufficient to bear a Gurwa crop with certainty, but only sufficient to bear a full "hulwa" crop.
4th ...	5 ¹	High-lying fields, as well as fields which were not level, growing "hulwa" rice, but the water supply not sufficient to produce a full "hulwa" crop.
5th ...	4 ¹	High-lying fields with a surface too sloping to allow of water remaining on them.

approximation to each other, than is the case in the Deccan with its more precarious climate. I have endeavoured to provide for this peculiar feature in the Konkan cultivation by increasing the scale of values both for soil and water for the inferior kinds of rice land. My calculations are based on the data given in the statement in a foregoing paragraph, combined with the information obtained by enquiries from the cultivators, who generally admit the value of the inferior kinds of rice land to be equal to half that of the best. Their estimate in this respect may, I am inclined to think, be depended upon. [Paras. 4 to 10 of Superintendent, Poona and Thána Survey's letter 264, dated 15th August 1853, pages 16 to 19, old Thána Selection.]

¹ Vide para. 6 *infra*.

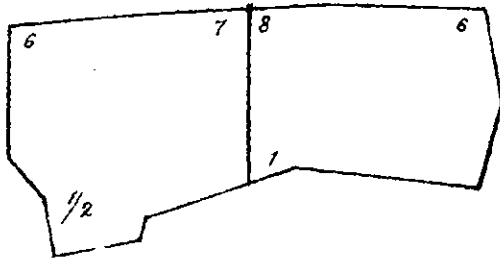
5. In all the talukas that were dealt with after Panvel, the soil and water classification of rice land was carried out according to the modified scale of values given below :—

Soil.				
Class.	Depth in cubits.	Soil.		Water Valuation.
		1st Order. Yellowish, red dark, red or brown and capable of producing Gurwa crop.	2nd Order. Red, grey, or black, not capable of producing Gurwa crops and is always sown with " Hulwa " crops.	
		Annas.	Annas.	Annas.
1	1	8	6	8
2	$\frac{3}{4}$	7	5	6
3	$\frac{1}{2}$	$5\frac{1}{2}$	$3\frac{1}{2}$	4
4	$\frac{1}{4}$	4	2	2

6. Under the above scale high-lying lands with a sloping surface and without embankments were not treated as rice, even though it produced a rice crop occasionally.

7. Soil which contained gravel, or black soil which contained clay to such an extent as affected its capability, was reduced one class.

8. The classification valuation fixed according to the foregoing scales was entered in the classer's book as shown below :—



Class.	Share.	Classification annas soil and water combined.
14	1	14
13	1	13
	—	—
	2	$27 \div 2 = 13-6$
		Average classification annas.

Note.—The figure in the left-hand upper corner shows soil class, that in the right hand upper corner shows water class, while that in the left-hand lower corner shows depth.

Rabi Lands.

9. Rabi lands were classed according to the following scale :—

Class.	Depth.	VALUATION.	
		Bandhuni Rabi. ¹	Malkhandi Rabi. ¹
1	1½	16	...
2	1¼	14	...
3	1	12	12
4	¾	10	10
5	½	8	8
6	¼	6	6

10. The valuation made according to the depth as shown in the above scale was lowered one class or 2 annas for each of the following faults :—

Kind of fault.	Sign.	REDUCTION IN VALUE.	
		Bandhuni.	Malkhandi.
A peculiar mixture more or less impervious to water	A	1	0
Liability to be swept over by running water...	WW	1	1
A mixture of sand	V	1	1
An excess of moisture from surface springs ...	□	1	0
A mixture of limestone	* * *	1	0

¹ There are two kinds of rabi land called 'bandhuni' and 'malkhandi,' the former term is applied to fields surrounded by embankments which resemble rice-land in appearance, and also to low-lying lands without embankments, in which water collects during the monsoon. The term malkhandi is applied in contradistinction to the above to open fields, in which no accumulation of water occurs and no embankments exist.

The bandhuni rabi lands are the most productive, which is attributable to the deposit formed by the water collected during the monsoon. As soon as this has been let off from the field, or has evaporated, the land is ploughed up, and the seed deposited. Little labour of tillage is, however, necessary, for noxious herbs and grasses are destroyed by the influence of the water collected during the monsoon, which at the same time acts as a manure in fertilising the soil. The malkhandi is precisely the ordinary jirait cultivation of the Deccan. I esti-

II. The entries in the classer's book were made as shown below:—

		2		Class.	Share.	Annas.
		1 1/2	3			
7				1	1	16
1/2				2	1	14
7	v			3	1	12
1				4	1	10 ¹
				4	4	52

52 ÷ 4 = 13 annas. Average Bhág annas.

Varkas Lands.²

12. In the Taluka (Nasrúpur including the Khálápúr Petha) first dealt with, Rice and Varkas lands were in the first instance linked together and assessed at a consolidated rate, every rice field carrying with it a certain allotment of Varkas. This arrangement was disapproved¹ by Government and (in 1877) the assessment fixed on the rice alone was fairly apportioned on the rice

mate the value of these two kinds of cultivation to be in the proportion of 16 to 12 annas, and the scale I have formed for their classification is drawn out accordingly. The system by which we class jirát lands will be applicable in its general details to both descriptions of rabi, [Paras. 11 and 12 of Superintendent, Poona and Thána Survey's letter No. 264, dated 15th August 1853. See pages 19 and 20 of the Old Thána Selection.]

¹ Note—¶ represents Malkhandi rabi.

Share No. 4 is of malkhandi rabi. The depth is 1 hát. Therefore the share belongs to the 3rd class; but as there is one fault it is reduced to the 4th valued at 10 annas.

² I do not consider that there would be any advantage in making a regular classification of these soils, according to the approved method of the Joint Report. I propose therefore that the classer should make a rough estimate of the quality of such lands in each village, by dividing them into 3 classes to be called 1st, 2nd, and 3rd Warkas, and making a record of the proportionate extent of each. I have drawn up a few simple rules for the classer's guidance on this subject to which I would beg to refer you for further information. [Paragraph 14 of Superintendent, Poona and Thána Survey's letter No. 264, dated 15th August 1853, Old Thána Selection, page 20.]

Warkas is a term applied to large tracts of land, chiefly hill lands covered with grass or jungle, assessed at a few annas per acre. Such lands are an invariable accompaniment of rice cultivation throughout the Konkan; they afford a supply of brushwood for "ráb" or wood-ash dressing for the rice fields, a portion also is cultivated with inferior kharif crops (as ragi, kodra, savi, &c.) and a portion produces grass for sale or pasturage. Near Bombay grass-lands are exceptionally valuable, and have been assessed at maximum rates ranging as high as three rupees per acre; elsewhere the maximum market rate is usually 4 annas, except in places where black soil is found, and where the maximum rate rises to 10 annas per acre. [Page 449, Stack's memorandum, para. 2.]

² See Chapter XVIII, Detailed Survey of Warkas &c., Vol. III. Also correspondence on the Original Settlement of the Khálápúr Petha, Government Selections No. CCXXIII, New Series.

and Varkas respectively. In all the talukas settled after Nasrápur, Varkas lands were assessed independently, their value having roughly been estimated by eye in accordance with the following rules:—

(1) Varkas land either flat or slightly sloping and having a fair quantity of soil, and capable of producing the different Varkas crops in rotation or the best grass when fallow, was classed as first class, valued at 4 annas.

(2) Slightly sloping Varkas, slightly flat and stony, alternately cultivated and kept fallow for grass, was classed as 2nd class, valued at 3 annas.

(3) Very sloping Varkas, covered with trees and brushwood, flat and stony, cultivated after several years of fallow, was classed as 3rd class, valued at annas 2.

(4) Steep sides of hills covered with boulders, or if flat is nearly all sheet rock, was classed as 4th class, valued at anna 1.

13. The entries in the classer's book were made as shown below:—

			Class.	Share.	Valuation.
1	3	3	1	1	4
			2	2	6
2	3	3	3	3	6
				6	16+6

Average classification = 2 annas 8 pies.

Garden Lands.

14. Garden lands were divided into two distinct classes of Agri and Dongri—

(a) Lands situated in the vicinity of salt-water rivers, creeks, and on the coast, and producing cocoanuts and supáris in alluvial and sandy soils, also lands in low-lying situations and producing grafted mangoes, fruit trees, sugarcane, vegetables, &c., with irrigation were classed as Agri (Bágáit) lands.

(b) Lands producing cocoanuts and supáris, grafted mangoes, fruit trees, sugarcane, vegetables, &c., situated inland on Varkas, on high-situated Máls or on hill-slopes with hard or gravelly soil and little or no subsoil moisture were classed as Dongri (Bágáit) lands.

Agri Bágáit.

15. Agri Bágáit was classed for—

- (1) Soil, (2) Water, and (3) Trees.

16. The scales, according to which the valuation of these three factors was ascertained, are given below :—

1. *Soil Valuation of Agri Garden.*¹

17. (1) Soil consisting of sand and earth in about equal proportions and with depth of $1\frac{1}{2}$ cubit was classed 1st class, valued at annas 8.

(2) Soil of reddish colour containing more sand than earth and with $1\frac{1}{4}$ cubit depth was classed as 2nd class, valued at 6 annas.

(3) White sandy soils near or on sea-shore were classed as 3rd class, valued at annas 4.

(4) White sandy soils with mounds of sands scattered over the surface bearing little or no garden produce were classed as 4th class, valued at annas 2.

18. The deteriorating faults were—

(1) Karal, *i.e.* soft sandy stone, or lime-stone mixed with Karal.

(2) Hard sand-stone.

19. For the first named fault if found within 1 cubit of the surface the soil was reduced one class; for the second named fault if found within 1 cubit in the 1st class soils, the soil class was reduced 2 classes; in the 2nd class soils the soil class was reduced 1 class.

Water Valuation of Agri Gardens.

Water from Wells.

20. Garden lands which derived their water-supply entirely from wells were classed for water according to the condition of the well and the distribution of the water-supply²—

¹ In the early settled talukas (Revdanda for instance) the soil of Agri garden lands was classed by a scale which provided for only three classes as will be seen from the following extract :—

For the first I adopted only three classes, which, as little variation of soil exists in these gardens, was found amply sufficient for all practical purposes. The first class comprises the tract of shell-sand adjoining the beach, which is very favourable to the growth of the cocconut. The trees will come into bearing in this soil in 7 or 8 years if well watered and carefully attended to. They take from 10 to 12 years in red soils with a large mixture of shell-sand, this has been taken as the 2nd class; and the 3rd comprises dark red soils having little or no shell-sand and dark-brown or black. Very few cases of the latter were met with, for the cocconut will not thrive in such soils; a mixture of marine deposits, such as exists in the shell-sand, seems an essential to its growth. [Extract from paragraph 24 of Captain Francis' Report, No. 88 of 24th February 1857, on Revdanda Taluka. See page 151. Old Thina Selection.]

² The quality of water such as sweet or slightly brackish was not taken into account, as water of the latter quality was considered "rather favourable to 'Agri

(1) Wells built with stone and mortar and having a supply sufficient for irrigation throughout the season were classed 1st class, and valued at 8 annas.

(2) Wells Pakka or Kutcha, and having a supply of water till within a month or two of the monsoon, were classed as 2nd class, and valued at annas 6.

(3) Wells not Pakka built, and having a supply of water for about half the hot weather season, were classed as 3rd class, and valued at annas 4.

(4) Wells not Pakka built, and having a supply of water for only a month or two after the monsoon, were classed as 4th class, and valued at annas 2.

21. The maximum area which could be irrigated by a "Rát" or Persian wheel turned by bullocks was fixed at $1\frac{1}{2}$ acre. In cases where the area of the field under a well exceeded this limit the water valuation was apportioned in the manner explained in the following extract¹ :—

A rát kept in working regularly will irrigate about an acre and a half of land. When therefore there is more than this extent for irrigation under one, the supply for the acre and a half is entrenched upon to the extent of the quantity required for the irrigation of the additional land. The quantity thus assumed as the maximum extent that can be irrigated by a single rát was determined after much careful inspection of a great many gardens, and I am persuaded from inquiry that it forms a safe standard to work upon. Adopting then an acre and a half as the standard extent for a single rát, the rate has been apportioned off by shares with reference to the extent of land when in excess of the given quantity. In a case for instance where there are three acres of land under a rát, the supply would be considered sufficient for only half this extent, the other half would thus remain unirrigated as it were; instead however of taking only the acre and a half, and applying to it the full rate, it is more convenient to share off the land as follows :—

$1\frac{1}{2}$ Acre	= 1 share	...	...	...	8 annas.
$1\frac{1}{2}$ do.	= 1 do.	...	...	...	0 having no water.
3	2				8

— 4 annas, or the average rate for the 3 acres.

This gives us half the full rate for the whole extent, all of which may be irrigated, but with a single rát a full supply for only half of it can be drawn, or what amounts to the same thing, a half supply for the whole extent. In cases where the extent was under the standard, the full rate

gardens' than otherwise." [Colonel Francis' Report on the settlement of Old Revdanda Taluka, paragraph 25, page 151, Thána Original Settlement, Selection No. XCVI, New Series.]

¹ Extract from paragraphs 27 and 28 of Colonel Francis' report on the Settlement of Revdanda Taluka, page 152, Thána Old Settlement, Selection No. XCVI., New Series.

was applied, but in all cases exceeding it, the rate was apportioned according to the foregoing plan; where, therefore, there are 3 acres under a first class

* Supposing it has but one rat.

well,* the rate is 4 annas as above shown; 3 annas where under a second, 2 annas under a third, and one anna only under a fourth class well. This plan is well calculated to ensure an equitable apportionment of the water rate, and in my opinion is a great improvement on our former plan of classing wells.

3. Trees—valuation of—.

22. The trees constituted the third factor in the garden valuation. All the fruit-bearing trees were regularly counted and reduced to one denomination, that of cocoanut, according to the following table:—

4 newly planted Cocoanuts	...	= 1 bearing cocoanut.
4 Supári trees	... ..	= 1 do.
1 grafted Mango	... ..	= 1 do.
2 Jack-fruit trees	... ..	= 1 do.

23. The valuation of the tree factor was then fixed according to the following scale:—

No. of bearing Cocoanut trees per acre.		Value.	
From	To		
		Rs.	a. p.
60	55	1	0 0
54	48	0	14 0
47	43	0	12 0
42	34	0	10 0
33	26	0	8 0
25	18	0	6 0
17	14	0	4 0
13	9	0	3 0
8	6	0	2 0
5	4	0	1 6
3	1½	0	1 0
1	...	0	0 6

DONGRI BA'GA'TT.

Soil classification.

24. (1) Land containing red soil free from sand, and situated on a level and with a depth of one cubit, was classed 1st class, valued at annas 8.

(2) Land containing red soil as above, but with a depth varying from $\frac{3}{4}$ to $\frac{1}{2}$ cubit, and sloping in surface, was classed as 2nd class, valued at annas 6.

(3) Land situated on hill sides, depth less than $\frac{3}{4}$ cubit, and containing soil mixed with "murum," was classed as 3rd class, and valued at annas 4.

(4) Land with a very much sloping surface, and with soil mixed with "murum," and depth less than $\frac{1}{2}$ cubit, was classed as 4th class, and valued at annas 2.

25. The values of the two other factors, (1) water-supply and (2) trees, were fixed in the same manner as in the case of Agri gardens explained above. The entries in the classification book were made in the same manner as shown on pages 21 to 30 of Appendix A.

Salt Bhatti or Khārāpāt Lands.

26. Khārāpāt¹ or Bhatti lands were classed for soil according to the following scale:—

Order of the Soil.	1 cubit deep, value in annas.	$\frac{3}{4}$ cubit deep, value in annas.	$\frac{1}{2}$ cubit deep, value in annas.	$\frac{1}{4}$ cubit deep, value in annas.
First order [Reddish coloured soil, distant from sea or under the influence of hill drainage.]	8	7	6	5
Second order [Black soil]	7	6	4½	3

27. The deteriorating faults were the same as in the case of

¹ I have next to explain our operations in the classification of the salt bhatti lands of this district. Their soils are of a distinct character, being all more or less impregnated with salt, and this, which would have an injurious effect on the growth of sweet rice, is a *sine quā non* with the different varieties of salt. There is, moreover, a striking difference in the system of cultivating the latter, which requires neither the process of burning brushwood and grass as manure for raising the young seedlings prior to their transplantation—a process absolutely necessary in the cultivation of sweet rice—nor does the land need ploughing. All that salt rice cultivation seems to require is, that the seed should be soaked till it has germinated, when it is sown broadcast and trodden into the ground. There are some spots in these salt bhatti lands where the cultivation is similar to that of the sweet rices, the latter in fact are grown, as by long continued cultivation and the influence of hill drainage, the soil in such spots has lost the peculiar character of

sweet rice lands and reductions in the soil classification of these lands were made similarly.

28. The water classification of these lands was carried out according to the plan adopted in classing sweet rice lands¹ (see scale and rules given under para. 4 above).

B.—Konkan Revision Classification.

29. The original classification in the Ratnágiri District which was carried out according to the rules given in Appendix A to this Section has been declared “final and not subject to any future *general* revision.”²

30. In the two other districts (Thána and Kolába) the original classification of the different descriptions of lands was revised according to the principles explained below.

salt bhatty land. Such cases, however, are rare, the practice above described being that in general use.”

As it would have been difficult to adjust the relative value of these two descriptions of land under one classification table, I have considered it better to have a separate table and scale for each, and in carrying out this plan have arranged the salt bhatty soils under two orders. Under the first are classed the reddish coloured soils, such as being comparatively distant from the sea, or under the influence of hill drainage, are found only slightly impregnated with salt. The second includes the black, which are the more numerous, and are met with in different degrees of fertility according to the quantity of salt they contain. To regulate difference of value in the latter respect, a table of faults has been applied in the usual manner, and with the use of it, the scale has a range of from 8 annas* down to 3. The lowest rate has been applied only to spots partly under the influence of the tide, or adjoining the outer embankments of a

khár, where leakage or percolation of salt water occurs.

[Paras. 9 and 10 of Captain Francis' letter No. 540, dated 6th December 1856, printed in Government Selection No. CCLXIV of Panvel Táluka, page 63.]

¹ In applying a water rate, I have carried out the plan we adopt in classing sweet rice lands, which is that of taking the description of rice grown as the indication of the extent and duration of the irrigating supply. That is to say, it being a rule in rice cultivation to sow ‘Gurwa Patni’ and other varieties of the late crop rices in situations where the supply of water is copious, whether from hill drainage or natural springs, and the ‘Halwa’ or early sorts where it is deficient, we take that rule as the basis of our water classification. It is often difficult in the dry season to assert from what source the field derives its supply of water, but the description of rice grown can be at once ascertained, and forms therefore a certain guide to work upon, which is an important point in classification operations. The ‘Choka’ and ‘Ratch,’ or white and red rices, of the salt bhatty lands, are the exact counterpart of the Gurwa and Halwa of the sweet. Our scale therefore required but little adjustment for the water classification of the former. [Extract para. 11 of Col. Francis' letter No. 540 of 6th December 1856, printed in Government Selection No. CCLXIV., New Series, Panvel Revision Settlement, page 63.]

² (1) Finally, I have every hope that the field operations for original settlements which have been, or which are now being, carried out in the Ratnágiri and Kánara

Sweet Rice Lands.

31. In the Khálápur Petha of the Karjat (old Nasrápur) Táluka, where the revision operations were first commenced, an endeavour was made to carry out the orders of Government "not to re-class more than was absolutely necessary," but owing to the original classification having been made on a scale¹ totally different from that which had been adopted in later Konkan surveys, it was found impossible to adjust the old valuation to the present standard and accordingly the whole of rice classification had to be re-done on the latter scale. The same procedure was followed in the Karjat Táluka and also in that part of the Panvel Táluka, where the original classification had been done on the old Khálá-

Collectorates, will be found to be so detailed in their nature, and so generally accurate in all material points, that revised rates may be introduced upon their basis with ease and confidence." [Extract from para. 20 of Survey Commissioner's letter No. 1360, dated 27th June 1883, printed in Government Selection entitled "Character of Land Tenures," page 34.]

(2) Moreover, as the revised survey record is sufficiently correct for the purposes of a standard, His Excellency the Governor in Council has resolved that it shall be accepted as final and not subject to any future general revision. This resolution secures from any further general alteration of the valuation of land for revenue purposes the whole of the Southern Marátha Districts, except a few tálukas and the greater portion of the Deccan. In the districts of Ratnágiri and Kánara, in which original settlements are still in progress, the work of the survey is sufficiently accurate to admit of the extension of the same guarantee to them. The power of Government to direct a re-valuation of soils will therefore be exercised almost solely in the province of Gujarát, the districts of Thána and Kolába, and in Káná-desh and Sátára; and in these it is believed that a partial re-survey will suffice. [Para. 15 of G. R. No. 2619, dated 26th March 1884, printed as Appendix A to Chapter XXII, Exemption from taxation of improvements &c., Vol. III.]

¹At the time of the first classification there was a disposition to apply the first class sparingly and only to very choice fields. We were now to the work, and I deemed it advisable to be moderate in our valuation so as to avoid the chance of over-assessment, and I think it is quite right to raise the rates of the best soils at the revision as proposed. As to the inferior orders of soil, I found from the experience of the district it was advisable to adopt for them a lower scale of values than that originally fixed. I do not recollect when the modified scale of values was introduced, but I think it was applied in the Panvel Táluka first. I feel pretty confident that the classification as carried out under this modified scale will be found to be good and may be adopted as the basis of the revised rates. It should be tested and adjusted to what is thought to be the proper standard by an addition to or reduction of the classer's ama-valuation as may be required. [Note by General Francis on the Khálápur Revision Settlement, quoted in paragraph 8 of Survey Commissioner's letter No. 981 of 22nd May 1888, page 229, Khálápur Selection No. CCXXIII, New Series.]

The application of the partial system of re-measurement to rice lands * * * was found quite impracticable. Equally impracticable was anything but a complete reclassification of these lands. Seven reasons for this are given by Colonel Godfrey in his 30th paragraph, the principal being the totally different nature of the old valuations from those which after much deliberation have been adopted in later Konkan surveys, and which by a more flexible scale of graduation relieve the poorer classes of land of an undue share of the burden of assessment which was before assigned to them. [Extract from

pur scale.¹ In villages transferred to the Panvel Táluka after its original settlement and in all the tálukas originally settled after Panvel, the original classification was found sufficiently accurate for the purpose of revision settlement, and was confirmed after such partial operation in the field as was deemed necessary in the circumstances of each táluka for standard, and also for bringing the records up to date. The nature and scope of this operation will be seen from the following extract² :—

A.—To re-class.

- (1) Lands originally classed as rice, now found to be rabi or varkas, to be re-classed as such.
- (2) Lands originally classed as garden now found to be rice, rabi, or varkas, to be re-classed as such.
- (3) Lands originally classed as varkas, now found to be rabi, rice, or garden, to be re-classed as such.
- (4) Lands originally classed as rabi, now found to be varkas, to be re-classed as varkas.
- (5) All Pullantlands.
- (6) Pó: varkas not classed originally, also any entered as kharáb and now found to be culturable.
- (7) Any land which was not classed at original survey.

B.—To examine but not necessarily re-class.

- (1) Lands originally classed as rice now recorded as garden.
- (2) All kharápát lands adjoining "shils" and situated between pure "kharápát" and pure "uthalápát" lands.

C.—To increase for advantages.

- (1) Rice lands classed as such at original survey, and capable of producing second crops after rice, to have Dusota valuation applied where not applied originally.
- (2) Lands originally classed as rabi, now found to be rice or garden, to have position class applied under the provisions given in paragraph 35.

paragraph 6 of Government Resolution No. 5856, dated 30th August 1888, on Khilápúr Revision Settlement. See page 258 of the Selection.]

¹ The revision classification of the táluka was commenced in April 1887 and was carried on at first under the same rules as those applied to the old work of the Karjat Táluka which provided for entire reclassification, but later on in 1889 it was found that old classification of a nature sufficiently good to be confirmed was being met with; therefore, instead of total reclassification partial classing for standard on the same system which had been so successfully employed in the Deccan Survey was ordered to be done, and the old classification with slight modifications where found necessary has been confirmed wherever possible. Entire reclassification was only found necessary in the villages of the original Panvel Táluka. [Extract from paragraph 8 of Superintendent, Konkan Survey's Report No. 1893, dated 23rd December 1891, on Panvel Revision Settlement. See page 3 of the Government Selection.]

² Extract from the Konkan Survey (Supplementary) Revision Rules.

(3) All rabi and varkas lands capable of a higher form of cultivation, whether it be as rice or as garden, to have the position class applied.

If whilst examining the old classification under Rule B(2) or valuing the capability for growing second crops &c. under Rule C, an error of 4 annas or more in the old classification is suspected with good reason, or comes to notice, the number in which it occurs must be re-classed.

Varkas lands need not be re-classed, but when going over the village lands the classers should note, and deal with, all rabi lands originally classed as varkas and left unnoticed by the measurers, in the manner ordered above.

32. In numbers re-classed under Rule A, the revision classification annas were adopted; while in numbers which owing to an error in the original classification were re-classed under Rules B and C, the original Bhág annas were assimilated to the present standard of valuation by an adjustment scale fixed for each taluka or tract on the principles of the Rohijan¹ scale explained below:—

1. In dealing with the classer's annas in reclassified pôt numbers, if the difference is 1 anna 6 pies and under, confirm the old classification annas.

2. Difference over 1½ up to 2 annas inclusive, increase or reduce the old classification valuation by 6 pies.

3. Difference over 2 annas up to 3 annas inclusive, increase or reduce the old classification valuation 1 anna.

4. Difference over 3 annas up to 3½ annas inclusive, increase or reduce the old classification valuation 1½ annas.

5. Difference over 3½ annas up to 4 annas inclusive, increase or reduce old classification valuation 2 annas.

6. In tested pôt numbers, the test annas should be taken as the true valuation given by revision classification, and in such cases the increase or decrease may be made 6 pies more than above stated if considered advisable.

7. Cases in which differences of over 4 annas exist should be dealt with separately,² bearing in mind that the great object is to confirm the old classification valuations as much as possible and to alter them only as little as possible where alteration is forced upon us.

8. In order to carry out this plan correctly, it will be necessary in future Bhág anna Taktás to enter (for the re-classed Nos. only), the kacha pies of the old classification valuations the same as is done for the new classification.

9. The confirming of the annas must be done by the Assistant himself in English figures as heretofore.

10. In cases of large differences of 3 annas and upwards, the old Survey numbers in which such large errors are found should have all their pôt numbers re-classified so as to eliminate all errors in any particular kind of soil existing as well in pôt numbers adjoining those re-classed in which the large error was found and further with that view any other pôt numbers of any

¹ So called because the scale was first devised and introduced in Rohijan, a village of the Panvel Taluka.

² In such cases the Original and Revision Bhág annas were added together and half of the total was taken as the true valuation.

adjoining Survey Numbers should, if necessary, be ordered to be re-classed. The Assistant will be the best judge as to such necessity or otherwise on examination of the lands when testing.

33. The following examples illustrate the application of the above rules :—

Original classification annas.		Revision classification annas.		Annas finally confirmed by the Koháján Scale.		REMARKS.
As.	p.	As.	p.	As.	p.	
{ 11	0	12	6	11	0	} As per Rule 1 above.
{ 11	6	10	0	11	6	
{ 12	0	14	0	12	6	} $\frac{1}{2}$ anna increased } as per Rule 2 } $\frac{1}{2}$ anna decreased } above.
{ 13	0	11	0	12	6	
{ 7	0	9	6	8	0	} 1 anna increased } as per Rule 3 } 1 anna reduced } above.
{ 8	6	5	6	7	6	
and so on.						
		Test annas				
12	0	11	0	12	6	} As per Rules 6 and 2 above.
				or 13	0	
15	6	13	0	14	6	} As per Rules 6 and 3 above.
				or 14	0	
7	0	13	0	10	0	By Rule 7.

*Rabi Lands.*¹

34. Such of the rabi lands as under the partial system *vide* para. 31, required to be re-classed, were classed according to the rules and scale given under paragraphs 9 and 10 above.

35. All rabi lands which were found to possess natural capabilities were classed for "Position" and an increase made to their soil valuation according to the following rules² :—

¹ In Khálápúr, Karjat, and part of Panvel, rabi lands were entirely re-classed for the reasons explained in the following extract :—

Rabi lands had also to be re-classed entirely : for, although the old and new valuations are the same, we found that in the former classification land had been classed as rabi, not merely on account of its quality, texture, or any peculiarity or speciality of soil, but the crops grown on it ^{applied to} appear to have unduly influenced the classers in determining whether the land was rabi or varkas, and the consequence is that some land had been classed as rabi, in most cases quite correctly so ; but land adjacent to it, of exactly the same kind and quality, which should also have been classed similarly as rabi, had been thrown out as varkas, presumably because it was not then producing crops known as rabi crops. Hence not only the rabi lands, but also land adjacent to it, which had passed as varkas erroneously until now, had to be re-classed. [Extract from paragraph 32, page 10, Khálápúr-Karjat Revision Settlement Selection.]

² The greater or less facility for conversion into rice was the factor which determined the "position" class.

1st.—Position class should be applied to all land flush with adjacent rice land which is capable of being converted into rice with little expenditure of labour and capital, and it will carry an increase of 4 annas over the soil valuation. Also to land in which rice is grown occasionally, either alone or in combination with a dry-crop.

2nd.—Position class is to be applied to land which lying higher than that described in Rule 1 does not possess such natural advantages of position and consequently would require greater labour and capital to convert into rice. The increase for this class will be 2 annas.

3rd.—Land with a sloping surface which would require terracing before being brought under rice cultivation cannot be said to possess natural facilities for conversion, and therefore no position class can be assigned to it.

4th.—Land which though favourably situated is incapable of growing rice either from being water-logged or from some deteriorating ingredient in the soil is not to have a position class assigned to it.

Garden Lands.

36. At the revision survey with the exception of those garden lands which under the partial system detailed above (Rules A to C under paragraph 31 above) required re-classification and which in that case were classed in accordance with the rules given in Appendix B, all garden lands had their original soil and water classification annas confirmed.

37. In addition to their soil and water classification all garden lands were classed for "Position" according to the following rules:—

(1) First position class should be assigned to garden land lying in a low position which collects and retains surface drainage or subsoil water percolating into it from higher land, so that superior crops of coconuts, suparis, grafted mangoes, betel-leaf and sugarcane can be grown with little irrigation; or to land in which the inherent moisture is sufficient to allow such crops to be grown.

(2) Second position class shall be applied to garden lands which lie in higher situations and of which the natural facilities for collecting and retaining moisture are inferior to that described above; or land of which the inherent moisture is only sufficient to grow the superior crops of the descriptions mentioned above with plenty of irrigation even after they have reached maturity.

(3) Third position class shall be applied to garden lands in high lying situations or on the slopes of hills where there is little or no inherent moisture, and in which there is no capability of collecting and retaining surface or subsoil drainage and consequently crops of inferior descriptions only, such as vegetables, pulses, &c., can be grown with the aid of constant irrigation and in which fruit trees can be grown only under much irrigation even after they have arrived at maturity.

(4) If all the land included in a survey or pôt number does not come under any one position class, two or more shares may be made and the proper position class assignable to each share may be applied and the average position class worked out in a manner similar to that of determining the

average Bhág annas, and this average position class will be taken as the position class of the number or pót number.

(5) When assessing garden lands, the value of the position class as a factor in the assessment will be determined according to the following scale :—

Soil and Water combined annas.	POSITION CLASS.				
	1	1½	2	2½	3
	Annas.	Annas.	Annas.	Annas.	Annas.
12-6 to 16	8	7	6	5	4
8-6 to 12	6	5	4	3	2
4 to 8	4	3	2	1	...

38. The "Position class" valuation was a substitute for the valuation of trees—which was 16 annas—under the original survey system. Thus in the revision classification the maximum garden valuation was fixed at 24¹ in lieu of 32 annas under the original survey as shown below :—

Revision Survey.				Original Survey.			
Soil	...	...	8	Soil	...	...	8
Water	...	...	8	Water	...	...	8
Position	...	...	8	Trees	...	...	16
—				—			
24				32			

¹ We now take into consideration the three principal factors of soil, water, and position, to which we give equal maximum value of 8 annas, making all three together a maximum classification valuation of 24 annas. [Extract from paragraph 52, page 30. Alibág Revision Settlement Selection.]

Colonel Godfrey has described the departure taken at this revision in the matter of garden assessments. It would clearly have been incorrect in affixing a final valuation to have taken into account the variable factor of the number of trees. Further, the character of garden cultivation is undergoing a change which causes a greater utilization of land suitable for garden cultivation to grow sugarcane, vegetables and other produce in lieu of the former almost universal cultivation of the cocoanut and other fruit trees.

It became necessary then to substitute some factor for the tree factor, to which the large proportion of 16 annas was assigned, while soil and water respectively were only valued at a maximum of 8 annas each. The value of a garden is estimable on more considerations than the mere classification of the soil and water. A very great deal depends on the position of the land. It was resolved then to confirm the old classification of soil and water with some insignificant modifications and to allow a valuation up to 8 annas for position. The maximum by the new rules framed for the purpose can only be assigned where the garden lies low and thus collects water by drainage or percolation from higher lands, sufficient, either unaided or only slightly aided by artificial irrigation, to produce garden crops. The lowest grade in the position class, value 4 annas, is allowable where the garden can

Varkas Land.

39. The following are the rules according to which the classification of Varkas lands was carried out at the Revision Survey:—

Under the general term 'Varkas' are included two kinds of lands, 1st Bhátte, 2nd Varkas, which are to be classed as follows:

Kind,	Classification Valuation.					
	Annas 6.	Annas 5	Annas 4.	Annas 3.	Annas 2.	Anna 1.
Bhátte	$\frac{1}{1}$	$\frac{2}{2}$	...	...	...	...
Varkas land ... ..	...	...	1	2	3	4

(1). *Bhátte land* is land with good depth of soil, usually cultivated regularly every year or capable of it, and sometimes producing *tur* or capable with little labour of being made into rice land.

When one cubit or more in depth, to be classed as 1st Bhátte and shown in classer's books thus:— $\frac{1}{1}$, value 6 annas. When less than 1 cubit in depth down to half a cubit, or when slightly sloping, to be classed as 2nd Bhátte, and shown in classer's books thus:— $\frac{2}{2}$, value 5 annas.

(2). *Varkas land.* (1) First class varkas land is either flat or may be slightly sloping, and has a fair quantity of soil, which will grow the different varkas crops in rotation or when fallow will grow the best grass. It is valued at 4 annas.

(2) Second class varkas land is chiefly sloping. It is sometimes flat and slightly stony and is alternately cultivated and left fallow for grass. This kind of land is to be classed as second class and valued at 3 annas.

(3) Third class varkas land is usually very sloping. Trees and brushwood generally grow upon it and it requires a fallow of several years before it can be cultivated. It is also sometimes flat and very stony, with the soil red, on which little grass and few bushes grow. This description of varkas land is to be valued at 2 annas.

(4) Fourth class varkas land consists of the steep sides of large hills which are covered with boulders or if flat is nearly all sheet rock, with small patches of brushwood. The fourth class is valued at 1 anna.

40. All varkas lands were classed for position according to the following rules:—

receive no assistance in irrigation from drainage or percolation, and where all irrigation is artificial. These grades are further modified according to the quality of the soil and water. No position class can be placed on land where the soil and water annas are below 4 annas, and even in good positions the position class may go as low as 4 annas, if the soil is classed below 8 annas for soil and water combined. [Extract from paragraph 13, page 146, Alibág Revision Settlement Selection.]

The increase for position class should be applied to—

(1) All varkas land flush with rice-land and capable of being turned into rice-land easily with little labour and no expense worthy of notice. Such land should bear 1st position class.

(2) All varkas land lying higher, of which the inherent capabilities for conversion into rice are less than above described, and which would require greater labour and some expense to bring under rice cultivation, such lands should bear the 2nd position class.

(3) Land, which, though producing rice crop occasionally, is not to be classed as rice, but is included in pôt varkas, should have position class increase according to its inherent capabilities.¹

(4) If the proportion of land capable of conversion into rice in any varkas number or phālmi tukda is so small that the average increase on the whole does not alter the classification rate on which the assessment is calculated, no increase for position class need be made; but if the average increase on the whole increases the classification rate, the position class should be applied.

(5) Whenever land in any phālmi tukda bearing position class in consideration of the facility for its conversion into rice-producing land is of or more than, 10 gunthas, it should be made into a separate phālmi tukda, and the increase applied as ordered; all smaller pieces of such lands need not be made into separate phālmi tukdas, the increase of position class applied to them affecting the average valuation annas being considered sufficient for assessment purposes.

Varkas land on the slope of hills which would have to be terraced for regular rice cultivation should have no position class, as it has no inherent capability for rice cultivation and can only be converted into rice-land with much labour and expense.

41. The nature and scope of the field operations carried out in varkas lands at the Revision Survey will be found fully described in Chapter XVIII. Detailed Survey of Warkas, &c., Vol. III.

Khārāpāt Lands.

42. Such of the Khārāpāt lands as required re-classification under the partial system (Rule B. referred to in paragraph 31 above) were classed under the scales given below. All other Khārāpāt lands had their original soil and water annas confirmed.

SOIL CLASSIFICATION SCALE.

Khārāpāt Lands.

Order of Soil.	1 cubit deep ; value in annas.	$\frac{3}{4}$ cubit deep ; value in annas.	$\frac{1}{2}$ cubit deep ; value in annas.	$\frac{1}{4}$ cubit deep ; value in annas.
1st Order ...	8	7	6	5
2nd Order ...	7	6	4 $\frac{1}{2}$	3

¹ By "rice land" must be understood, in classification, land which usually produces rice, is level, situated low, and embanked; and, on the other hand, land with a sloping surface, with no embankments, even if producing a rice crop occasionally, is not to be considered rice land. [Rule 5, Chapter I, Koukan Revision Classification Rules.]

WATER CLASSIFICATION SCALE.

Khárápít Lands.

Class.	Value.	Description in short.
	As.	
1st	8	Rice lands adjoining sweet rice-lands or having the drainage of sweet rain water from higher-lying lands, or can produce the superior kinds of Chowké rice from the existence of surface springs or natural moisture.
2nd	6	Fields having a smaller supply of water than above, lying on high situations, and producing Halva Patni rice.
3rd	4½	Fields near salt-water, producing only Ráté rice crops and not yielding a good Chowké or Halva Patni crop, water supply being fair.
4th	3	1st. Fields near salt-water creeks and near the dams producing only Ráté crops or in which salt-water percolates through the soil. 2nd. Fields producing Bhole and other medium kinds of Chowké rice and having less water-supply, and land sloping and water not standing on it.
5th	2	Land subject to being overflowed by salt-water or having pools of salt-water.
6th	0	Land being washed over by salt-water and having hollows in it retaining salt-water and only about half the land producing crops, cultivation being done in patches only.

*Pullan Lands.*¹

43. All Pullan lands were re-classed at the Revision Survey according to the following rules:—

Pullan Land.

(1) Level, low-lying and situated some distance from the sea with a fair admixture of soil in it, such as is found intermixed with Agri-Bagait lands or between rice fields, should be classed as 1st Pullan = 15 annas.

(2) Level sand nearer the sea, situated higher, with so slight an admixture of soil that it is hardly perceptible except for a yellowish or a reddish tinge it gives to the sand, should be classed as 2nd Pullan = 10 annas.

(3) Pure sand on sea-shore or sand of the description above, but of very undulating surface with mounds and dips, should be classed as 3rd Pullan = 4 annas.

¹ By "Pullan" must be understood the sandy plains in the immediate neighbourhood of the sea and tidal creeks; it is found sometimes quite bare, producing nothing, sometimes covered with Káju and Undi trees, and is generally easily convertible into rice-land or Agri-Bagait. (Konkan Classification Rules)

44. All Pullan land, which had been measured in with gardens, but which bore no garden produce, as also all Pullan land which had been measured as Pôt Varkas, was at the Revision Survey separately classed as Pullan, according to the above rules and distinguished in the classification and assessment papers by the vernacular letter *g*.

*Pôt Kharáb.*¹

45. The principles² which have regulated the deductions on account of *Pôt Kharáb* in this Survey are explained in the following rules:—

(a).—*Rice and Rabi lands.*

In rice and rabi lands bándhs of less than 2 annas need not be deducted. Bándhs are not to be deducted as *Kharáb* when Nógli and other grains are grown on them. In *Kharápít* lands, the large embankments, dykes, water channels for drainage and places where salt-water is always standing and no crops can be grown, should be deducted as *Kharáb*.

(b).—*In Varkas lands.*

The *Kharáb* for unculturable should be deducted (as shown in rule (c) below), but all *Kharáb* estimated by sight should be represented in the classification shares in annas and the average annas of *Kharáb* for the whole Survey number or phálni tukda worked out in the usual manner, and from this the area of *Kharáb* must be deduced. Pies in the average *Kharáb* should have a 6-pie *Dharsod*, and be entered in full annas.

(c).—*All lands in general.*

In all lands the classer should notice in every pôt number whether the measurer has made correct deductions on account of unculturable land, and in case he has not done so, he should re-measure and correct the deductions.

The area of large stones and *kúlal* (sheet rock) should be carefully estimated by sight, and deductions made accordingly.

Wells, houses, old rocks, nálas, and other uncultivable area must be carefully estimated and deducted.

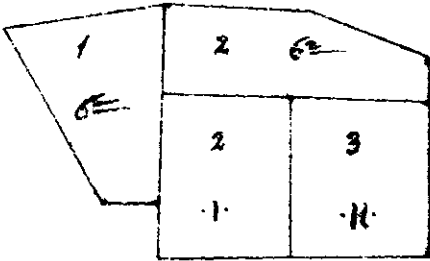
46. The following example will show how in the case of *Varkas* lands (Rule (b)) the *Pôt Kharáb* is represented in annas

¹ Extract from sub-para. (3) of para. 25 of Superintendent Ratnágiri Revenue Survey's No. 21, dated 12th January 1888, pages 9 and 10, Khalápur Revision Settlement, Selection No. CCXXIII.

In the original survey the rice and varkas cultivation was not divided off, and land which was varkas was all measured off in one block with rice as being all rice land, and in such cases, to obviate the difficulty of assessing varkas land as rice, all the area of varkas so included into the rice area was deducted as unculturable "*Kharáb*:" hence survey numbers entered in the old registers as entirely rice were found to contain considerable areas of culturable varkas. This had all to be rectified, and thus in instances where varkas was originally shown, none or considerably less is now found to exist, and where no varkas was expected to be found, considerable areas had actually been included as *kharáb* in the rice area.

² See also Chapter IX. on *Pôt Kharáb*. Part III. Settlement, Vol. III.

in the classification shares, and the total area of the *Kharáb* for the whole number deduced therefrom :—



Total area of the Number.		Classification Shares.	Kharáb annas.
A.	G.		
25	20	1	6 (2)
		2	6 (3)
		3	11 (8)
		4	1 (4)
			96 (17) Total Kharáb annas.

$17 \div 4 = 4\frac{1}{4}$ average Kharáb in the Number or 4 annas after eliminating fractions. Rule (b) = then

Annas.	Annas.	A.	G.	A.	G.	Total Pót Kharáb in the Number.
16	=	4	::	25	20	: 6 15

47. In the case of Varkas numbers containing scattered area of *Pót Kharáb* as shown in the above example, it was usual, with a view to ensure a greater accuracy, to work out the average valuation in the manner shown below :—

Survey No. 1.

Class.	Classification shares.	Number of shares of 1 anna each after deducting the Pót Kharáb.	Value in Annas.
1	1 (1st)	14	56
2	2 (2nd & 4th)	25	75
3	1 (3rd)	8	16
		47	147

$$\frac{147}{47} = \frac{\text{As.}}{3} \frac{\text{Ps.}}{2} \text{ is the average valuation.}$$

*Records prepared in the course of the classing Barsat Tapásni.*¹

48. In this Survey the results of the measurement and classification operations are collated in the following final papers, *viz.* :—

- (1) Kachha Súd.
- (2) Pakka Súd.
- (3) Darwári.

Of these the first two are, with the exception of the Rate and Akár columns, prepared in the classing establishment, while the third—Darwári—is prepared in the Head Quarter Office.

49. The forms in which these papers are prepared are appended.

¹ Formerly it was the practice in this Survey to prepare a paper called "Jungle Khanda" corresponding to the "Pahani Súd" in the Deccan and Gujarát. This practice was discontinued in 1895.

Mouje—(name of the village), Tarf , Tituka , District , Year .

NUMBER		Name of Field	Kind of Land	AREA.		Bhāg Annas.	RATES. Kharif, Rabi, Bkgrāt.		Assessment.		Amount of Judī due from the Ināmdār.	Amount of assessment due to the Ināmdār after deducting Judī.		
Survey Number.	Plot Number.			Total Area.	Product Kharīb, culturable.		Rs. a. p.	Maximum Rate.	Rs. a. p.	Kachha Akar.			Pakka Akar.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	...	1	Māl near the Nazam- Shiv.	Varkas (Govern- ment).	A. S. 3 25	A. S. 0 4	A. S. 3 21	Rs. a. p. 0 4 0	Rs. a. p. 2 4 0	Rs. a. p. 0 3 0	Rs. a. p. 1 15 9	Rs. a. p. 2 0 0	...	...
2	...	1	Dougari Māl	Do.	18 0	..	18 0	0 4 0	2 4 0	0 9 0	10 2 0	10 0 0	...	...
3	1	...	Shet Sākharē	Kharif (Govern- ment).	3 26	0 2	3 24	1 3 6	6 8 0	7 11 6	29 8 2	29 0 0	...	...
4	...	...	Fākālē	Kharif	1 19	0 1	1 18	1 3 0	6 8 0	7 11 6	11 4 7	11 0 0	...	...
5	1	...	Talyācha Kālū	Rabi (Govern- ment).	0 11	..	0 11	7 0	2 4 0	15 6	0 4 3	0 4 0	...	...
Total					27 1	0 7	26 34							
Village site					2 11	2 11								
Temples					0 17	0 17								
Roads, &c...					0 20	0 20								
Grand Total					30 0	3 51								

PAKKA SUD (FORM No. 2.)

Mouje , *Tarf* , *Taluka* , *District* , *Year* .

NUMBER.		Name of Field.	Kind of Land.	Total area.	Deduct - Kharab.	Remaining culturable.	Rate per acre.	Kharab AKAR.	Pakka AKAR.	REMARKS.	
Survey Number.	Plot Number.										
1	2	3	4	5	6	7	8	9	10	11	12
1	...	1	Mál, near Nagaon Shiv.	A. G. 3 25	A. G. 0 4	A. G. 3 21	Rs. a. P. 0 9 0	Rs. a. P. 1 15 9	Rs. a. P. 2 0 0		
2	...	1	Dongar Mál ...	Yarkas (Government). 18 0	...	18 0	0 9 0	10 2 0	10 0 0		
3	1	...	Shet Sakhare ...	Kharif (Government). 8 26½	0 2	3 24½	7 14 6	28 8 2	29 0 0		
4	...	...	Fakale ...	Kharif (Government). 1 19½	0 1	1 18½	7 11 6	11 4 7	11 0 0		
5	...	?	Tatyacha Káth ...	Rabi (Government)... 0 11	...	0 11	0 15 6	0 4 3	0 4 0		

SÚD (PAKKA AND KACHCHA FORMS NOS. 1 & 2).

Explanatory Remarks.

This paper is called the "Súd,"¹ and takes the place of the Register of the Deccan and the Gujarát Surveys.

2. Two copies of this paper are prepared in two different forms: one is called the "Kachcha" and the other the "Pakka" Súd. The former is kept on the Survey records, and the latter sent to the táluka for the preparation of the settlement papers and the village accounts. The difference between the details shown in the two forms can be easily seen by comparing the one with the other.

3. Subdivisions of rice, rabi, and garden survey numbers are called Pót numbers, and are shown in column 2; those of varkas survey numbers are called "Phalni numbers" or "Phalni Tukdas," and are shown in column 3. The remaining² columns explain themselves. The entries in columns 1 to 8 are taken from the Measurement Field Book; those in the remaining columns are taken from the Classification Book.

4. The Rate and Akár columns are filled in after the maximum rates have been sanctioned.

5. It is the practice in this Survey to show the sketches (Gats) of survey numbers in the Pakka Súd. These sketches or "Gats" are drawn on separate pages, and are so arranged in the "Pakka Súd" that each "Gat" page is immediately followed by the page or pages containing its details.

¹ In the Thána District separate "Súds" have been prepared for the rabi and varkas lands.

² Columns 14 and 15 of the Kachcha Súd are not now filled in by the Survey Department.

KONKAN SURVEY.

Darwári.

Mouze _____, Taluka _____, District _____.

Survey Number.	Pot Number.	Area.	Kachha Akár.	Pakka Akár.
1	2	3	4	5
<i>Kharif. Maximum rate Rs. 6-8-0.</i>				
<i>Valuation Re. 1-3-0. Rate of assessment per acre Rs. 7-14-6.</i>				
7	1	3 24½	28 8 2	29 0 0
<i>Valuation Re. 1-3-0. Rate of assessment per acre Rs. 7-11-6.</i>				
46	1	1 18½	11 4 7	11 0 0
<i>Rabi. Maximum rate Rs. 2-4-0.</i>				
<i>Valuation Re. 0-4-0. Rate of assessment per acre Re. 0-15-6.</i>				
8	1	0 11	0 4 3	0 4 0
<i>Entire Varkas. Maximum rate Rs. 2-4-0.</i>				
<i>Valuation Re. 0-4-0. Rate of assessment per acre Re. 0-9-0.</i>				
21	1	3 21	1 15 9	2 0 0
30	1	18 0	10 2 0	10 0 0

ABSTRACT.

Valuation.	Pot Number.	Area.	Dar or rate of Assessment.	Kachha Akár.	Pakka Akár.
<i>Kharif. Sanctioned rate Rs. 6-5-0.</i>					
1 3 6	1	3 24½	7 14 6	28 8 2	29 0 0
1 3 0	1	1 18½	7 11 6	11 4 7	11 0 0
	2	5 2½		39 12 9	40 0 0

An abstract is prepared for each kind of land such as Rabi, Varkas, &c., in a similar form.

Explanatory Remarks.

This paper is prepared in the Survey Daftardar's office after the Kachha Súd is received from the classing establishment.

2. The entries in columns 1 and 2 are taken from the Súd.

3. The "Kacha Akár" (column 4) is the product of the assessment rate and the area. The "Pakka Akár" (column 5) is the product of the assessment rate and the area, with the fractions eliminated according to the principles of "Dharsod".

4. A separate Darwári is prepared for each kind of land, Rice, Bágáyat, &c. An abstract is given at the foot showing the total area and assessment of all the numbers arranged in order of their rates, i.e. valuations.

APPENDICES.

APPENDIX B. (REFERRED TO IN PARA. 14.)

Pátasthal bágáit rules which were cancelled on the 3rd December 1877 by the issue of the rules at present in force were as follows:—

(1) The soil of such lands was classed according to the classification valuation scale given in the Joint Report, and the water class according to the following rules.

1st Class.

Water carried by a Pát from a paka built Bandhara in good repair and affording a perennial supply of water.

2nd Class.

Water-supply perennial, but decreasing in quantity during the hot months of April and May.

3rd Class.

Water-supply lasting throughout the year, excepting in bad seasons when there is a total failure for about a month or two, and yet it is customary to grow sugarcane.

4th Class.

Pát affords water-supply until the 15th of March and does not therefore suffice for sugarcane, but is sufficient to grow Khapli-wheat, Bunning, &c.

5th Class.

Pát affords water-supply until the 1st or 15th February and does not suffice to grow Khapli-wheat, but is sufficient to raise a second crop of chillies, onions, carrots, &c.

6th Class.

Pát affords water-supply annually during the months of November and December.

Note 1.—Páts affording water-supply until the 15th November are not to be taken account of.

Note 2.—When the area of land is larger than the water-supply of the 4th and 5th water class can sufficiently irrigate, the water class is to be lowered one class.

Note 3.—When the lands to be irrigated are at a distance from the source of water-supply, in consequence of which a sufficient supply of water is not obtained, the water class is to be reduced one class.

Note 4.—In case a Bandhára when first made after the rains holds a large volume of water, which however gradually diminishes during the hot months and therefore does not suffice to fully irrigate all the lands under the Bandhára, the area annually irrigated as well as the portion of it which receives a full supply of water, and the portion receiving an insufficient supply, should be carefully considered and the 5th water class assigned to the latter.

Note 5.—The irrigated land if not already measured should not be estimated, but measured and entered in the Bágáit Takta, a form of which duly filled in is attached.

* Appendix A. (Pát Kharab Rules) already printed as Appendix C. to Chapter I. Measurements.

APPENDIX C. (REFERRED TO IN PARA. 14.)

RULES FOR THE MEASUREMENT AND CLASSIFICATION OF PÁTASTHAL

LANDS ISSUED IN 1867-68.

I.—*Measurement.*

1. The orders on this are, that all Pátasthal lands shall be measured into Pôt numbers according to occupaney, and that they shall be separately mapped upon a scale of 5 measurer's chains to the inch, subsidiary to the general village map.

2. In Málegaon and Dhulia the subsidiary shares of survey numbers in Pátasthal land have already been ascertained by the "Hisewar" measurement. In these tálukas one Pôt number should now be measured in each Pátasthal survey number, and if it is found to correspond to the area given by the "Hisewar" measurement (which will be found in the number Karda) within 2 gunthas to the acre, the "Hisewar" measurement may be assumed to be correct. If a greater error appears, the measurement of all the pôts must be completed, so as to ascertain whether the error was in the "Hisewar" measurement or in the original measurement, and wherever it was, it must be corrected. This is, however, left discretionary with the Assistant Superintendent, who may find it better to have each pôt number separately measured.

3. In Bâglân and Pimpalner the survey measurements have generally been completed, but the settlement of dry-crop lands not having yet been introduced, no "Hisewar" measurement has been made. The pôt numbers must now be measured, and no subsequent "Hisewar" measurement of these lands will be required. As a rule, the pôtwar measurement should be made only of distinct holdings now entered in the village books. But if the measurer now finds in one survey field 2 shares distinctly cultivated by different persons, *one not being the tenant of the other*, though the name of one is not now entered, he should measure 2 pôt numbers accordingly, since both persons will probably have to be recorded as occupants at the settlement.

4. It may be sufficient for the measurer, as time is of consequence, to measure 1 pôt out of 2, or 2 out of 3, in a survey field, leaving the balance of area for the other pôt. But as this gives the measurer room to fudge his work, the Assistant Superintendent is requested to be careful to check this by always testing the *other* pôt, and this also will be left to the discretion of the Assistant Superintendent, who may prefer to order some of his men to measure all the pôts.

5. As the sugarcane is now standing, and the chain cannot be dragged across the field, the sides of the pôt number should be chained, and a "dhar sod" allowed, at the discretion of the Assistant Superintendent.

6. A map of the Pátasthal lands of each village, constructed on the scale of 5 chains to the inch, by means of the Pentagraph in the Superintendent's office, will be forwarded as soon as possible. In these maps the pôt numbers must then be entered in red ink, numbered Survey No. 10. Pôt Nos. 1, 2, 3, &c. The existing survey Shej is not to be interfered with.

II.—Classification.

7. To enable the classing Assistants and classers to appreciate properly the object of the instructions now issued, the mode of settlement which it is proposed to adopt for Pátasthal lands must be explained.

8. The area of Pátasthal land having first been ascertained, a fixed assessment will be imposed on each pót number, the amount of which will be regulated—1st according to the nature of the soil, 2nd to that of the water-supply, 3rd to the distance of the field from the source of supply. To effect this, 1st the soil will be divided into 3 classes, *i. e.* 1st class including the 3 first classes of the survey scale, or 12 (or, when the new valuation scale is in force, 13) annas and upwards. 2nd class the next two classes, or 8 annas inclusive and upwards to 12 (or 13). 3rd class all below the 5th class or 8 annas. The water-supply will likewise be divided into 3 classes, the best water-supply for each village or Bandhára, irrespective of the relative value of that supply to that of other villages, or Bandháras, being put into the 1st class, as explained below, paragraph 18, and the rates thus found (*i. e.* reduced from the maximum Pátasthal rate fixed by the Superintendent for the village or Bandhára according to the class of soil and water of the field) will be reduced according to the distance of the field from the source of supply, for which purpose the distance of each field from the supply must be shown in $\frac{1}{4}$ miles, *vide* paragraph 17.

9. The classers must therefore prepare a “Darwari” in the accompanying form.

10. (Rules for filling up column 1 of the “Darwari”.)

The first thing to be decided is, to what survey numbers Pátasthal rates should be applied. On this it is to be noted that as a rule, the people of the western district of Khándesh make all the use they can of their water, and it is not therefore desired to increase the area of land under Pátasthal assessment. The general rule should therefore be to consider as Pátasthal, and enter in column 1 of the “Darwari” those fields which are already entered as Pátasthal in the village books. But to this there are exceptions.

1st.—Small patches of land (mostly waste) now assessed at dry-crop rates may be found surrounded by Pátasthal fields. If there is no obstacle to their being irrigated, they should be entered as Pátasthal.

2nd.—Fields (commonly waste) may be found, which, though now entered and rated as Pátasthal, cannot be irrigated, from being on a higher level, from the Bhandhára having been broken, &c. Such lands should be entered as dry-crop, and excluded from column 1. When the classers are in doubt about this, they will be right in excluding from column 1 all fields which have not been irrigated for the last 10 years. *Example.*—At Dhywell in Pimpalner, the land now entered as Bágáit consists of about 150 bighás irrigated by a Pát on the north side of the Bandhára, and of about 60 bighás which used to be irrigated by a Pát on the south side. But from shortness of water the 60 bighás under the south Pát have been waste for 15 or 20 years. They should be entered as dry-crop.

3rd.—In some villages the people may wish to extend irrigation to fields now dry-crop. The Assistant Superintendent should specially report such

cases, explaining particularly (a) whether in his opinion the water-supply is sufficient to allow of the new land being irrigated without injury to the old, (b) whether the holders of the old Pátasthal consent that the new land be irrigated.

4th.—Land now entered as Motasthal, but which has the aid of the Pát, should now be entered as Pátasthal.

11. (Rules for column 3.) “Kharab land” (in which the area occupied by the Pát is included) to be deducted under the ordinary rules. But *vide* paragraph 14 below.

12. (Column 4.) The Pôt number will have been framed by the measurer. The classer is responsible for their having been correctly framed.

13. (Columns 5 and 10.) Land included in a Pátasthal number or Pôt, but to be entered as dry-crop. This point requires particular attention.

1st.—Land that is not actually irrigable must be entered as dry-crop. The classer is not to enter a piece of dry-crop land as Pátasthal because he thinks that the owner by lowering and levelling it might make it irrigable; nor is he to exclude a patch of land from Pátasthal merely because the owner does not actually irrigate it.

2nd.—In many villages there are raised banks, or sloping strips, between the plots of irrigation, which, though not actually “Kharab,” are unirrigable, if not unculturable. Where such exceed an average of 2 annas in width, their estimated area must be deducted as dry-crop, and if necessary, re-classed as such. It will be understood that such a bank between two Survey or Pôt numbers not exceeding 4 annas in width, will not be deducted if half belongs to each number.

14. The classers must be careful to deduct the proper amount of land both as dry-crop and as “kharab” (under Rule for column 2 above). The Superintendent has seen a case in which, out of a Pátasthal field of $2\frac{1}{2}$ acres, in which several stony hillocks had been included by the measurer, only 15 gunthas had been deducted as “kharab,” instead of 35, the proper amount. This would represent a probable difference of from Rs. 5 to 8 in the assessment of the field.

15. Mr. Scott’s attention is particularly directed to this point in Dhulia, where it is feared that much dry-crop land has been included in Pátasthal Survey numbers and that the Revenue authorities have imposed the old Pátasthal Bigoti rate (Mámul Dar) upon the whole area so included. The same may be the case in Bágán and Pimpalner in villages in which the “Záhir-náma” calling on the people to cultivate according to the limits of Survey numbers has been published.

16. (Columns 7 and 11.) In villages not yet classified, the classification must of course be made Pôtwar. In those that have been classified, the present classification may usually stand. It will generally be found that where there are Pôt numbers in a Survey field, a “khashta” has been made for each Pôt number, and if so, their original classification may be adopted for each. But included dry-crop land will often have to be reclassified, and particular attention must be paid to a case like this.

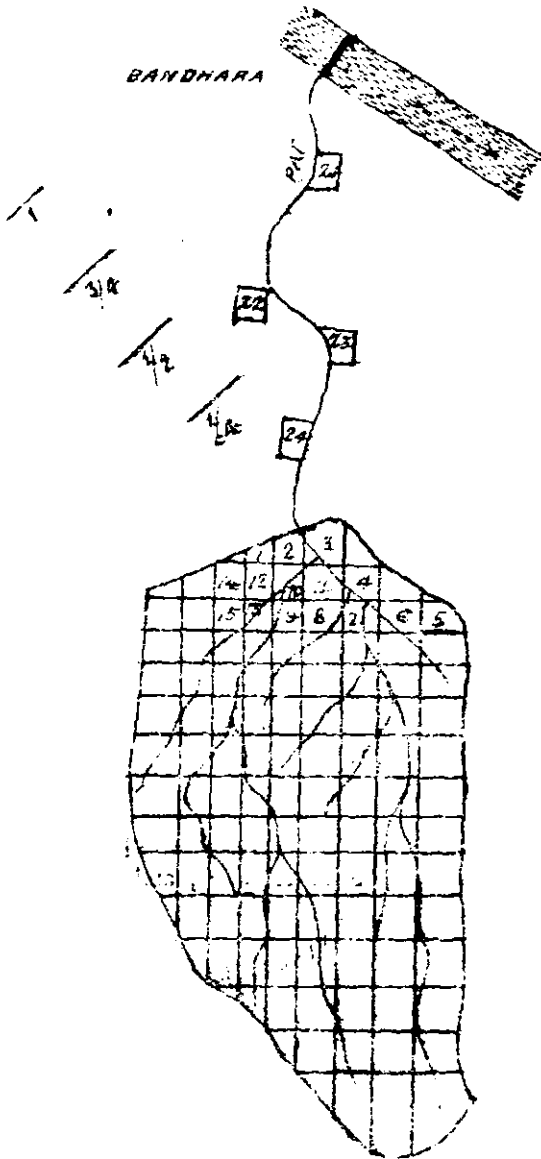
$$\begin{array}{r}
 \text{N.} \\
 \begin{array}{r}
 6 \quad 2 \\
 1 \quad 1\frac{1}{2} \\
 \hline
 \text{W.} \quad \frac{6}{1} \quad \frac{2}{1\frac{1}{2}} \quad \text{E.}
 \end{array}
 \end{array}$$

Here the original classification of the entire Survey number is 10, which would place it in the 2nd class of Pátasthal soils for assessment. But the two western Hissas are dry-crop, the two eastern Pátasthal, consequently the dry-crop land must now be classed separately, at annas 7, and the Pátasthal at class I of Pátasthal soil.

In the "Darwari," the class only of Pátasthal soil (*vide* paragraph 8 above) need be shown, not the anna classification.

If the classer finds any Pátasthal soil, which from the presence of the fault called "karal" or any other, will not grow sugar, he must be careful to put it, if its existing classification does not do so, in the 3rd class of Pátasthal soils.

17. (Column 12.) Distance should be reckoned from the point where the Pát enters the "Thall" of irrigated lands. *Example.*



23. Stones will not be entered in the Map to mark Pôt numbers, but the holders may put them up if they please.

24. Measurers and classers may work together in the same village at this revision, and the classer is to make the measurer useful, as may be found convenient. There is great need of haste.

25. Revision work of this kind does not admit of a regular test, and a careful general supervision and personal examination of all difficulties will also insure accuracy better than one. The test return, therefore, need show only the number of fields and Pôt numbers examined, and the result.

Statement of Mango Trees, vide para. 22.

Survey Number.	Pct Number.	Holder of field or Pct Number.	Holder of Trees.	NUMBER OF MANGO TREES.		Government share in the trees.	REMARKS.
				In Jirayat.	In Pátasthal.		
1	1	Rama ...	Rama ...	4	6	One-ladi	
				1	1	None.	
2	2	Bhiku ...	Rama ...	5	7		
				...	4	5.	
				...	1	None.	
				...	5		

Berij, 1st class water, 1st class soil, 3 10 acres.
 II do. 2 0 do.
 III do. 0 20 do.
 2nd class water, I do. 1 0 do.
 II do. 1 10 do.
 3rd class water I do. 1 0 do.
 II do. 0 20 do.
 III do. 1 20 do.

Instructions to Classing Assistants regarding the information they are to supply regarding Pátasthal lands.

Instructions.	Example.
<p>Information on the following points to be furnished for all villages in which there is Pátasthal irrigation.</p>	<p>Wulwarra, táluka Malleganm, examined by Survey Commissioner and Superintendent of Survey.</p>
<p>A.—Whether the Bandhara is Pukha Masonry, Kutchá, or Natural. If the former, whether in or out of repair, and to what extent. If the latter, what is the annual expense for clearance, &c., and similar details about the Path.</p>	<p>Bandhara, a small work in a rocky basin of the river just below a basin and in good repair. The Path a fine one, well-engineered several miles along the bank of the river, and over several ravines, but is said to be now leaky.</p>
<p>B.—Bandhara and Path when constructed and by whom, <i>i.e.</i> by Government, the villagers, or an individual. If the latter, whether any Inam lands or perquisites are attached to them, and, if so, are repairs of the Bandhara or Path charged to such emoluments and to what extent.</p>	<p>The Path is old, but was formerly supplied only from a ravine, 10 or 12 years ago. Government constructed the present work in the river, and consequently it was ordered that 4 days a month water should be supplied from it to the Kakuri Bandhara. No Inam or emoluments attached to the Path or Bandhara, except for Pathkurics.</p>
<p>C.—Whether any other villages were supplied from the Bandhara, and if so, by what rotation.</p>	<p>Kakuri 4 days a month as above.</p>
<p>D.—What is the system of distribution of the water, has any field, estate, person, &c., a prior right to the water, or a right of any greater quantity, and if so, under what circumstances and on what conditions as regards rates of assessment, &c.</p>	<p>There are 4 Fuds or divisions of the Pátasthal lands, each of which, and all the owners of which, have equal rights to the water, the first field getting as much as it requires, and so on to the last in the Fud, when the rotation re-commences. There is a 5th Fud, which only gets surplus water.</p>

Instructions.	Example.
<p><i>E.</i>—What is the system of cultivation, and the nature of rotation of crops, whether, <i>e.g.</i> sugar is grown altogether in one division of the village one year and in another the next. When the sugar is planted whether Kamode rice is grown. What crops are manured. How often the different crops are watered, &c. What is the general appearance of the standing crops.</p>	<p>is according to the 4 The rotation of 4 years—1st year Fuds and is sown afterwards planted, Kamode and sugar, 4th Bajri. The 2nd Sugar, 3rd V which had Kamode next year the Fud which had sugar, has sugar, that this rotation does wheat and so on. 1 Fud, which, as not apply to the 5th ded in the 4th noticed below, is included in the 4th when there is sufficient water only. Sugar is planted in March cut. The previous year's crop is being cut. The sugar Kamode only is manured. 5 days, the gets water about once in 10 days. The second crops Kamode once in 3 or 4. Such as mentioned above are not raised. Crops look the average this season.</p>
<p><i>F.</i>—What is the present area of Pátasthal land, what are the present rates of assessment, are they crop rates or fixed, and if the latter, are they always levied, or not levied, when the land is planted with dry-crops? And what are different rates of assessment, what reason is there for the difference.</p>	<p>There are 2 Fuds of about 35 each rated at Rs. 11½ per bigha 3rd of about 40 bighas at 7½ Rs. 4th of about 25 bighas at 7½ Rs., the 5th a few bighas at Rs. 5 valued with the 4th when there is sufficient water. All the rates are fixed, and no remission is given the land is planted with dry The rate is lower in the 5th Fud account of the uncertainty of water-supply, and in the 3rd and 4th because the land is said not to be good as in the 1st and 2nd, but is no very perceptible difference.</p>
<p><i>G.</i>—What is the division of the Pátasthal lands among the village community, has each Vatandár, or hereditary cultivator, a piece of land in each division of the Pátasthal lands, so that he gets sugar every year, or how? and if an Upri gets a piece of Pátasthal land what is his position.</p>	<p>Each Vatandár has a bit of land each Fud, and when the turn of Fud for sugar comes round, he is obliged to plant sugar, borrowing from a Sowkar if he has not the money.</p>

APPENDIX D. (REFERRED TO IN PARA. 18.)

Rules for the classification of rice lands in Deshi villages of the Deccan Revenue Survey issued on the 17th January 1857.

Description and color of Soil.	DEPTH OF SOIL AND ANNAS.			
	1 cubit.	$\frac{1}{2}$ cubit.	$\frac{1}{4}$ a cubit.	$\frac{1}{8}$ of a cubit.
	Annas.	Annas.	Annas.	Annas.
Darkish red and reddish yellow	8	6	4	3
Reddish black and black	6	4	3	2
Clayey black and grey	4	3	2	1 $\frac{1}{2}$

Explanation.

1. When the 1st description of soil has a large admixture of sand, and when dug instead of turning up in clods crumbles, it should be reduced to the 2nd description. When, however, the soil is alluvial it should be retained in the 1st description.

2. The 2nd description of soil during the hot weather is cut up by fissures. When the fissures are large it should be reduced to the 3rd description, but when the soil is black, and it is customary to raise a second crop, it should be retained in the 2nd description.

3. When the soil is inferior in fertility to the 1st and 2nd descriptions, it should be entered in the 3rd description.

4. When the soil has to be reduced for the reasons stated in Rules 2 and 3, the fault of Walsar or clay should be entered.

5. After entering the soil classification as given above, the water class is to be estimated and entered according to the nature of the supply and crops grown.

(1) When the water-supply is from surface springs, or received by Pát from a nála, or from there being moisture in the soil, owing to which Jirvel, Ambe Mohor, or some other superior kind of rice is grown, which is cut in November, and a good yield annually is a certainty. Sugarcane can also be grown. The water class should in this case be entered as 1st, value 10 annas. When, however, the moisture is so great as to injure the crop, then only is the water class to be entered as 2nd, value 8 annas.

(2) When the description of rice grown is the same as stated above, but in seasons of bad rainfall the yield is not good, then the water class should be entered as 2nd, value 8 annas.

(3) When the rice grown is not of a superior kind but middling such as Halva, Ambe Mohor, &c., which is cut during October and November, and when the rainfall is even scanty the yield of such rice is good, then the water class should be entered as 3rd, value 6 annas.

(4) When the description of rice mentioned above is not grown as a rule, but a coarser kind which is cut in October, but the yield in seasons of scanty rainfall even is good, then the water class should be entered as 4th, value 4 annas.

(5) Although it is customary to grow the same kinds of coarse rice as mentioned in Rule 4, yet owing to the advantage of moisture being less, and that when there is a break of eight or ten days during the monsoon, there is no certainty of a crop, then the water class should be entered as 5th, value 2 annas.

(6) When the land is elevated and wholly dependent upon rainfall to grow Take Kudai, or other inferior kinds of rice, then the water class is to be entered as 6th, value nil.

Explanation.

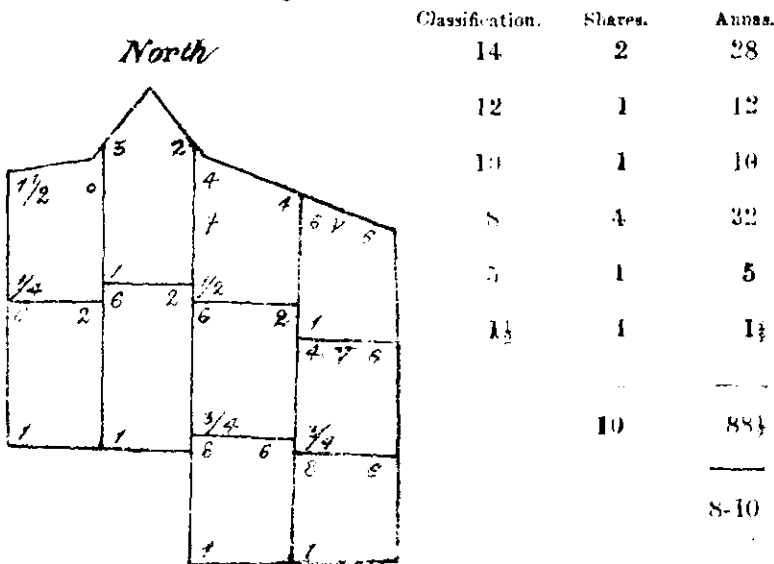
Reliance is not to be placed on the statements made by the cultivators as to the description of rice grown, but the fertility of the soil, inherent moisture, embankments along the boundaries, whether the land is low-lying or elevated, and water is received by Pât, are to be considered, as well as the description of the crop that can be grown, after which the water class is to be assigned. The water class should be entered on the north-east corner of the classification share, which will be understood from the example given.

Pratbandi No. 5.

To the south of this number is Government land. Khâtedâr Balaji bin Sakharam Patil.

Pât No. 1.

To the north of this number is Balaji bin Trimbakji Dekne. Measured area 30 gunthas, of which 1 guntha has been deducted as kharâb at measurement, to which has been added 1 more guntha at the time of classification, total 2 gunthas. Remaining arable 28 gunthas.



In the above sketch the soil classification and water class have been entered according to the rules. A mark * has been made in a share of the above sketch in which at present there is Ambe Mohor rice, but as the land is very sloping and such rice is not always grown, the 4th water class has been assigned instead of the 3rd.

CLASSIFICATION RULES OF THE DA'NG REVENUE SURVEY.

Rice Land.

The classification of rice land was based upon soil, water, and embankment. The maximum value in annas assigned to rice land was 16, of which 8 annas were apportioned to soil, 4 annas to water, and 4 annas to embankment. The scales were as given below.

1st Soil Scale.

Class.	Color of Soil.	DEPTH OF SOIL AND VALUE.			Faults.
		One cubit and upwards.	From 1 to 4 cubits.	From 4 to 1 a cubit.	
1	Pivalvat, Thambad Pivalvat, Thambad (yellow and yellowish red soils).	8	5	3	Each fault in texture, &c., reduces the soil valuation by one class down as far as the one anna valuation.
2	Thambad Kalvat, Kalvat Thambad, Kalvat (dark red soils).	5	3	1	
3	Kalsar, Thambad-Kalsar (very dark red soils).	3	1	1	
4	Pivalvat Burkhat, Thambad Burkhat, Kalvat Burkhat, Kalsar Burkhat (coarse soil of every description).	1	1	1	

Note.—Practically Kalsar or a mixture of coarse pebbly soil and sand appears to have been the fault generally used, and this was given freely.

2nd Water Classes.

Class.	Land to the end of February.	Land in March.	Land in April and May.	Value
				in Annas.
1	Surface water or very muddy ...	Moist to the surface.	Fairly moist below the surface.	4
2	Slightly moist on surface with firm concrete mud below.	Dry above but moist below the surface.	Slightly moist below the surface.	2
3	Dry on surface and slightly moist below.	Dry above and below.	Dry above and below.	0

2nd—Red soil like the above, sloping from west to east, but not so sloping as that its substance is washed out.

3rd—So shall land formed by the alluvion of rivers, or nálas, or by rain in hollow ground.

4th—Blackish land, if level.

2nd Class, value 5 Annas.

1st—Reddish shallow soil tolerably level with small stones and mixed with muram.

2nd—Blackish soil, sloping, clayey or tough.

3rd Class, value 4 Annas.

1st—Good red soil, but so sloping that if ploughed its substance is washed out and lost.

2nd—Black soil so sloping as not to retain moisture.

4th Class, value 3 Annas.

Sloping sides or peaks of hills, quite muram, only fit for "Dhali" and not admitting of the plough.

5th Class, value 0.

All rocky or stony ground, totally unfit for cultivation, shall be deemed "Kharab" and entered in the fifth class.

The combination annas and rates of assessment for rice lands applied in the Dāngi Districts are as follows.

Name of District		CLASS AND VALUE IN CLASSIFICATION ANNAS AND RATE OF ASSESSMENT.					
		1st Class.	2nd Class.	3rd Class.	4th Class.	5th Class.	6th Class.
		Value.	Value.	Value.	Value.	Value.	Value.
Kownai	Classification annas ...	16	14 to 12	11 to 8	7, 5, 3, 1	None.	None.
	Assessment rate ...	6 0 0	4 14 0	3 6 0	1 8 0	None.	None.
Trimbak Peta	Classification annas ...	16	14 to 12	11 to 8	7, 5, 3, 1	None.	None.
	Assessment rate ...	6 0 0	4 14 0	3 6 0	1 8 0	None.	None.
Dinduri	Classification annas ...	16 to 14	13 & 12	11 & 10	9 to 7	5 to 3	1 anna.
	Assessment rate ...	3 0 0	2 8 0	2 0 0	1 8 0	1 0 0	0 10 0
Násik	Classification annas ...	16 to 14	13 & 12	11	9 to 7	5 to 3	1 anna.
	Assessment rate ...	6 0 0	4 12 0	3 8 0	2 4 0	1 2 0	0 12 0

¹ Para. 3. Land formerly entered as Awan but which is totally unfit for rice cultivation should be now classed as Káli. In such cases there is no need to make each Chuck number into a separate Pát number. Taking ownership and tenure into consideration as many Chuck numbers as lie together in the old Survey number may be clubbed into one number.

² At the time of Revision Survey classification of Dángi villages all rice lands on which a second crop is regularly grown should have an extra 2 annas added to the classification annas combining soil, water, and embankment.

¹ *Vide* Superintendent, Poona and Nasik Survey's letter No. 338, dated 19th April 1875.

² *Vide* Survey and Settlement Commissioner's No. 210 of 10th February 1877.

APPENDIX F. (REFERRED)

Statement of Wells and Motesthal and Pitasthal Bights in

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Revenue Survey "Number" in which the well is situated and whether the "Number" is Government or Inam.	Number of the well, according to the order of priority.	Who built the well, and when, and who enjoys the benefit of it now.	How the "Tharola" is built, and how many motis is it for.	Depth from the lower roller of the "Tharola" to the surface of the water.	Depth of water.	Superficial area of the surface of the water.	When was the Mot last used.	How many Motis are in use generally.	For how many hours in the hot weather are the Motis used daily.	Is the water sweet or brackish, and what kinds of springs are there.	The Survey "Numbers" and whether they are Government or Inam.	Approximate acres, and if them how many are sown every year with fragrant.	Who have a right to the water, or who enjoys a share of it.
				Yards.									
24 M. J. E.	3 N.	No person knows when or by whom the well was built, but Burma the clean and repaired it about 10 years ago, and he now enjoys the benefit of it.	The "Tharola" is for two motis and is built up with chunama and stone. The rest of the well is not built up, but is in good repair.	4½	3	22½	In use at present.	1	5	Water sweet. There are two springs, each about the thickness of two fingers. The others are small.	25 M. Jud.	10, 26, 30, 31 at an average.	No. 27 has a right to one-fifth share of the water, and enjoys that now.
25 G.	1	The well was built by the father of the present occupant about 75 years ago, and the occupant himself enjoys the benefit of it.	The "Tharola" is for one mot built up with chunama and stone. The rest of the well is not built up, but is in good repair.	4	7	20	In use at present.	1	9	Water sweet. There are two springs, each about the thickness of one finger.	61 Government.	19, 12, 29 at an average.	None but the occupant has any right to the water.

TO IN PARAS. 8 AND 15).

Mauje in the *Taluka* of the *Collectorate*.

Survey "Numbers" are irrigated by the Well, what crops are sown in the Bagrah, &c.					Superintendent's Settlement.								
15	16	Of the Pat if there is one.		19	20	21	22	23	24	25			
		How many acres are irrigated from the Pat.	Class of the supply of water.								Value per acre of the soil in Annas.	Fruit trees in Bagrah cultivation.	"Number."	Bagrah acres and guntas.	Rate.	Amount.
<p>Are crops sown in rotation in the Bagrah soil.</p> <p>Crops in the Bagrah during the present season.</p>													
<p>They are</p> <p>0 20 Betel creeper.</p> <p>0 20 Supdri trees— Small 100. Large 200.</p> <p>0 10 Plantains.</p> <p>0 10 Turmeric.</p> <p>1 20 Sugarcane.</p> <p>1 20 Dry-crop.</p> <p>4 20 Total.</p>					<p>A. g.</p> <p>2 20</p>		<p>Rs. a. p.</p> <p>3rd. 0 13 6</p>		<p>10 Mango. 4 Jack. 4 Coconut.</p>				
<p>They are</p> <p>A. g.</p> <p>1 15 Sugarcane.</p> <p>1 0 Chillies.</p> <p>0 20 Turmeric.</p> <p>1 4 Baiming.</p> <p>0 35 Khapli wheat.</p> <p>0 26 Pea.</p> <p>5 20 Total.</p>							<p>0 15 7 8</p>		<p>Mango. 61</p> <p>Yearly of Rotation. 4 0 0 30</p>				
<p>A. g.</p> <p>Yearly ... 4 0</p> <p>In rotation ... 1 20</p> <p>Total ... 5 20</p>									<p>The Warda river is dammed up on-site. Mauje Kabor and water is conveyed from that place by means of a Pat. The dam is slightly out of repair, and therefore less water is conveyed from it than used to be. At present there is no one to repair the dam, but it costs about Rs. 3 a year to keep the Pat in repair. A petition has been made to Government to repair the dam.</p>				

APPENDIX G. (REFERRED TO IN PARA. 12.)

Statement showing the area of *Bhāgit* land found at Revision Survey classification irrigated under assessed and unassessed Wells in Village *Tātuka* of the *Collectorate*.

Reve- nue Survey Num- ber.	Revision Survey Numbers.		Motasthal <i>Bhāgit</i> ,		Soil classifi- cation.	Well Position class, Gene- ral Position class, or Per- colation clas- " Chad "	Chad Annas in feet of Posi- tion class.	Total of columns 5 to 7.	Rate accord- ing to Scale Jantri on annas in column 8.	Remark : whether the well is assessed or unassessed.
	Survey.	Pot.								
1	2	3	4		5	6	7	8	9	10
			Acres.	Guntas.						
2	3	...	3	52	13 0	W. P. 2 0	...	...	...	Assessed.
			Alluvial "chad"	...	2 0					
			Soil "chad"	...	2 0					
					1-1 0					
4	6	...	4	10	13 7	W. P. 2 0	...	...	...	Unassessed.
			Nala "chad"	...	1 6					
			Soil "chad"	...	2 0					
					1-1 1					
5	7	...	1	36	15 0	W. P. 2 0	...	...	...	Assessed.
			Alluvial "chad"	...	6 0					
			Soil "chad"	...	2 0					
					1-7 0					
8	10	...	2	4	15 0	W. P. 2 0	...	..	...	Assessed.
			1st class. Percolation	...	...			
			Soil "chad"	...	2 0					
					1-1 0					

Explanation.

1. Columns 1 to 6 and 10 are to be filled in by the Classifier; columns 7, 8, and 9 will be filled in at the time of preparing the "Akarband."

2. In column 5 after entering the soil classification bhāg annas the increase on account of different chads should be shown opposite each kind of chad.

3. The increase on account of Well Position class or General Position class should be entered in column 6.

4. All wells of First Survey villages are to be considered and entered as assessed.

APPENDIX II. (REFERRED TO IN PARA. 15.)
 PATASTHAL BA'GA'IT TA'KTA.
 Information regarding Patasthal Bagait according to Revision Survey of Mowjeh
 of the Collector, prepared in 18

Land pertaining to	Arable area of Revision Survey		Patasthal bagait.		Baga'it crops this year.	Water Class. Pat affords water-supply until.	Value per acre of the soil in annas.	Whether the Pat is affixed by well water; if it is, from which well is water received.	Num-ber.	Superintendent's Settlement.			Particular information about the water-supply, whether received from a Tank or Mda.
	Revision Survey Name and Loc.	Area according to Revision Survey.	Area according to Revenue Survey.	A. g.						A. g.	Baga'it.	Rato.		Amount.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
3	4	12	6	0	A. g. Annas. Superior crops: 14 2 Plantains .. 2 10. Sugar ... 1 35. Turmeric ... 1 30	1st Water Class. 31st May.	15 0	Not affixed by well water. When affixed by well water, class of well to be entered.	4				Water received by Pat from a Puka Bandhara constructed across the "Gaucha Odu" to the north of Survey No. 4. 1 Water lasts in the Bandhara until the 31st of May. 2 Pat affords water until the end of May. 3 Annual cost to keep the Pat in working order is 1 Rupee. 4 Water-supply to each field not fixed. Water is taken to each field in consecutive order. 5 Distance of number from the 1st number irrigated is $\frac{1}{2}$ a mile.
Additional information to be entered is two years' bagait crops from the village papers.													
Year 18 .. 2 20 Sugar ... 2 0. Plantains .. 2 20 Sugar ... 2 0. Turmeric ... 2 0 Banning. 1 20. K. Wheat. 1 0 Carrots ... 0 30. Patali ... 0 20 Carrots. 0 30													
Year 15 .. 0 16 0 Annas. Chillies ... 0 31 6 26 Annual Bagait ... 6 26 Pherpali													
Chillies ... 0 31 6 26 Annual Bagait ... 6 26 Pherpali													
Patali ... 0 20 Carrots. 0 30													
6 0 6 0													

APPENDIX I. (REFERRED TO IN PARA. 16, CL. 13)

Collectorate furnished in 18

Taluka of the

Information regarding Bandharas in Mowjee

Name of Taluka.	Assessed or unassessed.	Pata-thal Bapat according to First Survey.			Pata-thal Bapat according to Revised Survey.			Up to what month does the Pat afford water.	Has the Pat well and or not.	REMARKS.		
		Area.	Assessment.	Rate from and to.	Average rate per acre.	Assessed area.	Unassessed area.				Total area.	
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Pata Assessed	A. G.	Rs. a.	Rs.	Rs. a. p.	A. G.	A. G.	A. G.	A. G.	31st of May.	Has no well and.	Information to be furnished by classing Assistants regarding Bandharas, vide Circular No. 612, dated 26th March 1888, from Superintendent, Revenue Survey, Poona and Nasik. 1 Whether the Bandhara is made annually, if not, how often made in last 3 or 4 years. 2 The approximate date to which the Pat usually flows, and the best crop usually grown. 3 If sugarcane is a regular crop, once in how many years is it grown. 4 What difference is there in distance between the numbers nearest to and that most distant from the Pat. 5 Do all the Numbers receive water by an even easy flow, or is it necessary to specially dam up the Pat, or use a "Stop" to water any special Numbers, if so, which numbers. 6 Is the "Pat" fixed. If so, how many days does it continue in all.

REMARKS.

13

General Name of the Patta.	Kaoha or Paka.	Patashal Bagait according to First Survey.			Patashal Bagait according to Revision Survey.			Up to what month does the Pat afford water.	Has the Pat well or not.		
		Assessed or unassessed.	Area.	Assessment.	Rate from and to.	Average rate per acre.	Assessed area.			Unassessed area.	Total area.
1	2	3	4	5	6	7	8	9	10	11	12
			A. G.	Rs. a.	Rs.	Rs. a. p.	A. G.	A. G.	A. F.		

7 Is the land divided into "Phads" for convenience of rotation of crops, each owner holding a bit of land in each "Phad" and all owners following the same rotation, so that each "Phad" is entirely cultivated with each crop in succession. If so, how many "Phads" are there, and what is the usual rotation. If not, is any other general arrangement adopted to economize the water-supply.

8 Is there any special recurring expense connected with the Pat or Bandhara. If so, what does it amount to approximately, and by whom is it met. Does it fall equally on all owners of Numbers or affect some more than others.

9 If the Bandhara is Paka, was it built by Government, the villagers, or one or more individuals. If the latter, do they hold any "sanaal" or title-deed investing them with special rights in the water-supply.

10 Is the total area recorded by the classer as regularly irrigated in proportion to the water-supply available, and is this the case in individual Numbers where the area now recorded as patashal much exceeds that formerly assessed. As a rough guide in judging, it may be assumed that a Pat whose stream is equivalent to that from one mot will in an eight-day fall suffice for 10 or 12 acres and so on.

APPENDIX J. (REFERRED TO IN PARA. 16, CL. 20.)

Kamal Patrak regarding Patasthal Bājārit of Mowjeh Taluka of the Collectorate, prepared by the Kulkarni in 18 .

Name of Bandhara and of Naka across which it is made, and its natural point of descent.	Name of Khateedar.	Detail of Patasthal Bājārit according to First Survey.			Right to water-supply for many days and hours.	Detail of Bājārit crops according to Village Form No. 3.				Amplified case to be kept by Bandhara and Patasthal workmen.	Is the Pat in use this year, Is it used annually, or only when water is abundant?	Up to what month does the Pat stand?	Revision Number.	REMARKS.			
		Reve-ning Survey Number, and whether the Bandhara is Kachar or Pakka.	Area, Asses-ment.	Pit and Mōt combined.		Purely Patasthal.	Year.	Year.	Year.						Year.		
1	2	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	Yehu Bin Salu Patel.	A. G. Rs. 0 0 60	A. G. Rs. ..	A. G. Rs. ..	Purely Patasthal.	Time not fixed; water is taken to each field in consecutive order.	Days 9	Hours 10	Sugar .. 1 30 Plantains .. 2 20 Chillies .. 1 10 Turmeric .. 2 20 Wheat .. 1 0 Garlic .. 1 0 Mustard .. 1 0 Custard .. 1 0 Custard .. 1 0	Sugar .. 2 20 Plantains .. 2 20 Chillies .. 1 0 Turmeric .. 2 20 Wheat .. 1 0 Garlic .. 1 0 Mustard .. 1 0 Custard .. 1 0	Sugar .. 2 20 Plantains .. 2 20 Chillies .. 1 0 Turmeric .. 2 20 Wheat .. 1 0 Garlic .. 1 0 Mustard .. 1 0 Custard .. 1 0	Sugar .. 2 20 Plantains .. 2 20 Chillies .. 1 0 Turmeric .. 2 20 Wheat .. 1 0 Garlic .. 1 0 Mustard .. 1 0 Custard .. 1 0	One 1/2 acre of this year and another 1/2 acre used.	Up to 31st May.	4		
<p>Pakka Bandhara constructed across the "Gavaria oda" to the north of Survey No. 4.</p>																	

APPENDIX K.

APPENDIX K.

Statement showing the Rice lands according to Revenue and Revision Survey of

ACCORDING TO REVENUE SURVEY.							ACCORDING TO					
Number.		Acres.			Rate.	Assess- ment.	Number.			Acres.		
Survey.	Plot.	Total.	Un- arable.	Remain- ing arable.			Survey	Plot.	Plots.	Total.	Un- arable.	Remain- ing arable.
1	2	3	4	5	6	7	8	9	10	11	12	13
4	1	0 30	..	0 30	4 6	3 4 0	4	..	1	0 35	..	0 35
	2	1 10	..	1 10	5 2	1 6 6	..	..	2	1 15	..	1 15
..	..	2 10	..	2 0	..	9 11 0	1	..	2	2 10	..	2 10
5	1	0 36	..	0 36	4 9	4 1 8	5	..	1	0 36	..	0 36
	2	1 7	..	1 7	4 12	5 9 4	..	..	..	..	..	..
	3	1 2	..	1 2	5 2	5 6 1	..	..	2	2 24	..	2 24
..	2	2 9	..	2 9	..	10 15 5	..	..	..	..	..	..
..	3	3 5	..	3 5	..	15 1 1	1	..	2	3 20	..	3 20
..	4	4 6	..	4 6	3 14	16 1 4	6	..	..	4 6	..	4 6
..	..	..	..	..	..	..	9 Inām.	..	..	2 3	..	2 3
18	..	2 33	..	2 33	4 2	11 10 5	10	..	..	3 0	..	3 0
4	4	12 4	..	12 4	..	52 7 10	5	..	2	14 39	..	14 39
Government						..	4	..	2	12 36	..	12 36
Inām ..						..	1	..	..	2 3	..	2 3
Total ..						..	5	..	2	14 39	..	14 39

NOTE -- The assessment of rice land entered in col. 18 has been calculate at a maximum rate of 4 Rs. 4 per

(REFERRED TO IN PARA. 23).

Morjeh Tituka of the Collectorate, prepared in 18 .

REVISION SURVEY.

Old Rice.					New Rice.					Total.		Average rate of assessment per acre.	REMARKS.
Acres.	Soil classification.	Water classification.	Rate.	Assessment.	Acres.	Soil classification.	Water classification.	Rate.	Assessment.	Acres.	Assessment.		
14	15	16	17	18	19	20	21	22	23	24	25	26	27
A. g.	A. p.	A. p.	Rs. a.	Rs. a. p.	A. g.	A. p.	A. p.			A. g.			
0 30	16 0	1 0	3 8	2 10 0	0 5	16 0	1 0	..	..	0 35	..	..
1 10	15 6	1 0	3 14	4 13 6	0 5	15 6	1 0	..	..	1 15	..	..
2 0	..	..	..	7 7 0	0 10	..	..	..	..	2 10	..	..
0 36	16 0	2 0	3 1	2 12 1	..	..	..	..	..	0 36	..	..
2 9	15 6	1 0	3 14	8 9 11	0 18	15 6	1 0	..	..	2 24	..	..
3 5	..	..	..	11 6 0	0 15	..	..	..	..	3 20	..	..
4 6	14 0	2 0	2 12	11 6 7	..	..	..	..	..	4 6	..	..
..	..	..	..	..	2 3	15 0	2 0	..	..	2 3	..	..
2 33	15 0	2 0	2 14	8 1 11	0 7	15 0	2 0	..	..	3 0	..	..
12 4	..	..	..	38 6 0	2 35	..	..	..	..	14 33	..	..
<i>Detail.</i>													
12 4	..	..	..	38 6 0	0 32	..	..	..	..	12 36	..	..
..	..	..	..	..	2 3	..	..	..	..	2 3	..	..
12 4	..	..	..	38 6 0	2 35	..	..	..	..	14 30	..	..

acre for the purpose of estimating what the result will be at a higher rate to be fixed.

APPENDIX L. (REFERRED TO IN PARA. 64.)

PAHANI SU'D.

Statement showing the Revenue and Revision Survey Numbers, names of fields, &c., in *Moujeh* *Tiluko* of the *Collectorate prepared in 18*.

REVISION SURVEY NUMBER.	Survey Pct.	Revenue Survey Number.	Name of Field.	Kind of Holding.	Name of Khacdar or Inaudar.	ACRES ACCORDING TO REVISION SURVEY.				
						Total acres.	Deduct unarable.	Remaining Arable.	Jirayat.	Bagait.	Rice.
1	2	3	4	5	6	7	8	9	10	11
1	...	1	Of Kumbharki ...	Government cultivated.	Sabbhara bin Ramoo Kaudhar	A. R.	A. S.	A. R.	A. R.	A. R.
2	...	2	Of Amla ...	do.	Gowind bin Aba Patil	5 1	0 2	5 2	0 0	0 0
3	...	3	Of Nagrath ...	do.	Nau bin Raoutji Sude	9 34	0 4	6 32	2 34	0 0
4	...	4	Of Guravke ...	do.	Narayan bin Sandhooji Gurav	7 21	0 10	1 1	3 19	0 0
5	...	Part of 5 ...	Of Sutaraki ...	do.	Murari bin Raoutji Sutar	12 23	0 3	10 10	0 0	2 10
6	...	Part of 5 ...	Of Sutaraki ...	do.	Ganapati bin Sita Sutar	14 34	0 4	11 10	0 0	3 20
7	...	6	Of Chaplia ...	do.	Government assessed waste	17 39	0 30	13 3	0 0	4 6
8	...	Part of 7 ...	Of Wad ...	do.	Narawan bin Yeha Patil	27 4	0 32	26 12	0 0	0 0
9	...	2	Of Mang ...	do.	Baba bin Yeha Patil	1 37	0 0	1 37	0 0	0 0
10	...	9	Palsacha mal	Service Imm.	Bahaji bin Krishnaji Virkar	3 3	0 0	1 3	0 0	0 0
11	...	10	Adjoining odha	Government Forest	Forest	10 38	0 8	7 22	1 5	2 3
12	...	11	Of Par ...	Government free graz.	Government waste, free grazing	27 15	0 0	27 15	0 0	0 0
13	...	12	Of Wad ...	Government cultivated.	Vaman Bajaran Kulkarni	14 33	0 0	14 33	0 0	0 0
				Government unarable.	Quarry	9 31	0 27	9 4	0 0	0 0
						4 21	4 21	0 0	0 0	0 0

APPENDIX N—continued.

Rate.	NUMBER.		Culturable area.	Assessment.	Gat Akar.	Less	More.
	Survey.	Pct.					
1	2	3	4	5	6	7	8

Abstract of Government culturable dry-crop land.

16 0	1	...	14 3	14 1 2	14 1 2	...	...
15 6	1	...	15 3	14 9 8	14 9 8	...	...
15 0	1	...	9 4	8 8 6	8 8 6	...	...
13 6	1	...	10 10	8 10 4	8 10 4	...	...
13 0	1	...	4 1	3 4 4	3 4 4	...	...
12 6	1	...	11 10	8 12 0	8 12 0	...	...
12 0	2	...	8 17	6 5 1	6 5 1	...	...
11 6	...	1	1 3	0 11 10	0 11 10	...	...
11 0	1	...	13 3	8 15 10	8 15 10	...	...
10 6	1	...	5 2	3 5 0	3 5 0	...	...
9 0	1	1	3 9	1 13 0	1 13 0	...	...
	11	2	94 25	79 0 9	79 0 9	...	...

Rates and amounts for Government culturable waste land.

6 0	7	...	26 12	9 13 10	9 13 10	...	...
	1	...	26 12	9 13 10	9 13 10	...	...

Rates and amounts for Inám culturable dry-crop land.

14 6	15	...	4 11	3 14 0	3 14 0	...	...
	1	...	4 11	3 14 0	3 14 0	...	...
12 6	3	...	7 22	5 14 4	5 14 4	...	...
	1	...	7 22	5 14 4	5 14 4	...	...

Abstract of Inám culturable dry-crop land.

14 6	1	...	4 11	3 14 0	3 14 0	...	...
12 6	1	...	7 22	5 14 4	5 14 4	...	...
	2	...	11 33	9 12 4	9 12 4	...	...

Total Abstract of culturable dry crop land.

Government culturable.	11	2	94 25	79 0 9	79 0 9	...	...
Do. waste	1	...	26 12	9 13 10	9 13 10	...	...
Inám	2	...	11 33	9 12 4	9 12 4	...	...
	14	2	132 30	98 10 11	98 10 11	...	...

APPENDIX N—continued.

Rate.	NUMBER.		Culturable area.	Assessment.	Gat Akar.	Less.	More.
	Survey.	Pol.					
1	2	3	4	5	6	7	8

Rates and amounts for Inam culturable new Rice land.

Part of 9	...	2 3	...	...	...	...
.....	...	2 3	...	...	...	...

Total abstract of new Rice land.

Government ... ..	.....	...	0 32	...	...	...	...
Inam ... ..	.....	...	2 3	...	...	..	...
	.....	...	2 35	...	...	...	...

Rates and amounts for Government culturable Patasthal land.

Part of 3	..	3 10	...	...	...	...
.....	...	3 10	...	...	...	...

Rates and amounts for Inam culturable Patasthal land.

Part of 9	...	1 5	...	...	...	...
.....	...	1 5	...	...	...	...

Abstract of Patasthal land.

Government ... ..	.....	...	3 10	...	...	...	...
Inam ... ..	.....	...	1 5	...	...	...	...
	.....	...	4 15	...	...	...	...

Government Forest land.

10	...	27 15	...	...	...	...
16	...	23 34	...	...	...	...
2	...	51 9	...	...	...	...

Land assigned for free grazing.

11	...	14 33	...	...	...	...
18	...	18 32	...	...	...	...
2	...	33 25	...	...	...	...

APPENDIX N—continued.

Rate.	NUMBER.		Culturable area.	Assessment	Gat Akar.	Less.	More.
	Survey.	Pot.					
1	2	3	4	5	6	7	8

Government unculturable land.

13	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...

Detail.

Dry-crop	14	2	132 30	98 10 11	98 10 11	...	...
Motasthal ... ..	...	...	4 38	...	...	...	...
Old Rice ... ..	...	...	12 4	...	...	...	...
New Rice ... ..	...	...	2 35	...	...	...	...
Patasthal ... ..	...	...	4 15	...	...	...	...
Forest	2	...	51 9	...	...	...	...
Free grazing	2	...	33 25	...	...	...	...
Unculturable Quarry ...	1	...	...	...	...	...	...
Do. Burial ground	1	...	...	...	...	...	...
Unaccounted	20	2					
		2					
		4	241 36	98 10 11	98 10 11	...	...

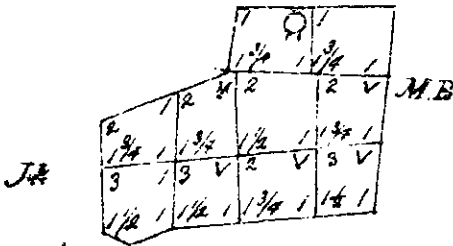
APPENDIX O. (REFERRED TO IN PARAS. 8 AND 65.)

Example 1.

FIRST SURVEY VILLAGE.

Jirait and Motasthal Bagait land.

F. S. No. 1.



	Area.	Unculturable.	Remaining culturable.
Jirait ...	5 39	...	5 39
Motasthal Bagait...	6 36	0 2	6 34
Total ...	12 35	0 2	12 33

Class.	Jirait. Shares.	Annas.	Motasthal Garden. Class.	Shares.	Annas.
2	3	42	1	2	32
3	2	21	2	2	25
	5	66	3	1	12
Average rate...13-2			5 72		

Confirmed.

Jirait ...	9-6	average rate.	13-7	14-0	Average rate... 14-5
Motasthal Bagait...	3-27	do.	14-5	14-6	

- 1 The Number is near the village.
- 2 This Number is usually measured.
- 3 The cattle are watered at the well in the Number.
- 4 The measurements, sketches in the measurer's book, and the entries are properly made.
- 5 The map is correct.
- 6 There are 2 gumbas of Pât Kharâh in this number on account of the well.
- 7 The boundary marks, both mounds and stones, are according to the field book and in good repair.

Annual ...	2 30
Pherpali...	4 4
	6 34
Confirmed annual ...	2 30
of the annual taken from the Pherpali area...	0 37
	3 27

Remarks regarding garden cultivation.

- 1 The well is said to have been sunk about 15 years ago by the Karla of the number, Govinda bin Banji, and he is at present the Wâhivatdar.
- 2 The "Tharola" of the well is for one Môt and is strongly built up with channam and stone; the other parts are not built up, but the sides of the well are of firm rock.
- 3 The depth from the lower roller of the "Tharola" to the surface of the water is five yards, and the depth of the water is 4 yards. The dimensions of the surface of the water from east to west 4½ and from north to south 4 yards, making the area at the surface 18 yards.
- 4 The Môt has been worked since morning, now two hours. In the hot season the well contains sufficient water to admit of the Môt being worked five hours a day.
- 5 The water is sweet and there are two springs, about as large as the thickness of two fingers, coming from the west. The other springs are small.

Remaining, 3 7	
of the Pherpali area to be added to Jirait.	
Jirait ...	5 39 13 2 4 14 8
Of Pherpali,	3 7 14 5 2 13 9
	9 6 7 12 5
Average rate per acre...	0 13 7

6 The crops cultivated during the current season are :

As. p.	As. p.
8 8 Superior crops :	7 4 Minor crops :
Betel creeper... 1 34	Onions ... 0 15
Sugarcane ... 1 0	Ratali ... 0 30
Plantains ... 0 34	Batauz ... 1 8
	Brinjals ... 0 15
	Chillies ... 0 18
Total ... 3 28	Total ... 3 6

7 Revenue Survey No. 4, a Government field, has a right to, and enjoys the benefit of one-fourth of the supply of water from the well in this Number.

8 Two acres and 30 guntas of this Number are sown every year with garden crops. The remaining 4 acres and 4 guntas in consequence of the water in the well being deficient is sown in rotation with dry and garden crops.

9 The water from the well can be conveyed only to the portion irrigated annually and in rotation.

10 Remarks 1, 4, 5, 7, 8, 9, are written from information given by the Karla, and Yithu bin Narayan rjet and Genu bin Hari Patel,

(Signed) Classer.

APPENDIX P. (REFERRED TO IN PARAS. 12 AND 65.)

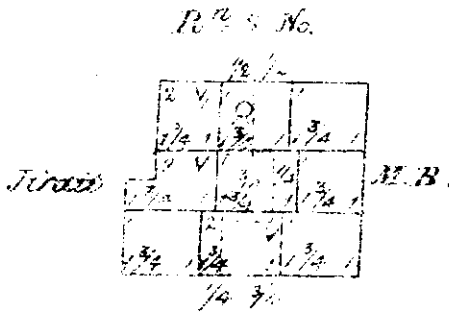
Example 2.

REVISION SURVEY VILLAGE.

Jirait and Motasthal Bâgâit land.

	Acres.	Uncul- turable.	Remain- ing culturable.
Jirait	5 19	0 2	5 17
Motasthal Bâgâit.	5 19	...	5 19
	<u>10 38</u>	<u>0 2</u>	<u>10 36</u>

Pôt Kharab according to First Survey
on account of unculturable land.



Jirait.

Class.	Shares.	Annas.
1	2½	36 0
2	2½	31 6
	<u>4½</u>	<u>67 6</u>
		15 0

Motusthal Bâgâit.

Class.	Shares.	Annas.	Position class annas.
1	3½	60 0	7½
2	½	10 6	1½
	<u>4½</u>	<u>70 6</u>	9
		15 8	2
Position class ...	2 0		
		<u>17 8</u>	

Information to be given as per Example No. 1.

APPENDIX Q. (REFERRED TO IN PARA. 65.)

Example 8.

FORM OF CLASSER'S BOOK.

Page 1. 3rd December 1898. This day the following Khatedars and the village officers were present at the time of classification—

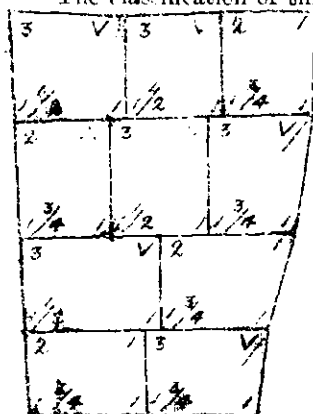
- | | |
|------------------------|--------------------------------|
| 1 Narsu bin Govinda. | 4 Hari bin Genu. |
| 2 Rama bin Mr Kundu. | 5 Mulhari bin Ramji, Patel. |
| 3 Govinda bin Tukaram. | 6 Ramchandar Sadasiv Kulkarni. |

Revision Survey No. 1.

To the east of Revision Survey No. 2.

Revenue Survey Number.	Name of Field.	Government or Inam.	Name of Government occupant or that of the Inamdar.	Description of land.	Total area.	Unculturable.	Remain- ing culturable.
					A. g.	A. g.	A. g.
1	Pimplacha.	Government	Narsu bin Govinda ...	Jirafit ...	31 21	0 11	31 10
				Rice ...	...	...	...
				Garden ...	...	...	...
				Cultivated by occupant...	Total ..	31 21	0 11	31 10

The classification of this Number is as follows :—



Class.	Shares.	Annas.
2	4	56
3	6	72
	<u>10</u>	<u>128</u>

Average rate 12 10

If the soil increase is applicable, the addition according to Scale I will be 2 0

14 10

Confirmed according to "Dhar Sod" scale 15 0

The old kharab is according to Exception 1 of Rule 1 of the Pöt kharab rules to be confirmed.

- 1 The "Number" is $\frac{3}{4}$ mile from the village and $\frac{1}{2}$ a mile from the hamlet.
- 2 This "Number" is not manured.
- 3 The cattle are watered at the river close by.
- 4 The measurements, sketches in the measurer's book, and the entries are properly made.
- 5 The map is correct.
- 6 There are 11 gonthas of unculturable land in this Number.
- 7 The boundary marks, both mounds and stones, are agreeable to the Rules, and correspond with the entries in the measurer's book, and are in good repair.

(Signed)

Classer.

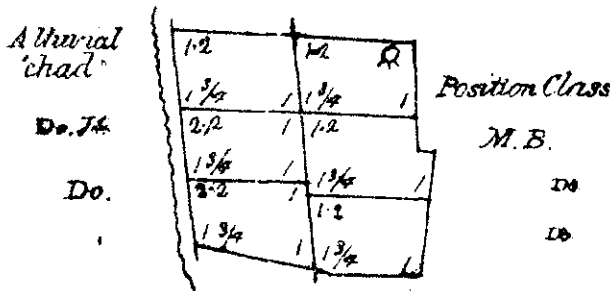
APPENDIX R. (REFERRED TO IN PARA. 65.)

Having given a page of the Classers' book for one Number written in detail it will be superfluous to do so for all other examples of classification.

Example 4.

Mixed Number Jirait and Motasthal bágáit. All six shares being subject to alluvial increase, and the three eastern ones to Well Position Class as the Motasthal bágáit land at Revision Survey is by order of Government to be assessed as dry-crop.

Revision Survey No. 2.



Pôt kharab according to First Survey, 2 gunthas on account of well.

	Area.	Unculturable.	Remaining culturable.
Jirait ...	7 5	...	7 5
Motasthal Bágáit.	7 6	0 2	7 4
Total...	14 11	0 2	14 9

Jirait.

Class.	Shares.	Annas.	Extra.
1	2	1	6
2	2	2	28
		3	44
			12

Average rate ... 14 8 4 0

Add—Alluvial increase ... 4 0
 1 2 8

Confirmed according to "Dhar Sod" scale ... 1 3 0

Motasthal Bágáit.

Class.	Shares.	Annas.	Extra.
1	2	3	48
			12

Average rate ... 16 0 4 0

Add—Alluvial increase ... 4 0
 1 4 0

Confirmed according to "Dhar Sod" scale ... 1 4 0

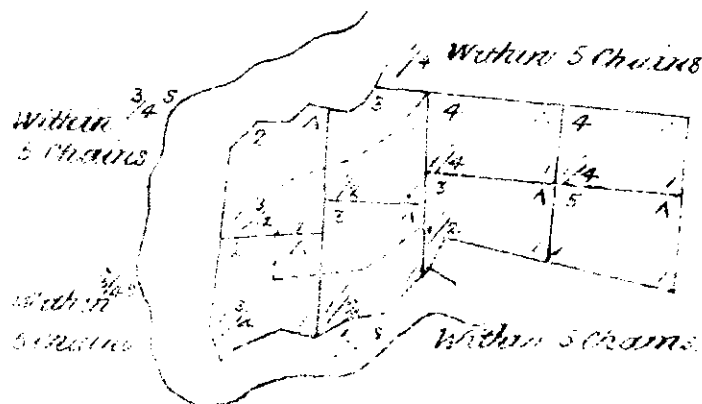
In this case as the Well Position Class gives an increase of 2 annas and the Alluvial increase 4 annas; the former has been abandoned and the latter applied.

APPENDIX S. (REFERRED TO IN PARA. 65.)

Example 5.

Jirayat Number portions of 4 shares subject to increase on account of being within 5 chains of Nāla containing water until the end of December.

Revision Survey No. 3.



Pôt kharab according to First Survey, on account of unculturable land.

	Area.	Unculturable.	Remaining culturable.
Jirāt ...	... 21 26	0 13	21 23

Class.	Shares.	Amas.	Extra.
2	2	28	3 0
3	3	36	1 6
4	2	20	...
5	1	8	...
	<u>8</u>	<u>92</u>	<u>4 6</u>

Average rate 11 6 0 7

Add—Increase on account of
being within 5 chains ... 0 7

12 1

Confirmed according to "Dhar
Sod" scale 12 6

Soil chad to be added where applicable. Where General Position Class is applicable and works out more than the Nāla "chad," the General Position Class is to be applied and the Nāla "chad" abandoned.

In all cases a "chad" is to be reckoned on the soil classification.

APPENDIX T. (REFERRED TO IN PARA. 65)

Example 6.

Jirāit Number two shares taking 2nd Well Position Class and 2nd Percolation Class on account of Well in adjoining number being above 2 and within 5 chains of canal. Water taken by right. Depth from lower roller to the surface of water 16 yards.

Revision Survey No. 4.		Jirāit ...	Area. ... 12 0	Unculturable. ...	Remaining culturable. 12 0
		Class.	Shares.	Annas.	Extra.
		1	1	16	...
		2	4	56	2 0
		3	1	12	...
			6	84	2 0
		Average rate ...	...	14 0	0 4
		Increase on account of Well Position Class ...	...	0 4	
				14 4	
		Confirmed according to "Dhar Sod" scale ...	...	14 6	

The increase on account of 2nd Percolation Class is added by the Superintendent.

APPENDIX U. (REFERRED TO IN PARA. 65.)

Example 7.

Jirait and rice-land.

Revision Survey No. 5.

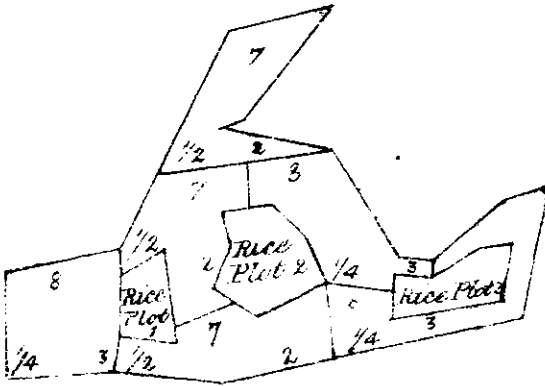
	Ares.	Uncul- turable.	Remaining culturable.
Jirait	...19 11	0 28	18 23
Rice	... 4 30	...	4 30
Total	<u>24 1</u>	<u>0 28</u>	<u>23 13</u>

Pôt kharab according to First Survey on account of unculturable land.

Jirait.

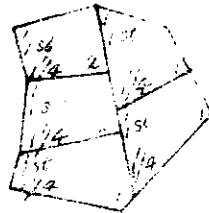
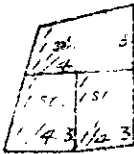
Class.	Shares.	Annas.
7	3	13 6
8	3	9 0
	6	22 6

Average rate ... 3 9
Confirmed according to "Dhar Sod" scale ... 3 6



Rice Plot 1 A 1-5.

Rice Plot 2 A 2-1.



Class of Water.		
Class.	Shares.	Annas.
3	3	9
	3	9

Rice Land.		
Class.	Shares.	Annas.
1	3	13
	3	16

Class of Water.		
Class.	Shares.	Annas.
1	3	3
2	2	4
	5	7

Rice Land.		
Class.	Shares.	Annas.
1	5	80
	5	16

Average class 3 annas, confirmed according to "Dhar Sod" scale 3 annas.

Average rate Re. 1-0-0, confirmed according to "Dhar Sod" scale Re. 1-0-0.

Average class 1 a. 5 ps., confirmed according to "Dhar Sod" scale 1 anna 6 ps.

Average rate Re. 1-0-0, confirmed according to "Dhar Sod" scale Re. 1-0-0.

Rice Plot 3 A 1-24.



Class.	Shares.	Annas.	Class.	Shares.	Annas.
1	2	2	1	4	64
2	2	4			
	<u>4</u>	<u>6</u>		<u>4</u>	<u>16</u>

Average class 1 anna 6 pies, confirmed according to "Dhar Sod" scale 1 anna 6 pies.

Average rate Re. 1-0-0, confirmed according to "Dhar Sod" scale Re. 1-0-0.

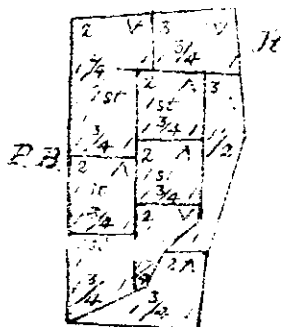
		First Survey.	Revision Survey.		
1st	...	1 0	1 5	1 0	0 5
nd	..	1 33	2 1	1 33	0 8
3rd	...	...	1 24	...	1 24
		<u>2 33</u>	<u>4 30</u>	<u>2 33</u>	<u>1 37</u>

APPENDIX V. (REFERRED TO IN PARA. 65.)

Example 8.

Jirait and Pátasthal Bágait land.

Revision Survey No. 6.	Area.	Uncultivated	Assessment
Pátasthal Bágait	6 00	...	6 00
Total	12 26	...	12 26



Class of Water.			Pátasthal Land.			Jiravat.		
Class.	Shares.	Annas.	Class.	Shares.	Annas.	Class.	Shares.	Annas.
1	6	6	1	2	32	2	2	28
	6	6	2	4	56	3	2	24
				6	88		4	52

Average class 1 anna, confirmed according to the "Dhar Sod" scale 1 anna.

Average rate As. 14-8, confirmed according to the "Dhar Sod" scale 15 as.

Average rate As. 13-0, confirmed according to the "Dhar Sod" scale As. 13-0.

- 1 The Number is $\frac{1}{4}$ a mile from the village.
- 2 This Number is annually manured.
- 3 The cattle are watered at the river, which is $\frac{1}{4}$ of a mile.
- 4 The measurements, sketches in the measurer's book, and the entries are properly made.
- 5 The Map is correct.
- 6 There is no Pot kharab in this Number.
- 7 The boundary marks, both mounds and stones, are agreeable to the rules and correspond with the entries in the measurer's book, and are in good repair.

Bandhára No. 1.—Pátasthal acres 6-26. Information regarding the Pát. To the north of Revision Survey No. 4 across the "Gávcha Oda" a Paka bandhara has been built, water from which is carried by channel to this Number.

- 1 Water lasts in the Bandhara until the 31st May.
- 2 Do. Pát do.
- 3 Cost to keep the Pát in repair is 1 rupee.
- 4 Water is taken when required.
- 5 First Survey area 6-0, assessment Rs. 60.
- 6 Garden crops this year are as follows:—

As. ps.	As. ps.	Fruit trees:
11 2 Superior crops:	1 10 Minor crops.	Mango large 10, middling 15, small 10.
Sugarcane ... 1 35	Chillies 0 31	
Plantains ... 2 10		
Turmeric ... 1 20		
Total ... 5 35		

APPENDIX U, TO SECTION I. DECCAN AND S. M. C.

Class.	Class of Water.		Class.	Rice Land.	
	Shares.	Annas.		Shares.	Annas.
1	2	2	1	4	64
2	2	4		4	16
	<u>4</u>	<u>6</u>			

Average class 1 anna 6 pies, confirmed according to "Dhar Sod" scale 1 anna 6 pies.

Average rate Re. 1-0-0, confirmed according to "Dhar Sod" scale Re. 1-0-0.

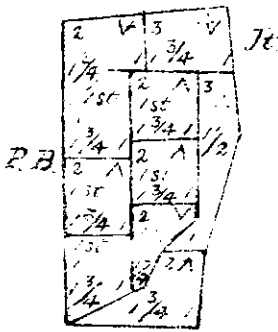
Rice Plot.	Area of Rice.		Old Rice.	New Rice.
	First Survey.	Revision Survey.		
1st ...	1 0	1 5	1 0	0 5
nd ..	1 33	2 1	1 33	0 8
3rd ...	...	1 21	...	1 24
	<u>2 33</u>	<u>4 30</u>	<u>2 33</u>	<u>1 37</u>

APPENDIX V. (REFERRED TO IN PARA. 65.)

Example 8.

Jirait and Patasthal Bagait land.

		Area.	Unculturable.	Remaining culturable.
Revision Survey No. 6.		Jirait 6 0	...	6 0
		Patasthal Bagait... 6 26	...	6 26
		Total ...12 26	...	12 26



Class of Water.			Patasthal Land.			Jiravat.		
Class.	Shares.	Annas.	Class.	Shares.	Annas.	Class.	Shares.	Annas.
1	6	6	1	2	32	2	2	28
			2	4	56	3	2	24
	6	6		6	88		4	52

Average class 1 anna, confirmed according to the "Dhar Sod" scale 1 anna. Average rate As. 14-8, confirmed according to the "Dhar Sod" scale 15 as. Average rate As. 13-0, confirmed according to the "Dhar Sod" scale As. 13-0.

- 1 The Number is $\frac{1}{4}$ a mile from the village.
- 2 This Number is annually manured.
- 3 The cattle are watered at the river, which is $\frac{1}{2}$ of a mile.
- 4 The measurements, sketches in the measurer's book, and the entries are properly made.
- 5 The Map is correct.
- 6 There is no Pôt kharab in this Number.
- 7 The boundary marks, both mounds and stones, are agreeable to the rules and correspond with the entries in the measurer's book, and are in good repair.

Bandhara No. 1.—Patasthal acres 6-26. Information regarding the Pat.

To the north of Revision Survey No. 4 across the "Gavcha Oda" a Paka bandhara has been built, water from which is carried by channel to this Number.

- 1 Water lasts in the Bandhara until the 31st May.
- 2 Do. Pat do.
- 3 Cost to keep the Pat in repair is 1 rupee.
- 4 Water is taken when required.
- 5 First Survey area 6-0, assessment Rs. 60.
- 6 Garden crops this year are as follows:—

As. ps.		As. ps.	Fruit trees:
14	2 Superior crops :	1 10	Minor crops : Mango large 10, middling 15, small 10.
	Sugarcane ... 1 35		Chillies. 0 31
	Plantains ... 2 10		
	Turmeric ... 1 20		
	Total ... 5 35		

APPENDIX U, TO SECTION I. DECCAN AND S. M. C.

Class.	Class of Water.		Class.	Rice Land.	
	Shares.	Annas.		Shares.	Annas.
1	2	2	1	4	64
2	2	4		<u>4</u>	<u>16</u>
	<u>4</u>	<u>6</u>			

Average class 1 anna 6 pies, confirmed according to "Dhar Sod" scale 1 anna 6 pies.

Average rate Re. 1-0-0, confirmed according to "Dhar Sod" scale Re. 1-0-0.

Rice Plot.	Area of Rice.		Old Rice.	New Rice.
	First Survey.	Revision Survey.		
1st ...	1 0	1 5	1 0	0 5
nd ..	1 33	2 1	1 33	0 8
3rd ...	...	1 21	...	1 24
	<u>2 33</u>	<u>4 30</u>	<u>2 33</u>	<u>1 37</u>

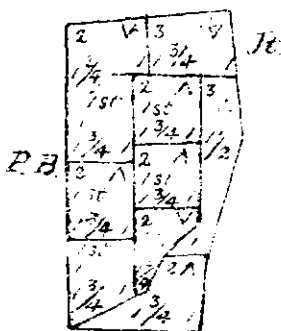
APPENDIX V. (REFERRED TO IN PARA. 65.)

Example 8.

Jirait and Patasthal Bagait land.

	Area.	Unculturable.	Remaining culturable.
Jirait	6 0	...	6 0
Patasthal Bagait...	6 26	...	6 26
Total ...	12 26	...	12 26

Revision Survey No. 6.



Class of Water.			Patasthal Land.			Jirait.		
Class	Shares.	Annas.	Class.	Shares.	Annas.	Class.	Shares.	Annas.
1	6	6	1	2	32	2	2	28
	6	6	2	4	56	3	2	24
				6	88		4	52

Average class 1 anna, confirmed according to the "Dhar Sod" scale 1 anna. Average rate As. 14-8, continued according to the "Dhar Sod" scale 15 as. Average rate As. 13-0, confirmed according to the "Dhar Sod" scale As. 13-0.

- 1 The Number is $\frac{1}{4}$ a mile from the village.
- 2 This Number is annually manured.
- 3 The cattle are watered at the river, which is $\frac{1}{2}$ of a mile.
- 4 The measurements, sketches in the measurer's book, and the entries are properly made.
- 5 The Map is correct.
- 6 There is no Pôt kharab in this Number.
- 7 The boundary marks, both mounds and stones, are agreeable to the rules and correspond with the entries in the measurer's book, and are in good repair.

Bandhara No. 1.—Patasthal acres 6-26. Information regarding the Pôt. To the north of Revision Survey No. 4 across the "Gāvcha Oda" a Paka bandhara has been built, water from which is carried by channel to this Number.

- 1 Water lasts in the Bandhara until the 31st May.
- 2 Do. Pôt do.
- 3 Cost to keep the Pôt in repair is 1 rupee.
- 4 Water is taken when required.
- 5 First Survey area 6-0, assessment Rs. 60.
- 6 Garden crops this year are as follows:—

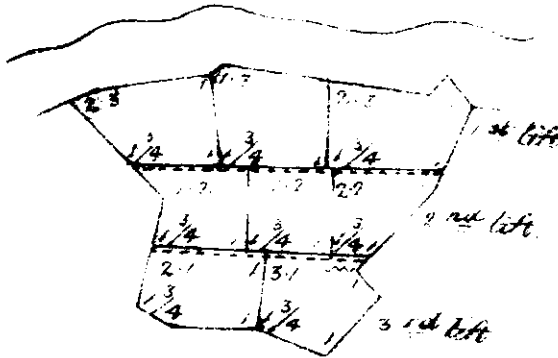
As. ps.	As. ps.	Fruit trees:
14 2 Superior crops:	1 10 Minor crops:	Mango large 10, middleg 15, small 10.
Sugarcane ... 1 35	Chillies. 0 31	
Plantains ... 2 10		
Turmeric ... 1 20		
Total ... 5 35		

APPENDIX W. (REFERRED TO IN PARA. 65.)

Example 9.

Applicable to the Sâtára Collectorate and Kolhápúr Territory. Jiráit Number having alluvial increase. Increase superadded on account of Kuva bágáit being occasionally made, or for the advantage of being able to get water and have Kuva bágáit cultivation.

Revision Survey No. 7.



Jiráit ...	...	...	...	...	Arca.	Unculturable.	Remaining culturable.
					18 0	...	18 0
Class.	Shares.	Amas.	Increase alluvial.	Lifts.	Increase.		
1 3	1	16 0	6 0	1st	4 0		
2 3	2	28 0	12 0	1st	8 0		
1 2	2	32 0	8 0	2nd	4 0		
2 2	1	14 0	4 0	2nd	2 0		
2 1	1	14 0	2 0	3rd	1 0		
3 1	1	12 0	2 0	3rd	1 0		
	<u>S</u>	<u>116 0</u>	<u>34 0</u>	...	<u>20 0</u>		
Average rate	...	14 6	4 3		<u>2 6</u>		

Add—

Increase on account of Alluvial	...	4 3
Increase on account of Kuva bágáit	...	2 6
Average rate	...	21 3

Confirmed according to "Dhar Sod" scale Re. 1-5-6.

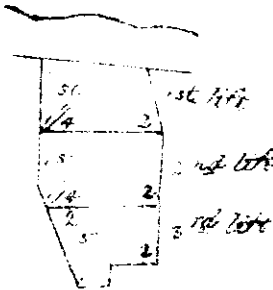
APPENDIX X. (REFERRED TO IN PARA. 65.)

Example 10.

Applicable to the Sâtâra Collectorate and Kollâpur Territory. Rice land with increase on account of Kuva bâgâit being occasionally made, or for the advantage of being able to get water and have Kuva bâgâit cultivation.

Revision Survey No. 8. Rice Area. 5 3 Unculturable. 0 2 Remaining culturable. 5 1

Pôt Kharab according to First Survey on account of unculturable land.



Class of Water.

Class.	Shares.	Annas.	Lift.	Increase in water class.	Water class after increase.
2	1	2 0	1st	1 0	1 0
2	1	2 0	2nd	0 6	1 6
2	1	2 0	3rd	0 6	1 6
	<u>3</u>	<u>6 0</u>		<u>2 0</u>	<u>4 0</u>
Average class	...	2 0		0 8	1 4

Increase on account of Kuva bâgâit 0 8

Average rate ... 1 4

Confirmed according to "Dhar Sod" scale 1 anna 6 pies.

Rice Land.

Class.	Share.	Annas.
1	2	32
2	1	14
	<u>3</u>	<u>46</u>

Average rate ... 15 4

Confirmed according to "Dhar Sod" scale 15 6

APPENDIX Z. (REFERRED TO IN PARA. 65.)

Example 12.

Applicable to the Sâtara Collectorate and Kollhâpur Territory. Dry-crop Kushki land which is irrigated once or twice a year. *Vide* paragraph 41, rule 5.

Kushki Land.

Revision Survey No. 10.

	Acres.	Unculturable.	Remaining culturable.
Kushki...	... 13 8	0 3	13 5

No former kharab. The kharab now given is on account of unculturable land, rocky.

2	✓	2	✓	3	✓
1 3/4	1	1 3/4	1	1 3/4	1
3	✓	3	✓	4	✓
1 3/4	1	1 3/4	1	1 1/2	1
		4	✓	4	✓
		1 1/4	1	1 1/4	1

Class.	Shares.	Annas.	Increase per share.	Total increase.
2	2	28	6	12
3	3	36	6	18
4	3	30	4	12
	<u>8</u>	<u>94</u>		<u>42</u>

Average rate ... 11 9

Add

Increase for water ... 5 3

Average rate ... 17 0

Confirmed according to "Dhar Sod" scale Rs. 1-1-0

A bandhara is raised across a nâla to the east of Revision Survey No. 6, and water carried by Pât to this Number.

APPENDIX A. (REFERRED TO IN PARA. 37 OF SECTION II.)

RULES REGARDING THE COUNTING OF TREES.

Fruit trees in Bágáyet land must always be carefully counted. In the counting of cocoanut and supári trees a difference of not more than 10 per cent. will be allowed in the number of these trees counted by the classer, as compared with the number counted at test.

Sizes of Cocoanut and Supári Trees.

The different sizes of cocoanut and supári trees to be taken into consideration are as follows:—

Trees which have been newly planted and whose leaves only show above the ground, no portion of their stem being visible, must be considered as seedlings (róps). Trees the stems of which show above ground but which have not come into bearing must be considered as small trees. Such trees as have come into bearing, whether they are small or large, must be entered as large trees.

Scattered Cocoanut trees when to be considered as Bágáyet and when not.

In some Bágáyet numbers where the cocoanut trees are very far apart, it is difficult to decide what area of ground should be considered as Bágáyet. In such cases all the trees which are at a distance of within two chains of one another must be considered as standing on one piece of Bágáyet land, and the boundary of this piece must be fixed at a distance of half a chain from the outermost trees of the group standing on it.

The Assistant Superintendent will examine this statement at test time, and should he see any reason to remove any land appearing in it from the Kushki or Pulan heads to Bágáyet, he will write an English remark to that effect in the statement showing the area he considers should be made Bágáyet and the water class applicable, which will be taken into consideration when the rates are fixed.

If scattered cocoanut trees in Kushki or Pulan lands are within two chains of one another, the land covered with the trees within that distance will be classed as Bágáyet.

APPENDIX C.

INFORMATION TO BE RECORDED IN THE CLASSIFICATION
BOOK AND TAKTAS.

Information regarding gardens and wells should be written out at time of classification as follows : —

1. For gardens irrigated by kutchu wells, that is wells which are not built up or permanent, but merely holes dug out, the following information should be recorded—

(1) The depth from the surface to the water and the depth of water.

(2) The number of cocoanut and supari trees and their state, whether good or otherwise.

(3) Whether other Survey numbers have a right to be supplied with water from the well or not ; if so, what share of water each number is entitled to.

2. For gardens irrigated by Pakka or built-up permanent wells, the following information should be recorded—

(1) Who sunk the well and when, whether he or his heirs are still in possession of it ; if not, who is.

(2) The manner in which the well is built up and what contrivance is used for drawing up the water, and if several, how many.

(3) The depth from the surface to the water and the depth of water.

(4) Whether the well is being worked, or not, at time of classification. If so, the number of hours it has been worked previous to classification and for how long it may be worked during the hot season.

(5) Whether the water is sweet or brackish, what kind of a spring it has and the direction from which it comes.

(6) The number of cocoanut and supari trees and their condition, whether good or otherwise.

(7) Whether other Survey numbers have a right to be supplied with water from the well or not, and if so, what share of water each number is entitled to.

APPENDIX D.

RECORDING OF THE NATURAL MOISTURE CLASS IN THE CASE OF
GARDEN LANDS.

As it is necessary to know whether gardens are good or not, whether the soil has good natural moisture or not, and what kind of situations the gardens are in, all gardens should be graduated as follows :—

1. Gardens in low and level situations where the natural moisture of the soil is good, that is, in situations similar to where rice-land would bear the 3rd water class, the garden should be graduated first, and 1st class for natural moisture of soil entered.

2. Gardens in level situations, but where the natural moisture of the soil is less in consequence of the soil being hard and water only found at greater depth, should be graduated as second, and 2nd class for natural moisture of soil entered.

3. Gardens adjoining or on the slope of hills, where the trees will not flourish without being freely watered in consequence of there being no natural moisture of soil, should be graduated as third, and 3rd class for natural moisture of soil entered.

The situations of all gardens should be thus defined in the information recorded in the Classers' Books and should be entered in the Bāgait Taktas as shown below :—

Water Class
3
1

The class for natural moisture of soil should be entered below the water class of the garden, divided from it by a horizontal line.

APPENDIX E.

DISTANCE FROM VILLAGE SITE.

In the Kánara Zillah in many places there are no distinct village sites, the houses of the cultivators being situated in the fields, or wherever there are coconut gardens. The distances of numbers from the village site, or from the owners' houses must, in such cases, be taken according to the following rules :—

1st.—The house of the owner of a number, or the site of any group of houses of the village, whichever of these two is nearest a number, that distance must be taken.

2nd.—To uncultivated numbers, the distance from the site of the nearest group of houses must be taken.

3rd.—Distances within half a mile must be entered as half a mile. Distances above half a mile and up to one mile must be entered as one mile. Distances above one mile and up to two miles must be entered as two miles. Distances above two miles and up to three miles must be entered as 3 miles. Distances above three miles must be entered as "above 3 miles."

2. The number in which the house is situated, from which the distance to a number has been taken, must be stated in paragraph 1 of the usual entries in the Classifier's Book.

3. Often the houses of a village are scattered over many numbers. When the distance from such village site has to be taken, all the houses that are within 10 chains distance from each other must be considered as belonging to one group or village site, and the distance of a number from the nearest house in that site must be taken. Houses that may be at a distance of above 10 chains from such village site are not to be considered as belonging to that site. Also any number of houses from four and upwards that may be above 10 chains distance from such site must be treated as a separate group or village site. A collection of fewer than four houses must not be treated as a village site.

4. The distance of a number from the place at which the cattle are watered in the hot weather must be entered in paragraph 3 of the usual entries in the Classifier's Book, with a remark stating the place or number this distance has been taken from.

APPENDIX F.

"DHARSOD" TO BE MADE IN FIXING THE AREA OF NUMBERS.

1. As the Survey numbers and Pôt numbers in Sarvey numbers in the Kánara districts are often very small, the following rules are laid down for making the give-and-take, "Dharsod," of annas in fixing the areas of numbers.

1st.—For numbers of 3 gunthas and less in area, a give-and-take of 2 annas to be made as follows:—

Area to be fixed.

Annas.	Gunthas.	Annas.	Annas.	Gunthas, Annas.
1 and under...	= 0	1	From 9½ to 11 ...	= 0 10
From 1½ to 3 ...	= 0	2	" 11½ to 13 ...	= 0 12
" 3½ to 5 ...	= 0	4	" 13½ to 15 ...	= 0 14
" 5½ to 7 ...	= 0	6	" 15½ and above ...	= 1 0
" 7½ to 9 ...	= 0	8		

2nd.—For numbers above 3 gunthas to 5 gunthas in area, a give-and-take of 4 annas to be made as follows:—

Area to be fixed.

Annas over a Guntha.	Gunthas, Annas.
2 and under	= 0 0
From 2½ to 6	= 0 4
" 6½ to 10	= 0 8
" 10½ to 14	= 0 12
" 14½ and above	= 1 0

3rd.—For numbers above 5 gunthas to 10 gunthas in area, a give-and-take of 8 annas to be made as follows:—

Area to be fixed.

Annas over a Guntha.	Gunthas, Annas.
4 and under	= 0 0
From 4½ to 12	= 0 8
" 12½ and above	= 1 0

4th.—For numbers above 10 gunthas in area, a give-and-take of 1 guntha to be made as follows:—

Area to be fixed.

Annas over a Guntha.	Gunthas, Annas.
8 and under	= 0 0
8½ and above	= 1 0

APPENDIX G.

RECORDING THE AREA OF SURVEY NUMBERS ACCORDING TO PÔT NUMBERS.

The rules given in Appendix F for give-and-take in fixing the areas of numbers are applicable both to Survey numbers and Pôt numbers. Also the unculturable area in a number and the areas of the different kinds of cultivation in a mixed number must be fixed according to whichever rule the total area of the number makes applicable to it.

In a Survey number containing Pôt numbers the area of the Survey number must first be fixed according to the rules given in Appendix F, and then the sum of the areas of the Pôt numbers must be made to agree with the area so fixed. For this purpose it will often be necessary to add a few annas to or deduct a few annas from the areas of the different Pôt numbers. When this is necessary, the adding to or deducting from the areas of the Pôt numbers must be done according to the following rules :—

1st.—An increase or decrease of one guntha to be made only in Pôt numbers above 10 gunthas in area.

2nd.—An increase or decrease of 8 annas to be made only in Pôt numbers that are above 5 gunthas to 10 gunthas in area.

3rd.—An increase or decrease of 4 annas to be made only in Pôt numbers above 3 gunthas to 5 gunthas in area.

4th.—An increase or decrease of 2 annas to be made only in Pôt numbers that are 3 gunthas and less in area.

In Survey numbers containing very small Pôt numbers of only a few annas in area, it will occasionally be found impossible to make the sum of the areas of the Pôt numbers agree with the area of the Survey number, because the annas of such small Pôt numbers cannot be sufficiently changed by the give-and-take allowed. For example—

	Gunthas.	Annas.	
Area of a Survey number containing two Pôt numbers ...	16	2	, which area
By the give-and take necessary is fixed at ...	16	0	
Area of Pôt No. 1, 15 gunthas 12 annas, which by give-and-take becomes ...	16	0	
Do, 2, 6 annas, which by give-and-take remains ...	0	6	
	16	6	

Or if the 12 annas in Pôt No. 1 are discarded, still the sum of the areas of the two Pôt numbers will not agree with the area 16 gunthas fixed for the Survey number.

In such cases the areas of the Pôt numbers must not be changed beyond the change allowed by the give-and-take applicable to them, and the areas of the Survey numbers must be fixed according to the sum of the areas of the Pôt numbers.

1. The method of entering in the Classer's Book the acres of a "Survey number" according to "Pôt numbers" is as follows :—

Pôt Number.	Name of Wargdar.	Total Acres.		Unculturable Acres.		Remaining Culturable Acres.			
		Acres.	Gunthas.	Acres.	Gunthas.	Acres.	Gunthas.		
1	Shrinivas Ramechandra ...	K.	0	15	0	0	0	15	
		T.	0	5	0	0	0	0	5
2	Ganesh Ballal ...	K.	0	4	0	1	0	0	3
		B.	0	15	0	0	0	0	15
3	Sadashiv Narayan ...	P.	0	3	0	0	0	0	3
		T.	0	17	0	2	0	0	15
			<u>1</u>	<u>19</u>		<u>0</u>	<u>3</u>	<u>1</u>	<u>16</u>

2. In showing the classification work of a number in the Classer's Book a sketch must first be drawn of the "Survey number" in which the "Pôt numbers" must be separately shown, then under this a sketch of each Pôt number must be drawn in which its classification must be entered. The average classification annas of each Pôt number must be calculated separately.

3. Of the entries that are made by paragraphs under each "Survey number" the remarks in paragraphs 1, 2, 3, and 5 are chiefly applicable to Survey "numbers," they must therefore be written in the usual way.

4. Of the entries that are made by paragraphs under each Survey number remarks regarding "Pôt numbers" necessary to be entered in paragraphs 4, 6, 7, and 8 may be entered together for all such "Pôt numbers" the circumstances of which agree with the Measurer's entries. But the remark to be entered in those paragraphs for "Pôt numbers" the circumstances of which differ from the Measurer's entries must be entered separately by paragraphs under each main paragraph for each "Pôt number."

5. The entries regarding Turree land may be made for all "Pôt numbers" that do not differ in their circumstances together in the same paragraph, but when the circumstances differ the entries for each "Pôt number" must be entered by separate paragraphs under each main paragraph.

6. The usual entries by paragraphs regarding Bágáit land must be made separately for every "Pôt number."

7. A new form of "Bágáit Takta"¹ has been printed for the Kanara districts, which alone must be used. In cases of cocoanut and supari garden land, the number of these trees must be entered according to their size in columns 17, 18, 19, and 20 of this "Bágáit Takta." All other fruit trees in such garden land must be entered in column 24.

¹ See form of Bágáit Takta appended to this section.

APPENDIX H.

PREPARATION OF REGISTERS AND PAHÁNI SÚDS.

1. The following instructions regarding the method of preparing the Registers and Paháni Súds are applicable to villages where the Survey numbers contain Pôt numbers and where there is Poolun soil.

2. The total acres of the Survey numbers, their Kharáb, their Khooshkee, Turree, and Bágáit acres, and the "Dur" and "Akár" of the Khooshkee and Turree acres must be entered in the registers in black ink. The acres, "Dur" and "Akár," of Poolun land must be entered in red ink. The acres, "Dur" and "Akár," of Poolun land must be entered in the Turree columns of the registers, and for the purpose of distinguishing that land in the registers the letters P. T. must be entered in red ink against its acres.

3. The "Akár" of Poolun land must be calculated by the rates resulting in the Turree "Kayum Dur Jautree" from the soil classification and 6th water class. This water class and the "Kayum Dur" must be entered in the registers in red ink. At the end of the registers a note must be made to the effect that the acres against which the letters P. T. are entered are those of Poolun soil.

4. In the "Paháni Súds" the acres of Poolun soil must be entered in the column for the acres of Khooshkee soil and the letter P. placed against them to distinguish them, also a note must be made at the end of the "Paháni Súd" to the effect that the letter P. is entered against the acres of Poolun soil.

5. In entering in the "Paháni Súd" the acres of such Survey numbers as have Pôt numbers in them, the acres of each of the Pôt numbers must first be entered, and then beneath these the sum of the acres of the Pôt numbers must be entered, so that the total acres of the different Survey numbers may be known.

6. The directions given above for preparing the registers and "Paháni Súds" will be understood from the examples given in the accompanying forms of those papers.

7. When in accordance with the rule in paragraph 1 of Appendix B, the increase made on rice-land for scattered cocoanut trees, as shown in the table, gives a soil classification of over 16 annas or a water classification higher than first, then the register must be prepared for the rice-land as of 1st class soil and 1st water class, and a separate statement prepared according to the following form should be attached to the register. In this form columns 1 to 4 should be filled in, and column 5 left blank.

Number.	Soil Classification.	Water Classification.	Fixed rate as entered in Register.	Fixed rate.
1	2	3	4	5

APPENDIX A. TO SECTION III.

RULES AND SCALE FOR THE CLASSIFICATION OF *DHEKUDIAT*
LANDS IN DHOLKA TALUKA.

Rule 1.—All *jaráget* Survey numbers on the bank of a river or stream that have been determined to be not “*bhatta*,” must be examined by the classer to see if they are liable to be adjudged as *dhekudiat* and classed as such according to the following rules.

2. If in any such Survey number there is now a *dhekudi* in working or that was worked at some previous time, or a spot where a *dhekudi* can be conveniently erected, the classer must ascertain by enquiry and reference to the village papers in which Survey numbers irrigation by *dhekudi* has already been carried on, and he will thus be able to see and judge into which other numbers more or less adjacent water can be conveyed by *dhekudi*. All such numbers must then be classed for water according to these rules unless the following disadvantages cancel the benefits to be expected :

(1) —If the water should be far from the bank, or if a bed of sand &c. should intervene so that Rs. 20 or Rs. 25 or upwards would have to be spent on digging a channel to bring the water into the *dhekudi*. In such case the number should not be classed for the water rate, and the classer should write a remark in his field book to explain the cause of its not being classed.

(2) —If the bank is very broken, or the adjacent land under examination is so undulating or cut up by ravines that an aqueduct to convey the water to the land to be irrigated would have to be made at a cost of Rs. 50 or more the number should not be classed for the water rate.

(3) —Land, which though not “*kharábo*,” but which, from being much cut up by ravines or from some other reasonable cause, has never been cultivated and has been allotted for *gaochuran* (village cattle pasture land) is often met with on the banks of rivers and streams. Such land must not be now classed as *dhekudiat*, and the classer must enter a remark in his field book to explain why he has not so classed it. But if there happens to be a *dhekudi* in existence in such a number from which the water of the river is now conveyed into numbers situated at a distance from the bank, these numbers so irrigated must be classed for water according to the scale, even though the water has to be and is carried across *malas* or ravines. This rule is only applicable where the *dhekudi* and the necessary aqueduct are actually in existence.

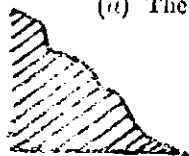
3. After having determined which fields are liable to be classed for water rate as *dhekudiat*, the classer must next class the water *annas* of each field according to the following rules.

4. The distance of the field from the *dhekudi* if there is one, and, if not from the place which is most convenient for erecting a *dhekudi* with the least expense, must be measured with the *ganta* chain, and according to the distance so found the *anna* value will be fixed by the scale in the annexed table.

5. In every number adjudged to be *dhekudiat* according to the above principles the classer must record a remark in his field-book, stating where, and in what direction, and at what distance from the number, the *dhekudi* is

which supplies the water, or the spot is which is selected as most suited for erecting a *dhekudi*, and the survey number in which the said *dhekudi* or the said site for a *dhekudi* is.

6. The following additional matters must be considered by the classer in order to guide him in fixing the scale in which a number must be entered :—



(a) The bank of the river may slope out down to the water, as shown in the margin, thus entailing labour, expense, and time in digging a pit to the level of the water to admit of the water-bag getting a dip and being easily drawn up and down.

(b) The bank may be high and the bed of the stream very low and the stream distant from the foot of the bank, the intervening space being however level or nearly so, so that a channel to bring the water under the bank may have to be cut, entailing expense and labour.

(c) The number to be irrigated may be so distant from the *dhekudi* that the construction of a channel to take the water there is a work of difficulty and magnitude, or again, owing to the level of the number being higher than that of the site of the *dhekudi*, a second lift is needed to take the water on to it.

(d) The water may be a long distance from the pit that has been dug to receive it, or from the scarped bank, and in consequence of a bed of sand intervening between the bank and the water, a deep trench may need to be cut to bring the water into the pit.

7. In such cases the following rules should be observed, and great care taken to use the one actually applicable to each particular case, for in most of the examples given in the above clauses, it is assumed that after the first expenditure has been incurred a second will not be required for the next six or seven years.

8. In the case of survey numbers in which there are no obstacles (such as a pit having to be dug or a channel to be cut through banks of sand, gravel, &c.) to getting the water by the simplest and cheapest appliances, such as tying together three logs of wood to make the apparatus, and where no embankment or expensive contrivance has to be provided, the highest class annas imposable under class A in the table appended, according to the distance in chains from the *dhekudi* or the site for a *dhekudi* to the field shall be fixed on that field and on every other that enjoys this advantage.

9. When the water can be got without incurring an outlay for erecting the *dhekudi* of more than five rupees, the fields watered or capable of being watered from this place shall be entered in Class B, and the annas fixed according to the distance in chains.

10. Similarly if the water can be got at a cost of not more than—

Rs. 8	the number should go into Class C.
” 12	” ” ” D.
” 15	” ” ” E.
” 20	” ” ” F.
Over Rs. 20	” ” ” G.

—all according to the distance.

11. If, in the case of any number coming into any of the said classes, it is found that no additional expense is or will be incurred from time to time beyond the first expense of erecting the *dhekuli* and making the channel, the anna value may be raised by two annas as is shown in the table of scales appended.

12. On the other hand if, in any such number, it is found that a yearly outlay will have to be incurred to keep the *dhekuli* in working order and the channel serviceable, the anna value should be lowered by two annas, as is also shown.

13. An example is here subjoined: A number comes into Class A; being within 10 chains distance its annas are 16; no yearly outlay is required; then add 2 annas and make the total anna value 18 annas; if the number be 20 chains distant its original annas will be 14; then, if no yearly outlay will be necessary, the 14 annas should be raised by 2 annas and made = 16 annas: and so on, in the case of each original class anna value.

14. The reverse of this should be done where an annual outlay of Rs. 5 will be necessary; that is, the original class anna value (according to distance) should be lowered by 2 annas; thus 16 annas would become 14 annas; or 8 annas would become 6 annas; and so on.

15. The expense of erecting and maintaining a *dhekuli* is to be estimated on the supposition that each *dhekuli* works one water bag.

16. In measuring the distance from the *dhekuli* or selected site for a *dhekuli* to the number adjudged capable of irrigation from it and requiring to have its water class annas determined, the course of the water channel, if there is one, should be followed by the classer. But if the number has not yet had water taken into it by a *dhekuli*, then that course must be followed which would most likely be taken, and measured up to the centre portion of the number. Enquiry and observation must determine the course of the water-channel in such cases.

17. If only portions of a survey number can be irrigated because of the level of the other portions lying too high, the portions not capable of irrigation must be measured and separately recorded, a detailed sketch being made in the classer's field-book.

18. In the table of scales appended distances of ten chains only are shown, and in the columns A, B, C and so on, the anna value is shown to be decreased by one class for each such interval. But as each class valued at two annas represents ten chains of distance, it is evident that 1 anna must represent five chains of distance.

For example: any distance less than 10 chains would, for a number coming under—

Class A, be entered at 16 annas.			
B,	”	14	”
C,	”	12	”
D,	”	10	”
E,	”	8	”
F,	”	6	”
G,	”	4	”

Hence a distance of 15 chains would give,
in Class A, a value of 15 annas.

"	B,	"	13	"
"	C,	"	11	"

and so on.

19. Further, 17 chains would be the same as 15 chains and give the same value in annas; but 18 chains and more (short of 20) would be valued at the same annas that 20 chains would be.

20. If in a survey number containing a *dhekudi*, any "*pet kharabo*" has already been deducted for it, that area will stand; but if none has been deducted, then one *guntha* for each *dhekudi* shall be deducted by the classer as "*kharabo*."

21. It is estimated that each *dhekudi* of one working *kos* (bag) is capable of irrigating eight acres of land. Then, if there happens to be much land near a river capable of *dhekudi* irrigation, and, at the same time, only one eligible site for erecting the *dhekudis*, so that as many as may be necessary will all have to be erected at that one site, the number of *dhekudis* necessary for the irrigable area being ascertained on the above estimate, the proper area of "*pet kharabo*" must be deducted at the rate of one *guntha* for each *dhekudi*. Example: In an irrigable area of 72 acres no *dhekudis* have yet been erected and there is one eligible site for *dhekudis* whence water can be conveyed to the 72 acres; then, $(72 \div 8 = 9)$, as *dhekudis* will be necessary, 9 *gunthas* must be deducted as "*kharabo*" from the area of the number in which the 9 *dhekudis* will be erected.

22. If in any village which possesses all facilities for *dhekudiat* irrigation no land has, up to the time of the classer's inspection, been irrigated from the river, the classer should report the fact to his Superintending Officer for communication to the Superintendent. But in the meantime up to receiving orders on the subject the classification of the lauds eligibly situated for *dhekudiat* irrigation should be proceeded with.

23. If in any village no *dhekudiat* irrigation has hitherto been carried on and none is likely to be so, owing to the water of the river being "*chopadu*," the classer should at once report the fact to his Superintending Officer, taking the countersignature of the village officials to his report. The Assistant Superintendent should then visit the village and satisfy himself as to the properties of the water.

24. If the water is found to be fit to irrigate and produce grain crops, though unfit for raising such garden crops as sugarcane, plantains, ginger, &c., the classer must, after obtaining the orders of his Superintending Officer, fix for the numbers irrigated or irrigable one-half of the anna value entered in the scale.

25. It may happen, and may be found to be the case in some villages, that owing to the lie of the land some numbers distant more than 80 chains from the place of the water-supply have been or are irrigated by *dhekudis*. In such cases each field up to the most distant one of the number thus irrigated shall be classed for water according to the scale for 80 chains; that is, at two annas; and this shall be done even though at the time of classification any of such numbers are found to be waste.

26. The above rules are not to be applied to rice land numbers.

APPENDIX B. TO SECTION III.

RULES FOR THE WATER CLASSIFICATION OF RICE LANDS IN SURAT.

The water classification of rice land is the valuation of (1) "akasia," *i.e.* the supply from direct rainfall and drainage, and (2) "himayat," *i.e.* the supply from tanks and rivers.

Each rice field or each compartment of a rice field shall be classed for the "akasia" supply and for the "himayat" independently.

Akasia.

Rule 1. 1st.—In fields which are well embanked and the situation of which is such that the drainage from higher ground is good, so that the land is capable of growing the finest kinds of rice annually, the water shall be classed at 8 annas.

2nd.—The water shall be classed at 6 annas in fields which are well embanked, but have not so good a drainage from higher ground, yet which will grow satursal without fail, and occasionally in good years the finer kinds of rice.

3rd.—The water shall be classed at 4 annas in fields which get some drainage from higher ground and by means of good embankments, are fairly certain of being able to grow rice of an inferior kind annually.

4th.—In high-lying fields which have no drainage and which receive only the rain which actually falls on the surface, so that rice is only grown in good years, the water shall be classed at 2 annas.

5th.—No other lands than the above shall be classed for water, even though occasionally rice is grown; but in original classification, if the rules regarding vagedu rice apply, such lands may be classed as vagedu rice lands.

Tank Assistance.

Rule 2.—(a) For Kharif crops—

1st.—The maximum classification for tank himayat shall be 8 annas, which maximum shall be only applied when full assistance is annually available by flow as long as water is required for the best kinds of rice, but if water from the tank, either by reason of the high level of the field or by reason of usual or occasional short supply of water in the tank in years of insufficient rainfall, obtained by lift, the classification annas shall be reduced by two annas. If water is obtained partly by flow and partly by lift, the classification should be fixed at 7 annas. If two lifts are used the reduction shall be 4 annas; if three, 6 annas.

2nd.—If the supply of water is precarious, owing to the small area of the tank or the small drainage area from which the tank is filled, so that the most favourably situated fields under the tank are not certain of a full supply by flow, as long as the water is required for the rice crop, the maximum classification annas shall be reduced to 6 or 4 annas, and reductions from this maximum made for lifts according to the preceding rule. The classer will be guided in fixing the reduced maximum by the variety of rice capable of being grown and the date up to which the tank flows. Thus,

If the tank flows till the 1st of October only and if fine varieties of rice are grown, the maximum shall be taken at 3 annas; but if the water does not last till the beginning of October, and if the variety of rice usually grown is inferior, the maximum shall be taken at 4 annas. If the maximum is fixed at 4 annas and the water is obtained for any field or portion of a field by 2 lifts, the himayat will be *nil*.

Rule 3.—(b) For Ravi crops—

1st.—The maximum classification annas for an irrigated ravi crop or crop following rice shall be 8 annas, but such maximum shall only be applicable to fields which have a certain and full supply by flow for irrigation throughout the year.

2nd.—If tank water is available by lifts wholly or in part, a reduction of two annas per lift shall be made, even though the supply be certain for perennial crops.

3rd.—If the supply by flow is certain only till about the 15th March, the maximum shall be reduced to 6 annas. If only till about the 15th February, to 4 annas. If the supply is not certain till the 15th February, the tank himayat shall only be classed at two annas for supply by flow.

Rule 4. (c) River assistance—

River himayat shall be classed as tank himayat, except that the maximum shall always be taken at 8 annas and reductions therefrom be made only according to the number of lifts.

Rule 5. Government wells—

No valuation shall be added for well assistance unless the well belongs to Government, and care shall be taken in assessing tank or river himayat, where there is also well assistance, that the valuation shall not exceed that which would be applicable if no well existed. But if the well assistance be from a well which is the property of Government, a charge for using the water of the well shall be fixed in the form of a bag rate based on the quality and depth of the water in the well.

APPENDIX A. TO SECTION IV.

RULES FOR THE CLASSIFICATION OF SWEET RICE LAND IN THE RATNAGIRI ZILLAH COMPILED FROM FORMER CIRCULAR ORDERS ON THE SUBJECT.

1. In the Ratnagiri Zillah it is the custom to cultivate several kinds of rice, but there are only two distinct classes of crops which are named respectively "Garwa" and "Hulwa." The "Garwa" includes all the finer descriptions of rice which have a small grain. It takes longer to ripen than the inferior sorts, and the crop is cut in November. The "Garwa" rice crops are more valuable than the "Hulwa." The "Hulwa" rice has a large coarse grain, and is usually cut in October. A kind of rice called "Pampok," which is cut in the middle of September, is included in the "Hulwa" description; it is the poorest description of rice of this class.

I.—Scale of Valuation.

Colour of Soil.	One cubit deep. Value in annas.	Two cubits deep. Value in annas.	Half cubit deep. Value in annas.	One-fourth cubit deep. Value in annas.
1	2	3	4	5
<i>First Order.</i>				
Yellowish Red	Rs. a. p. 0 8 0	Rs. a. p. 0 7 0	Rs. a. p. 0 5 6	Rs. a. p. 0 4 0
Brown and Blackish Red	0 6 0	0 5 0	0 3 6	0 2 0
<i>Second Order.</i>				
Red and Black	0 6 0	0 5 0	0 3 6	0 2 0

Soil of a yellowish red or brown colour, the particles of which are consistent on being dug up, and which has a good water-supply, is to be considered as belonging to the first order. Soil of this description, which has a depth of 1 cubit, is to be at 8 annas or first class, when the depth is $\frac{3}{4}$ cubit at 7 annas, $\frac{1}{2}$ cubit 5 annas 6 pies, and $\frac{1}{4}$ cubit 4 annas. Soil of the first order, having a depth of 1 cubit, $\frac{3}{4}$ cubit, or $\frac{1}{2}$ cubit, but which contains gravel, is to be given one fault and reduced one class, and where the depth is only $\frac{1}{4}$ cubit, it should be entered as belonging to the second order.

2. Reddish soil, which generally has little consistency on being dug up, and blackish soil with large fissures, the clods of which when dug up are hard, tough, and heavy, are to be considered as belonging to the second order, and are to be valued as follows:—

1 cubit deep...	...	... 6 annas.
$\frac{3}{4}$ " " ...	...	... 5 do.
$\frac{1}{2}$ " " ...	...	... 2-6 pies.
$\frac{1}{4}$ " " ...	...	... 2 annas.

High-lying land, the soil of which is yellow, of any depth, but which has no water-supply, is to be valued according to its productive capability.

II.—“*Jalwut Land.*”

3. “Jalwut” land is that in which, from excess of moisture, the crops are liable to rot. It may be known by the kind of grass which is always found growing on it; in some cases the soil is always muddy and full of moisture. This kind of soil should be considered as of the second order, and both soil and water should be reduced one or two classes according to the amount of moisture in the soil.

4. There is another kind of “Jalwut” land which does not always remain moist, but becomes friable in the hot weather. This description of soil should be entered under the second order, and both soil and water should be reduced one class on account of the fault of excessive moisture.

III.—*Rice Land affected by Salt Water.*

1. Land in which the crop is damaged by salt water, but where the presence of the salt is only discovered on digging, should be placed in the second order, and the soil and water both reduced one class.

2. In land where the presence of salt is detected on the surface, the valuation of soil and water should be reduced one or two classes in proportion to the extent of the damage. In places where at high tides the sea water floods the soil, the valuation of soil and water should be reduced two or three classes.

3. Land usually covered with water, but which is occasionally cultivated, should be classed at two annas, no valuation being put on for water.

4. In the same way that the soil is classed according to its capabilities, so must the extent of the water-supply be taken into consideration, and the value in annas entered on the right side of the figure. The value of each class is as follows:—

Class.	...	...	...	Annas.
I.	...	...	...	8
II.	...	...	...	6
III.	...	...	...	4
IV.	...	...	...	2
V.	...	...	...	0

5. The following is the explanation of the manner in which the class of the water is to be determined:—

1st.—In fields which are well embanked and the drainage good, where the crops are not liable to injury from a cessation of rain for a period of 15 days, or where “Gurwa” crops, such as Ambemore, Patni, &c., are usually grown, water is to be considered as 1st class and valued at 8 annas. Should a “Hulwa” crop be found in fields having good soil, and a full water-supply as mentioned above, the crops should not be taken into account, and the water should be classed as 1st class.

2nd.—The water should be classed as 2nd class and valued at 6 annas in fields which will not bear a “Gurwa” crop with certainty, but

which are well embanked and have a good supply of water, and bear a full crop of "Hulwa" rice, such as "Hulwa," "Patni," "Buksha," &c.

3rd.—In high-lying fields in which "Hulwa" crops are grown, but in which the supply of water is too limited to produce a full crop, the water should be classed as 3rd class, and valued at 4 annas.

4th.—In high-lying fields which have no drainage, which receive only the rain which actually falls on the surface, or in fields which are not level and have no embankments to retain water, the water should be classed as 4th class, at 2 annas.

5th.—In high-lying rice lands without embankments, which have too great a slope to allow of water remaining on them, no value to be given for water.

6th.—The different classes of water are to be valued as above, with the following exceptions:—

1st.—In some rice lands there is sufficient natural moisture in the soil to allow of sugarcane being grown occasionally, or a second crop of grain or of pulse after the rice has been cut. Fields of this description should be classed according to the above mentioned rules, and an extra valuation of 2 annas added on account of the second crop.

2nd.—The water rate should be raised one class in fields which get the drainage of hills or of village sites, and in consequence bear better crops, or are not affected in case of a failure of rain for twelve or fifteen days. The above is applicable only to fields classed below 1st class.

3rd.—If the extra drainage is likely to injure the crop in any way, the above rule must not be carried out.

4th.—In land which usually grows rice, but which, from some fault in the soil, has to be cultivated with a rabi crop every three or four years, or allowed to remain fallow, the land should be entered under the second order and the water reduced one class, except in cases where the water is of the 4th class.

5th.—In fields where water collects to such an extent that frequently rice cannot be grown, but a rabi crop is usually raised, the soil should be entered as second order, and the water as 4th class.

6th.—In fields where water collects to such an extent as to injure the crop, the water should be reduced one or two classes, according to the extent of the injury.

II.—*Rules for the Classification of Rabi Land in which Rice Crops are grown.*

1. When there is a proof that land in which, in lieu of a rabi crop, rice has been cultivated, and has given crops for three years out of five, it should be entered in the first or second order of rice land, according to its valuation, but the water should be invariably reduced one class, excepting the 4th class; as, for example, a "rabi" pot-number has been cultivated with rice for three years in succession, and the crop being a "Gurwa" patni one the water rate would be 8 annas according to the rules, but this should be reduced one class, *viz.* 6 annas.

2. Land which has only been cultivated for one or two years with rice is to be classed as first or second order, according to its capabilities, and the water classed as 4th class (2 annas). Information regarding the land described above must be got from the "Pahani-Kharda" or from the cultivators themselves, and when land is classed according to these rules, a remark should be made in the classer's book to the effect that the land is entered as rabi in the records, but that as it is now cultivated with rice it has been classed in accordance with the foregoing rule.

V.—Rules for the Classification of Rice Land in which Sugarcane and Waingun is cultivated by means of irrigation from Tanks, Nālas, or Wells.

1. In some land sugarcane is cultivated at intervals of two or three years by means of irrigation from "pāts," i.e. water-courses. In soil of this description all the land under the "pāt" in which sugarcane is raised in rotation should have an extra valuation of 4 annas added on to the classification.

The above rule is also applicable to such lands when only brinjals or other vegetables are raised.

2. All lands that are capable of being irrigated from wells by means of "Rahats" or "Ukties" should have an extra valuation of 2 annas added on to them.

3. In lands where there is a sufficient supply of water from the "pāt" for the cultivation of "waingun" (that is, a summer rice crop), 3 annas extra is to be added for the water of the pāt.

4. In cases where a large nāla of 15 or 20 hāths broad crosses the course of the "pāt," and the water has to be carried over in a trough, or where several small nālas cross the line of the "pāt," or where the water about the end of the season requires to be raised to the level of the pāt by hand, the valuation of the water should be 4 annas only.

5. In rice land where "waingun" or "gimwas" (that is, nāgli or kulith, &c., grown in the hot weather) is grown by irrigation from a well or "ukti," 2 annas extra is to be added for the water.

6. Where "gurwa" is grown by irrigation from a pāt, 4 annas is to be added to the classification on account of the water.

VI.—Rules for "Kharab."

The classer should notice in every pāt-number whether the measurer has made correct deductions on account of "bandhs" and unculturable land, and in case he has not done so, he should re-measure and correct the deductions.

Bandhs of less breadth than one cubic need not to be deducted.

The area of large stones and "katul" (sheet rock) should be carefully estimated by sight, and deductions made accordingly.

VII.—Rules for the Classification of Rabi Land.

There are two kinds of rabi land, "Bandui" and "Malkauli."


The former is embanked like rice land, but on account of excess of water in the rains, rice cannot be grown.

“Malkandi” land has no baulhs, but is open land like jerayet, and is generally on the banks of creeks or nálas. All “malkandi” lands that are only flooded by fresh water, and on which silt is found, should be classed as “bandni rabi.”

The above mentioned lands are to be classed in the same way as lands classed above the Gháts by the following scale:—

Annas of Valuation	...	...	...	16	14	12	10	8	6
Bandni, depth in cubits	...	...	...	1½	1½	1	¾	¾	¾
Malkandi, depth in cubits	...	...	...	...	...	1½	1½	1	¾

The valuation is to be made according to the depth as given above, but the valuation is to be lowered for the following faults:—

Kind of fault.	Sign.	Reduction in Value.	
		Bandni.	Malkandi.
Denotes a peculiar mixture more or less impervious to water.	A	1	0
Denotes liability to be swept over by running water.	VW	1	1
Denotes a mixture of sand	V	1	1
Denotes an excess of moisture from surface springs.		1	0
Denotes a mixture of limestone	* * *	1	0

The above faults must be looked for in classing rabi soil.

VIII.—In some places Sugarcane is grown in Rabi Soil and the Valuation is to be raised according to the following Rules.

1. Where there is certainly sufficient moisture in rabi lands to raise a sugarcane crop every two or three years, 12 annas should be added over and above the value of the soil. As for example, bandni rabi land, 1½ cubits in

depth, without a fault, is 16 annas, and 12 annas for sugarcane grown every two or three years, making a total of 28 annas. If Malkand land, 12 annas for soil and 12 annas for sugarcane, making a total of 24 annas.

2. The soil which does not produce a full crop of sugarcane, or where sugarcane is only grown at regular intervals of five years, 8 annas only are to be added.

3. Where sugarcane is only occasionally grown, 4 annas only are to be added.

4. A remark stating that sugarcane is grown should be made in the figure of all rabi numbers classed in accordance with the foregoing rules.

IX.—Rules regarding the Valuation of Water in Lands irrigated from Tanks, Nālas, or Wells.

1. Fields which have an unfailing supply of water from a tank or stream, and which flows of its self through a "pāt," and which produce 1st class crop of sugarcane and plantains should have a water-rate of 8 annas added.

This water-rate (8 annas) is also applicable when brinjals or other vegetables are grown.

2. The second class of the same description as the above, except that, in consequence of the water not being sufficient for sugarcane, brinjals, onions, and other vegetables are grown, or where at the end of the season there is not sufficient water to flow into the pāt freely, and it has to be raised to the level of the pāt by hand. In these cases the water is to be considered as second class, and the water-rate on the land, which is cultivated in rotation, should be 8 annas.

3. The third class includes two kinds: 1st, where the water cannot flow into the pāt naturally, but has always to be raised by a bucket; the 2nd is where water has to be raised from a well by a "rahāt" or "mōt," or any other machine.

Irrigation by either of these means is to be considered as third class, and the water valued at 4 annas.

4. In cases in which water is allowed out of charity to be brought in pots from wells, no valuation is to be made, but in all other instances the water brought in pots, whether from a well belonging to the owner of the number, or from a well the common property of the village, from a tank or from a river, &c., is to be valued at 2 annas.

X.—Rules for the Classification of Rice or Rabi Land irrigated by Water from a Pāt, &c., but where the Area cultivated is very small.

1. In places where small patches of brinjals, &c., are watered by hand, and where the area is so small that if a separate share were made the average water rate for the number would not be raised more than 3 pies, no extra valuation need be made for the water, but if it exceed 3 pies, then it should be added on, and a note made of it under the plot.

2. Rice and rabi lands not usually cultivated by irrigation from pāts or wells are to be treated in the manner mentioned above, where the area is very small.

3. When newly made rice and rabi land, which is only occasionally cultivated, is met with at the time of classification, it need not, if in detached pieces of less than 2 guntas in extent, be measured, but if regularly cultivated it

should be made into a separate number. Newly made rice land, if adjoining a number, should be included in the adjoining pôt-number, or made into a pôt-number according to circumstances.

4. If two or more detached pieces of newly made rice land, each of a guntha or more in extent are found close to each other, they should be made into a separate number.

XI.—Rules for “Kharab” in Rabi Land.

Bandhs are not to be deducted in rabi land, because it is usual to cultivate them with nágli, &c., but nálas, rocky ground, and unculturable land is to be deducted. The classer should notice whether the deductions made by the measurer are correct or not, and if not, he should deduct the “kharab” after measuring it.

XII.—Garden Lands.

There are two kinds of garden land, “Agri” and “Dongri,” the classification of which is to be made according to the following rules:—

Agri Bágáyat.

1. The first class is sandy soil, which has a slight admixture of earth and a depth of $1\frac{1}{2}$ cubits—value 8 annas.

2. The second class is a reddish soil mixed with sand, $1\frac{1}{2}$ cubit deep, or it may consist of fine white land, having the same depth—value 6 annas.

3. The third class consists of undulating poor white sandy soil, 1 cubit deep—value 4 annas.

4. The fourth class consists of uncultivated white sand—value 2 annas.

5. “Agri bágáyat” is divided into four classes as above, but in some places the soil on being dug out to the depth of one cubit is found to contain “Karal,” i.e. soft sandy stone, or has limestone mixed with it. For this fault it should be reduced a class. Another fault is where, on digging this soil to the depth of a cubit, hard sandstone is found; in this case it should be reduced two classes, but if of the second class it should be reduced only one class. Thus if in any way the depth is found deficient the class is to be reduced, but if the faults occur at a greater depth than $1\frac{1}{2}$ cubits no notice need be taken of them. In classing care should be taken to divide the number into equal shares.

Dongri Bágáyat.

6. In “Dongri bágáyat” the soil is red, and does not contain any sand. That land, when level and one cubit and upwards in depth, is to be considered as first class, and valued at 8 annas.

7. Second class is the same as above, except that the depth is from $\frac{3}{4}$ to $\frac{1}{2}$ a cubit, or when the soil is one cubit or $\frac{3}{4}$ of a cubit in depth but sloping, it should be entered in the second class, and valued at 6 annas.

8. Sloping ground $\frac{1}{2}$ a cubit or $\frac{3}{4}$ cubit deep, but which is hard or has “moorum” mixed with the soil, is to be considered as third class, and valued at 4 annas.

9. Ground which slopes very much and has a depth of $\frac{1}{2}$ a cubit or less, and has small stones mixed with the soil, is to be classed as 4th class, and valued at 2 annas.

10. In classing "agri" or "dongri" bágayat, if the supári and coconut trees are exposed to the south wind, or if the trees are affected by white ants and die in consequence, soil which would otherwise be classed as 1st and 2nd class should be reduced one class, and the reason for doing so should be given in the classer's book. The above is not applicable to the 3rd and 4th class.

XIII.—Rules for the Valuation of Water in Bágayat Land.

1. A first class well is one made of stone laid in mortar, in which the water remains all the year round, and the supply is sufficient for watering the garden every other day, or every third day, as may be required. Water from a well of this description is to be valued at 5 annas.

2. A second class well is either one in which the water lasts all the year, but instead of being built up with stone has a "rahat" or a stand fixed over it, or it may be a pucka built well in which the supply of water diminishes about April, and is only sufficient to water the garden once in eight days. Water from these kinds of wells is to be valued at 5 annas.

3. Third class wells may be either "pucka" or "kutchá" built, but the water-supply in them becomes less in March, and in April there is only enough for perhaps one watering, and in May they are quite dry. Water from this description of well is to be valued at 4 annas.

4. Fourth class wells may be either "pucka" or "kutchá" built, but the "rahat" is only used for two months after the rains, or the water may be taken up in pots and will last for about three or four months. Wells of the 1st or 2nd class, which are near houses, and are used chiefly for drinking purposes, but which also supply water to a very few trees or a very small patch of vegetables, should also be considered as 4th class, and valued at 2 annas.

5. Wells in the villages on the sea coast generally contain brackish water. This is not a fault for which any reduction should be made in the valuation, but a remark should be made regarding this in the classer's book, where the description of the well is shown.

6. Well water is to be classed according to the foregoing rules, unless the area irrigated is small, that is to say about 20 gunthas or under. In this case the valuation is to be raised one class on account of the smallness of the area. For example, a well of the 3rd class, having one "rahat," irrigates only 15 gunthas of land, therefore the well should be classed as a 2nd class one, and a remark to this effect made in the description of the well in the classer's book. Where the area irrigated is above 20 gunthas the class is not to be altered—this rule is applicable to all the classes, with this exception, that a well, the sides of which are not built up, and which would properly belong to the 2nd class, is not to be raised to the 1st class.

7. A well "pucka" built, in good order, which has not been used for some years, is to be classed according to the supply of water, and a remark made in the classer's book, and "bágayat" statement showing the number of years the well has been out of use. If it should have fallen in at all, it should be classed one class lower on this account.

8. As mentioned above, wells are to be classed by estimating the supply of water. The area of land under a well must also be considered, and the following scale shows what additions or reductions are to be made on this account.

One and a-half acres has been fixed as the maximum area which one "rahat" worked by a bullock is capable of irrigating, but in some numbers a

large area may be found under one well. In this case the shares are to be made as shown in the following example:—

Area in Acres.	Share.	Water Valuation.
1½ ...	1 ...	8 annas.
1½ ...	1 ...	0 "
	<hr style="width: 50%; margin: 0 auto;"/> 2	<hr style="width: 50%; margin: 0 auto;"/> 8

Average 4 annas.

In this example the area of land under the well is 3 acres, and the well is a 1st class one, having one rahat. The land is divided into two shares, in one of which the water is classed at 8 annas, and in the other 0. The average is taken as the value of the water in the whole number.

In the same way, in a 3-acre number, with 2nd class well (6 annas), the value for the whole number is 3 annas; this rule is applicable to all the classes of wells.

9. The area of land which can be irrigated by one rahat worked by manual labour is 20 gunthas, but here the water is to be classed according to the rules given above, if the size of the well is large enough to admit a "rahat" which can be worked by a bullock, and the supply of water is sufficient to last to the end of the season; the well in this case must be held to be a 1st class one, and the shares are to be made as follows:—

Area.		Shares.	Water Valuation.
A.	g.		
0	20 ...	1 ...	8 annas.
1	" ...	2 ...	0 "
		<hr style="width: 50%; margin: 0 auto;"/> 3	<hr style="width: 50%; margin: 0 auto;"/> 8

Average 2 as. 8 pies.

This example applies to all different classes as also to the acres.

XIV.—*Rules for the Classification of Water from Páts.*

1. There are four classes of páts: 1st, 8 annas; 2nd, 6 annas; 3rd, 4 annas; 4th, 2 annas.

1st.—When there is a stone and an earthen dam in the stream at the head of the "pát," and the supply of water is ample for watering every second or third day, the pát is to be considered as a first class one, and the water is to be valued at 8 annas.

2nd.—A "pát" which has a full supply of water, but which is carried across a large "nála" by means of a trough, or if the supply of water lasts only till April, and is not afterwards sufficient for watering the garden properly, the "pát" is to be entered as a 2nd class one—value 6 annas.

3rd.—If the water in the "pát" can be fully supplied up to March, but afterwards decrease as much as to necessitate a reservoir for the collection and flow of sufficient water, the "pát" should be entered as a third class one—value 4 annas. When the supply of water to a "pát" is deficient, or has to be raised into it, "pát" should be considered a third class one.

4th.—If the supply of water in a "pát" only lasts up to the month of January or February, then it is to be considered a fourth class one, and valued at 2 annas.

XV.—Rules for the Classification of Wells or "Páts" where the Wells or "Páts" are not Private Property.

1. When a public well has been included in a number, or when the water of a well or of a tank adjoining is used for irrigating a number, the water should be classed according to the rules, and the reasons are to be entered in the classer's book.

2. In cases in which water is allowed out of charity to be brought in pots from wells, no valuation is to be made, but in all other instances the water brought in pots, whether from a well belonging to the owner of the number or from a well, the common property of the village, from a tank or from a river, &c., is to be valued at 2 annas.

3. Where the water in the well or "pát" of any number is not owned by the person who uses it, but is given to him out of charity, or is paid for by him, no valuation should be put on it, but a remark to this effect should be made in the classer's book.

4. In numbers exceeding $1\frac{1}{2}$ acres in extent with only one "rahat" to the well the calculation of the shares is to be made as above; but in numbers of less than $1\frac{1}{2}$ acres, in which the water will not flow over the whole surface owing to a portion being above the level to which water will flow, the high-lying portion of the land is to be measured, and the water required for it is to be classed at 2 annas, but at its proper valuation for the remaining portion of the land.

For example, in a number of 1 acre 15 gunthas having one "rahat," the water from which flows over only 33 gunthas, but the remaining 22 gunthas are high-lying land—

	Shares.	Value.	Total Value in Annas.
then in 33 gunthas there are ...	3	8	24
and in 22 gunthas.....	2	2	4
	<hr style="width: 50px; margin: 0 auto;"/> 5		<hr style="width: 50px; margin: 0 auto;"/> 28

Average for whole, 5 as. 7 pies.

5. The above rules are applicable to "Agri" and "Dongri" bágáyat. The only exception in "Dongri" bágáyat is that where the land is above the level of the water, and there is no cultivation whatever in it, then that land is to be deducted out of "bágáyat" and included in "warkas."

6. "Dongri" bágáyat land under a well or "pát" which is not cultivated should be entered as "warkas."

7. In a number in which there is a well with a "rahat" on it, and the acreage of which is less than the stipulated area which a well is capable of irrigating, and the owner has more land near enough to be watered by the well, then such land will be liable to the water rate. As for example, a number 1 acre and 10 gunthas has a 1st class well, the area it should water is 1 acre and 20 gunthas; then if the owner has another garden land close by, 10 gunthas of it should be put down as capable of being watered.

8. If cocoanut and supári trees are grown on the "bandhs" of a rice field and it is usual to water the trees, then the land on which the trees stand should be measured, and the garden and rice area shown separately. The garden land should be classed according to the rules for classing bágáyat land.

If there are only a few trees, and they are not watered, the land should not be measured as "bāgāyat," but the name of the owner and number of trees should be entered in the classer's book.

9. In survey numbers or "pôt"-numbers, in which there are several houses and a few trees between the houses, the whole space covered by the houses should be entered as "wasāhat" or inhabited, and the number and kind of trees entered in the names of the owners. If there is a well in the number the ownership, class, and means of drawing water, whether by "rahat" or pots, should be recorded in the classer's book. Should there be a portion belonging to one owner, the boundary of which can be defined, it should be made into a separate "pôt"-number, and classed according to the rules.

10. In land in which there are a number of trees belonging to several owners, and it is not possible to measure the land according to each man's holding, the whole of the land should be measured and classed as one "pôt"-number, and a record of the trees made as directed in para. 8.

11. In classing, should a newly made piece of bāgāyat be discovered, if convenient, it should be included in the adjoining "pôt"-number, if not, it should be made into a separate "pôt"-number: scattered pieces of bāgāyat should have up to 5 gunthas of warkas land included with them, and then be made into a separate survey or "pôt"-number, boundary stones being put down according to the rules for the separate survey number.

12. Deductions on account of "karal" in bagayet to be made according to the rules for rice land.

13. Warkas land on the banks of "nullahs," &c., in which sugarcane is grown should be classed and entered as dongri bagayet, the water of the "pāts" and wells being classed as follows:—

14. If land is cultivated at intervals of one or two years, the water of the "pāt", being ample for the crop, is to be classed at 8 annas.

15. If sugarcane is grown only every four or five years, the water, being sufficient, is to be classed at 6 annas; but if grown at longer or irregular intervals, the water is to be classed at 4 annas.

16. If the water is supplied from a well, whether built up or not, and is sufficient for a crop at intervals of one or two years, it is to be considered as 2nd class (6 annas). If the crop is raised at intervals of four or five years, then the water is to be classed at 4 annas (3rd class), and at 2 annas (4th class) if at longer and irregular intervals.

XVI.—Rules for the Classification of "Warkas" Land.

1. Two kinds of land are included in "warkas," viz. "bhatle" and ordinary "warkas" or hill land, and are to be classed as follows:—

	As.	As.	As.	As.	As.	As.
Classification Valuation ...	6	5	4	3	2	1
Bhatle Land ...	$\frac{1}{1}$	$\frac{2}{2}$	...	...	...	...
Warkas Land ...	...	...	1	2	3	4

Explanation.

“Bhatle” land is flat, soil about 1 cubit in depth. It is usual to cultivate it regularly every year and every now and then. Tur is grown on it. Land of this description is to be considered 1st bhatle, and valued at 6 annas.

2. When land of the above description is from $\frac{3}{4}$ to $\frac{1}{2}$ a cubit deep it is 2nd bhatle, and is to be classed at $\frac{2}{3}$, and valued at 5 annas.

3. First class warkas land is either flat or may be slightly sloping, and has a fair quantity of soil, which will grow the different warkas crops in rotation, or, if when fallow, will grow the best grass. It is valued at 4 annas.

4. Second class “warkas” land is chiefly sloping. It is sometimes flat and slightly stony, and is alternately cultivated and left fallow for grass. This kind of land is to be classed at 2nd class, and valued at 3 annas.

5. Third class “warkas” land is usually very sloping. Trees and brushwood generally grow upon it, and it requires a fallow of several years before it can be cultivated. It is also sometimes flat and very stony, with the soil red, on which little grass and few bushes grow. This description of “warkas” land is to be valued at 2 annas.

6. Fourth class “warkas” land consists of the steep sides of large hills which are covered with boulder and cultivated, or if flat is nearly all sheet rock, with small patches of brushwood. The 4th class is valued at 1 anna.

Kharab in “Warkas” Land.

1. In making the “Phalni,” *i. e.* sub-division of “warkas” land according to individual holdings, all rock, nullahs, and other uncultivable area must be carefully estimated and deducted.

XVII.—Miscellaneous Rules and Explanations.

1. In rice, garden, or rabi numbers the classification of the included “warkas” land is to be entered in the 5th column of the classification book, and the area of each separate holding is to be calculated with an area-comb, and the figure is to be copied into a separate “phalni” book. The “kharab” is to be estimated and deducted in the usual way.

2. Warkas survey number should be plotted and classed in the classer’s book, and the different shares shown. The area of each separate holding is to be calculated with the area-comb and entered in the “phalni” book.

3. “Kurans,” *i. e.* grass numbers, which are sold by auction every year are to be shown in the classer’s “phalni” books, but the “phalni” and classification are not to be entered. Below the figure a remark should be made stating that as the number is a “kuran” it has not been classed.

4. The figures of forest reserve numbers should be entered in the classing and “phalni” books, but not classed. A remark showing that the number is included in the reserve is to be written below the figure.

5. Government “khanjaus,” *i. e.* salt marshes, are to be treated in the same manner.

6. Burial grounds less than 20 gunthas in extent may be included in a survey number, but shown as a separate "phalni" "tukda" (*i.e.* piece), and should be entered as "kharab," uncultivated. If above 20 gunthas, a separate survey number should be made, and a remark made as in para. 3.

7. "Rahats" or "Dungs," *i.e.* sacred groves, if below 20 gunthas in extent, may be included in a survey number, but a separate "phalni" "tukda" should be made of it, and the whole area shown without deductions. If above 20 gunthas, a separate survey number is to be shown in the column of arable acres, but the number should not be classed, and a remark showing that it is a sacred grove should be made in the "phalni" and classer's books.

XVIII.—Regarding the Original Boundaries of Fields, &c.

If at the time of classification it appears, from the shape of a field, that the area is more or less than that shown in the measurer's book or register, the calculation should be examined and corrected, if necessary. If there is no error in the calculation, but if from the plot there is a doubt about the area, the number should be re-measured; also if it appears that the number has not been measured according to the true boundaries, or according to the present *rahimat*, *i.e.* occupation, it should be re-measured and entered in Statement No. 3. A remark showing that a correction has been made should be written in the books.

2. At the time of classification each number on the original village map is to be examined, and all mistakes are to be at once corrected. A description of the nature of the error is to be made according to Form No. 4, in order that the fair map may be corrected.

3. All the numbers in a village are to be examined, in order to find out whether or not they have been made according to the rules, and all mistakes discovered are to be reported to the Assistant in charge of the office, and corrections made according to the orders received from him.

4. At the time of the classification the field boundary marks should be examined and compared with those shown in the measurer's books, and any stones that may have fallen down are to be properly fixed. When any stones are wanting, a report is to be made to the Assistant in charge of the office, and an account (Form No. 5) of the number of stones and cost of erecting them again sent in.

5. At the time of the classification an examination of the entries regarding the names of fields and occupants is to be made, and where differences are discovered they are to be corrected. In *khálsa* villages the names of fields and occupants are to be taken from the *Taláti's* books.

XIX.—Instructions as to how the Classing and other Books are to be kept.

1. The manner in which the classing books are to be kept, and entries regarding the correctness of measurer's books, maps, and boundary marks are to be written, is given in Form No. 1.

2. At the time of classification *khálsa* land is to be entered as cultivable or waste, as the case may be, but waste lands for which a "razinama" (resig-

nation paper) has not been given, should be entered as cultivated. In khoti land all lands, whether cultivated or waste, are to be entered as cultivable. If land is not actually occupied, it is to be entered as "khote-ni-bat" waste, and in the Bhaganna statement the number is to be shown as cultivable.

3. In the Bhaganna statement rice, "rabi," bagayet, and warkas land are each to be shown in separate forms (No. 2).
4. Mistakes discovered in the books are to be shown in Form No. 3.
5. Mistakes in the maps are to be shown in Form No. 4.
6. Entries regarding boundary marks are to be shown in Form No. 5.

FORM No. 1.

Classing Book of the Village of Táluka
Zilla

Persons present in the field at the time of Classification on the
of are as follows:—

On behalf of the Government.

1 Classifier.

On behalf of the Village.

1	3
2	4
	4

Survey No.

The first number stands on the east of the village. This is rice land belonging to Government.

Area according to Measurement.	Rice.		Warkas.		Total.
Acres.	Acres.	Gts.	Gts.	Acres.	
4	3	10	4	4	

Pôt No.	Description.	Tenure.	Name.
1.	Rice.	Phara.	Hôiche.

Name of the Occupant—Gyanu bin Bal Patel Rant.

Area according to Measurement.	UNCULTURABLE TO BE DEDUCTED.				Culturable.	Unculturable.
	At the time of Measurement.	Decrease at the time of Classification.	Increase at the time of Classification.	Total.		
G. 10½	G. ½	.....	G. 1½	G. 2	...	.

<i>North</i>		Class.	Shares.	Value.
6 5 1/2	6 7	13	1	13
4 1/2	3/4	11 1/2	1	11 1/2
			2	24 1/2
				12-3

P&t No. 2. Description. Rice. Tenure. Khotnisbat. Name. Pati.

Name of the Occupant—Narayan Moreshwar Gokhley.

Area according to Measurement.	UNCULTURABLE TO BE DEDUCTED.				Total.	Culturable.		Unculturable.
	At the time of Measurement.	Decrease at the time of Classification.	Increase at the time of Classification.			A.	G.	
A. 1 G. 13 1/2	G. 2	.....	.....	G. 2	A. 1	G. 11 1/2	...

<i>North</i>			Class.	Shares.	Value.
4	4	6	17	1	17
5 1/2	3 1/2	3 1/2	15	1	15
1/2	1/2	1/2	13 1/2	1	13 1/2
7 1/2	7 1/2	5 1/2	9 1/2	1	9 1/2
3/4	3/4	3/2	7 1/2	1	7 1/2
3/4	3/4	1/2	5 1/2	1	5 1/2
			6		68
				11-4	

"Powta" grown in 3 Shares.

P&t No. 3. Description. Rice. Tenure. Khotnisbat. Name. Kamthe.

Name of the Occupant—Dharma bin Gopal Juwaker.

Area according to Measurement.	UNCULTURABLE TO BE DEDUCTED.				Total.	Culturable.		Unculturable.
	At the time of Measurement.	Decrease at the time of Classification.	Increase at the time of Classification.			A.	G.	
G. 26	G. 26	...		

<i>North</i>		Class.	Shares.	Value.
$\frac{3}{2}$	4	9	1	9
$\frac{3}{2}$	2	$7\frac{1}{2}$	1	$7\frac{1}{2}$
$\frac{1}{2}$		7	1	7
		$5\frac{1}{2}$	1	$5\frac{1}{2}$
Area irrigated. 26 Gunthas.			4	29
				<u>7-3</u>

Class.	Shares.	Value.
2	1	6

On account of Summer rice crop ... 6
13

Particulars regarding the Water Supply.

I.—Water is carried by a "Pât" from a stream called "Gothnichapura," which lasts till the end of the year. The "Pât" therefore is entered as a 1st class one.

II.—This "Pât" is owned by two persons, half being owned by the occupant of this number and half by Abaji Rao bin Bahaji Rao.

III.—Waingan is cultivated throughout the whole of the land by means of irrigation from the "Pât."

Pât No.	Description.	Tenure.	Name.
4	Rice.	Khotnisbat.	Deolachi.
Name of the Occupant—Antaji Mahadeo Bhiday.			

Area according to Measurement.	UNCULTURABLE TO BE DEDUCTED.				Culturable.	Unculturable.
	At the time of Measurement.	Decrease at the time of Classification.	Increase at the time of Classification.	Total.		
G. 10	G. 1	.....	.....	...	G. 9	...

<i>North</i>		Class.	Shares.	Value.
$\frac{3}{2}$	$\frac{6}{6}$	$9\frac{1}{2}$	1	$9\frac{1}{2}$
$\frac{3}{2}$	4	$7\frac{1}{2}$	1	$7\frac{1}{2}$
$\frac{1}{2}$			2	17
$\frac{1}{2}$	$\frac{1}{2}$			<u>8-6</u>

Waingun is cultivated in one share of the number.

Area watered
5 Gunthas.

Class.	Shares.	Value.	
2	1	8	8 6
...	1	...	4 0
	<u>2</u>	<u>8</u>	
		4	<u>12 6</u>

Particulars regarding the supply of water by "Pât" are the same as for Pât No. 3.

Pât No. 5
Description. Rice.
Tenure. Khotnibat.
Name. Dewiche.
Name of the Occupant—Gopal Krishnaji Kadam.

Area according to Measurement.	UNCULTURABLE TO BE DEDUCTED.			Total.	Culturable.	Unculturable.
	At the time of Measurement.	Decrease at the time of Classification.	Increase at the time of Classification.			
G. 27	G. 27	...

<p style="text-align: center;"><i>North</i></p>	Class.	Shares.	Value.
	9	1	9
	5 1/2	2	11
		<u>3</u>	<u>20</u>
		6-8	

Other particulars regarding the above Survey Number.

- I.—Distance from the village in miles is
- II.—The sketch in the Measurement Book is correct.
- III.—The map of the whole of the village is correct.
- IV.—Boundary mark stones are in their proper positions.

V.—In this No. there are 24 gunthas of Warkas.

Culturable gunthas.	Karab.	Remaining.
24	4	20
Class.	Shares.	Value.
1	1	6
—		
1	1	4
	—	
	2	10
		—
		5

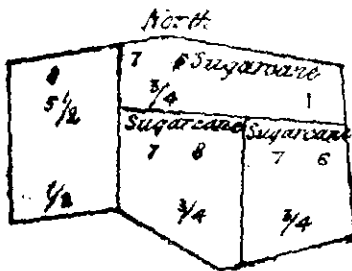
VI.—In Pôt No. 2 a second crop of pulses is grown, while in the Pôt Nos. 3 and 4 Waingun is cultivated. No second crop in the other Pôt Nos.

Survey No. 95.

Pôt No. Description. Tenure. Name.
 2 Rice. Dhara. Dewichebhatle.

Name of Occupant—Hari Shrilhar Apte.

Area according to Measurement.	UNCULTURABLE TO BE DEDUCTED.				Culturable.	Unculturable.
	At the time of Measurement.	Decrease at the time of Classification.	Increase at the time of Classification.	Total.		
G. 32	G. 32	...



Class.	Shares.	Value.
15	1	15
13	2	26
13 1/2	1	13 1/2
	—	
	4	54 1/2

Extra valuation for sugarcane grown by means of irrigation 13-7
 Area watered 24 gunthas. 1-6
 Total 15-1

Class.	Shares.	Value.
4	3	6
Not watered	1	0
	—	
	4	6
		—
		16

Particulars regarding the Well.

- I.—Well not built up, water supply is sufficient, entered as 4th class.
- II.—Water is supplied to the crop from the well by means of a "Rahat."
- III.—Sugarcane is cultivated.

Survey No. 121.

Pst No. 9 Description. Bandni Rabi. Tenure. Dhara. Name. Supaticha.

Name of Occupant—

Area according to Measurement.	UNCULTURABLE TO BE DEDUCTED.				Total.	Culturable.	Unculturable.
	At the time of Measurement.	Decrease at the time of Classification.	Increase at the time of Classification.				
A. g.	G.			G.	A. g.		
2 2	2	.....	.....	2	2 0	...

		Class.	Stamps.	Value.
<i>North</i>		Sugarcane ...	1	£8
		Do. ...	2	26
			1	32
			2	28
			<u>6</u>	<u>114</u>
				19

Every third year sugarcane is cultivated.

Pst No. 10 Description. Mulkundi Rabi. Tenure. Khotnisbat. Name. Mulkundi.

Name of Occupant—Gopal Narayan Datar.

Area according to Measurement.	UNCULTURABLE TO BE DEDUCTED.				Total.	Culturable.	Unculturable.
	At the time of Measurement.	Decrease at the time of Classification.	Increase at the time of Classification.				
G.				G.			
10	10	.....

<i>North</i>	Sugarcane	... 3	1	20
	Do.	... 4	2	28
		5	1	8
			—	—
			4	56
			—	—
				14

In one share of the number sugarcane is raised every fifth year by the natural moisture of the soil, and in two shares sugarcane is cultivated this year for the first time.

Pôt No.	Description.	Tenure.	Name.
11	Bandni Rabi.	Dhara.	Takihe.

Name of Occupant—Ranchandra Kasinath Lólé.

Area according to Measurement.	UNCULTURABLE TO BE DEDUCTED.				Culturable.	Unculturable.
	At the time of Measurement.	Decrease at the time of Classification.	Increase at the time of Classification.	Total.		
G. 29	G. 29	.....

<i>North</i>	Sugarcane	... 1	1	16
	Do.	... 4	1	10
			—	—
			2	26
			—	—
				13

Area watered.
26 gunthas.

Valuation of Bagayat water.	}	Extra valuation for sugarcane ... 8
Class Shares. Value.		
1 1 8		
— — 8		

Total ... 21

Particulars as to how and whence the water is brought.

I.—Water is carried by a "Pât" from a river flowing by the side of the No., the supply lasts throughout the year, and is therefore entered as 1st class.

II.—The pát is owned by two persons, $\frac{1}{2}$ being owned by the occupant of this No., while the other $\frac{1}{2}$ is owned by the occupant of the pát No. 4.

III.—The whole of the land is irrigated, and sugarcane is cultivated throughout the No.

Form of Classing Book for Garden Land.

Classing Book of the Village of _____, Taluka _____, Zilla _____.

Survey No. 1.

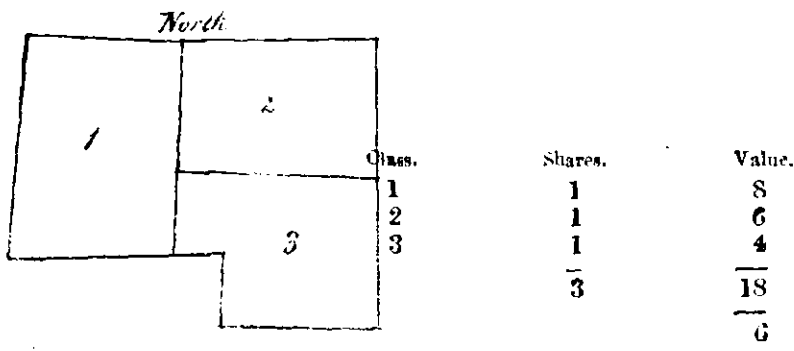
Area as measured.

Rice 0. Bagayat 0. Warkas. 0.

Pát No. Description. Tenure. Name.
 1 Agri Bagayat. Khotuisbat. Gayanuk.

Name of Occupant—Balaji Trimbak Sathe.

Area according to Measurement.	UNCULTURABLE TO BE DEDUCTED.				Culturable.	Unculturable.
	At the time of Measurement.	Decrease at the time of Classification.	Increase at the time of Classification.	Total.		
4	4	.....



Valuation in consideration of water supply well of the 1st class.

The shares into which the area is divided in order to determine the class of water are as follows:—

	Rahat.	Acres.	Shares.	Value.
Watered ...	2	3	3	24
Not watered ...	0	1	1	0
			<u>4</u>	<u>24</u>
				<u>6</u>

Annas.

6 for lands.
6 for water.

12 Total.

Particulars to be given regarding the Well.

- I.—It should be stated whether the well is built of stone laid in mortar, or is only a pit.
- II.—Whether it is wholly in the possession of the occupant of the number, or the common property of himself and other parties. If any of the sharers has more or less right in it than the others, the shares should be given.
- III.—Whether the land irrigated by the water raised by the two Rahats is cultivated as Bagayat or not.
- IV.—Whether the water is brackish or sweet.
- V.—Whether the whole area of this number is irrigated or not. If, say, the southern portion of the number is not irrigated on account of its being elevated, then the area which such portion contains should be stated.

Particulars regarding the Trees.

Cocoanut Trees—

10 bearing, or about to bear fruit.
1 from which juice (Tadi) is extracted.
2 are in half-grown state.
2 that are barren.
0 newly planted.

15

Betelnut Trees—

10 bearing fruit.
4 in half-grown state.

14

Miscellaneous -

5 Undi.
2 Phanas.
1 Ramphul.
2 Guava.

10

39 Total number of trees.

If there are any other kinds of fruit trees, they should be all stated. About 2 gunthas of land have been cultivated with betel-leaf creeper.

Survey No.

Pôt No. 1 Description, Agri Bagayat. Tenure, Dhara. Name, Warehapat.

Name of the Occupant—Krishnaji Jiwaji Sowan.

Area according to Measurement.	UNCULTURABLE TO BE DEDUCTED.				Culturable.	Unculturable.
	At the time of Measurement.	Decrease at the time of Classification.	Increase at the time of Classification.	Total.		
G. 15	G. 15	...

<i>North</i>		Class.	Shares.	Value.
/	2	1	1	8
		2	1	6
			2	14
				7 annas.

Particulars about the Classification of the Water.

The well is of the 2nd class.

The shares into which the land is divided in order to determine the class of water are as follows:—

Ralats.	Acres.	Shares.	Value.
2	15 gunthas.	1	6
1/5th of which is owned by the occupant.			6 annas.
A well of this class would irrigate 24 gunthas of land, but the occupant of this number has only 15 gunthas of land to be watered.			Total of Bhūg annas.
			7 for land.
			6 for water.
			13 annas.

Particulars regarding the Well.

I.—The well is built with stones laid in mortar. The water supply lasts till the end of March, and therefore has been entered in the 2nd class.

II.—The occupant of this Pôt No. owns one-fifth part of the well, one-fifth is owned by the occupants of Pôt Nos. 2 and 3, one-fifth is owned by the occupant of Pôt No. 3 of the Survey No. 5, and the remaining two-fifths are owned by the occupant of Pôt No. 2 of Survey No. 9.

III.—The water is raised from the well by means of 2 rahats fixed over it, and is used for the cultivation of bagayat crop.

IV.—The water is brackish.

V.—The whole land of the Pôt Nos. 1, 2, 3 of this Survey number as well as that of Pôt No. 3 Survey No. 5, and of Pôt No. 1 Survey No. 6, is irrigated by water from this well.

Particulars regarding the trees should be given in the same manner as given in the Pôt No. 1, Survey No. 1.

Pôt No.	Description.	Tenure.	Name.
2	Agri Bagayat.	Khotnisbat.	Mudhilpat.

Name of Occupant—Ramchandra Pandurang Joshi.

Area according to Measurement.	UNCULTURABLE TO BE DEDUCTED.				Culturable.	Unculturable.
	At the time of Measurement.	Decrease at the time of Classification.	Increase at the time of Classification.	Total.		
G 10	G. 10	...

<i>North</i>	Class.	Shares.	Value.
2	2	1	6 — 6 annas.

Particulars regarding the Classification of the Water.

Water is supplied from the 2nd class well mentioned in Pôt No. 1.

The shares into which the land is divided in order to determine the value of water are as follows:—

Rahats.	Acres.	Shares.	Value.
2	10	1	6 —

1/10th of which is owned by the occupant.

Particulars regarding the well are the same as given in Pôt No. 1.

Particulars regarding Trees.

Cocoanut Trees—
 5 bearing fruit.
 5 in a half-grown state.
 10 are tapped for juice.
 0 newly planted.
 5 barrea
 —
 20
 Betelnut Trees—
 200 bearing fruit.
 100 are in half-grown state.
 —
 300
 Miscellaneous—
 1 Undi.
 5 Phanas.
 2 Raumphul.
 2 Guava.
 10 Kaju and other trees.
 —
 20
 340 Total number of trees.

Plantains are cultivated in half a guntha of the land and half guntha is cultivated with betel-leaf creeper.

Pot No. Description. Tenure. Name.
 3 Agri Bagayat. Dhara. Agar.
 Name of Occupant—Govind Wassudeo Bhat.

Area according to Measurement.	UNCULTURABLE TO BE DEDUCTED.				Culturable.	Unculturable.
	At the time of Measurement.	Decrease at the time of Classification.	Increase at the time of Classification.	Total.		
G.	G.			G.	G.	
25	1	.....	.....	1	24	...

		Class.	Shares.	Value.
		1	1	8
		2	1	6
		3	1	4
			3	18
				6 annas.

Particulars regarding the Classification of the Water.

The well is of the 2nd class as mentioned in Pôt No. 1.

The shares into which the land is divided in order to determine the value of the water are as follows :—

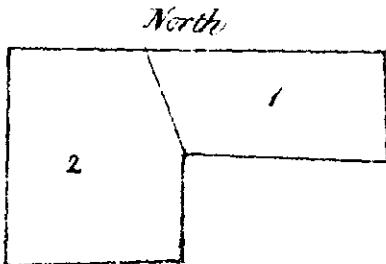
		Acres.	Shares.	Value.
Rahats.	}	1½ gts.	3	18
2		11	2	0
				5	18
	The occupant enjoys ½th share of the water.	Annas.		3—7 annas.
		6-6 for land		
		3-7 for water		
		9-7 Total.		

Particulars regarding the well are the same as for Pôt No. 1.

The number and kind of trees (if there are any) should be entered here.

Pôt No.	Description.	Tenare.	Name.
3	Agri Bagayat.	Khotnisbat.	Agarwadi.
Name of Occupant — Govind Sudasive Phatak.			

Area according to Measurement.	UNCULTURABLE TO BE DEDUCTED.				Culturable.	Unculturable.
	At the time of Measurement.	Decrease at the time of Classification.	Increase at the time of Classification.	Total.		
G. 30	G. 2	.....	.....	G. 2	G. 28	...



	Class.	Shares.	Value.
	1	1	8
	2	1	6
		2	14
			7 annas.

Particulars regarding the Classification of the Water.

The well is of the 2nd class as stated above for Pôt No. 1.

The shares into which the land is divided in order to determine the value of the water are as follows:—

Rahata.		Acres.	Shares.	Value.
2	The occupant enjoys } 1/3th share of the water }	2+ g.	6	36
		4 g.	1	0
			7	36
				5 2 as.

Annas.
 7 for land.
 5 2 for water.

 12 2 Total.

Particulars regarding the well are the same as given above for Pôt No.

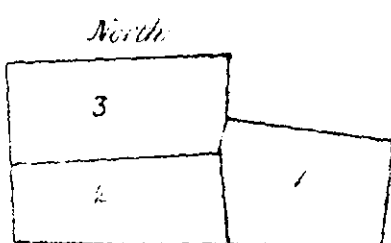
Remarks as to the number and kind of trees (if there are any) should be entered here.

Survey No. 6.

Pôt No.	Description.	Tenure.	Name.
1	Agri Bagayat.	Dhara.	Gharwali.

Name of Occupant—Gunesch Ramchundra Datar.

Area according to Measurement.	UNCULTURABLE TO BE DEDUCTED.				Total.	Cultur-able.	Uncultur-able.
	At the time of Measurement.	Decrease at the time of Measurement.	Increase at the time of Measurement.				
A.	G.			G.	A.	g.	
4	10	.....	.....	10	3	30	.....



Class.	Shares.	Value.
1	3	24
2	1	6
	4	30
		7 6 as.

Particulars regarding the Classification of the Water.

The occupant enjoys two-fifths share of the 2nd class well mentioned in Pôt No. 1 of Survey No. 2.

Rahats.

2. Of which two-fifths share is enjoyed by the occupant.

1. This rahat is entirely in the possession of the occupant.

	Class.	Acres.	Shares.	Value.
	2	1 8	4	24
	1	1 8	4	32
Elevated land watered by hand		0 12	1	2
Elevated land where water cannot reach...		1 2	3½	0
			12½	58
				4-8 as.

Measurement of elevated land :—

Length.	Breadth.
9	6
6	6
54	12
1 Acre 14 Gunthas.	
Total Bhág Annas.	
7 6 for land.	
4 8 for water.	
12 2	

Particulars regarding the Well.

I. The well is a 2nd class one, built of stone.

II. No one, except the occupant of this Pôt No., has a right to the water of this well.

III. Water is raised from the well by means of 1 rahat, fixed over, and is used for the cultivation of a bagayat crop.

IV. The water is sweet.

V. The eastern portion of this Pôt No. is not irrigated on account of it being elevated—the area of this portion is given above.

Further particulars regarding the Survey No.

I. The distance of the No. from the village in miles is—.

II. The figure of the No. in Measurer's Book is correct.

III. The map of the whole village is correct.

IV. The stones and boundary marks have all been erected in the field according to Measurer's Book.

V. There is no warkas land in the number.

Survey No. 73.

Pt. No. 1 Description. Dongri Bagayat. Temure. Dhara. Name. Gaothunajawal.

Name of Occupant—Balajirao bin Auundrao Mohite.

Area according to Measurement.	UNCULTURABLE TO BE DEDUCTED.				Culturable.	Unculturable.
	At the time of Measurement.	Decrease at the time of Classification.	Increase at the time of Classification.	Total.		
G. 14	G. 2	.....	.....	G. 2	G. 12	.....

North.

		Class.	Shares.	Value.				
<table border="1"> <tr> <td>1</td> <td>2</td> </tr> <tr> <td>3</td> <td>4</td> </tr> </table>	1	2	3	4		1	1	8
	1	2						
	3	4						
			2	1	6			
		3	1	4				
		4	1	2				
			4	20				
				5 as.				

Classification of the Water.

Pât of the 1st class.

The shares into which the land is divided in order to determine the value of the water are as follows:—

Pât.	Acres.	Shares.	Value.
1	0 9	3	24
Area not watered on account of its being elevated ...	0 3	1	2
		4	26

Total of Bhâg Annas.

5 for land.

6 6 for water.

11 6

Particulars regarding the Pát.

I. The Pát is brought from a stream about 200 feet distant from the No. The water-supply lasts till the end of the year, and is therefore entered as 1st class.

II. The use of the Pát is enjoyed by four persons. The shares are as follow :—

The occupant of the Pát No.	Annas.
Antaji Keshew ... ..	... 6
Bhicaji Wamman ... ..	... 4
Trimbak Govind ... ..	... 4
	... 2
	16

III. A garden crop is grown by means of irrigation by water from this Pát.

IV. Three-fourths of the area of this No. are watered, the remaining one-fourth is not watered on account of its being elevated. The area of this portion is given above.

Trees.

Cocoanut—

- 13 bearing fruit.
- 5 in a half-grown state.
- 16 tapped for toddy.
- 30 newly planted.

64

Betel-nut Palms—

- 73 bearing fruit.
- 27 in a half-grown state.

100

Fhanas—

- 10 bearing fruit ; 5 newly planted.

Miscellaneous—

- 2 Mangoes, bearing fruit.
- 3 do. newly planted.
- 10 Undi.
- 3 Guava.
- 5 Cocumb.

107 Total number of trees.

Plantains are grown in an area measuring	3	gunthas.
Pine apples do. do.	4	do.
Betel-leaf creeper do. do.	2	do.
	9	gunthas.

Pát No. 2 Description. Dongri Bagayat. Tenure. Dhara. Name. Persowa.
Occupant—Sudasive Bhasker Joshi.

Area according to Measurement.	UNCULTURABLE TO BE DEDUCTED.				Culturable.	Unculturable
	At the time of Measurement.	Decrease at the time of Classification.	Increase at the time of Classification.	Total.		
G.					G.	
13	13	...

<i>North</i>		Class.	Shares.	Value.
		2	1	6
		3	1	4
			2	10
				5 as.

Particulars regarding the Classification of the Water-supply.

The shares into which the land is divided in order to determine the value of the water are as follows:—

Pát.	Acres.	Share.	Value.
1	13	1	6
			6

Total of Bhág Annas.

5 for land.

6 for water.

11

I. The Pát is brought from a stream which runs along the boundary of the village, the water-supply in which lasts till the end of the year. This Pát on its way crosses a nála, where the water has to be conveyed by a trough placed across the nála, and is therefore entered as 2nd class.

II. The Pát is owned by the occupant of this number, but the inhabitants of the village are allowed to use it as common property.

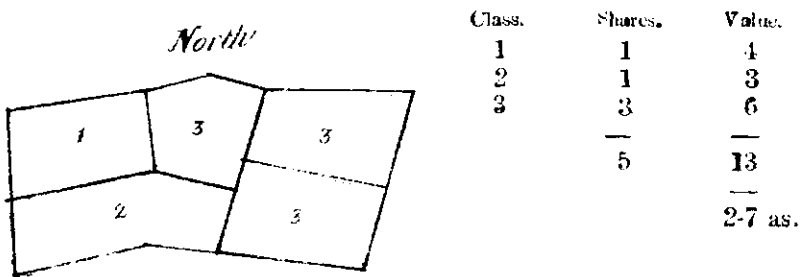
III. The water from the Pát is used for irrigating a bagayat crop.

IV. The whole area of this number is watered.

Particulars regarding the number and kind of trees (if there are any) should be given as in Pát No. 1.

Survey No. 10.
Warkas Lands.

Area according to Measurement.		Unculturable.		Culturable.
A.	g.	A.	g.	A.
27	20	7	20	20



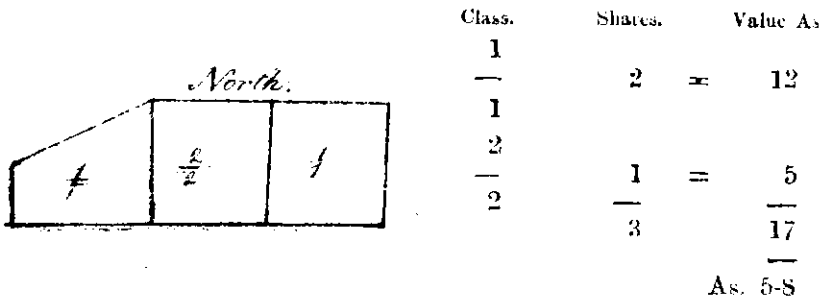
The other particulars regarding the Survey No. :-

- I. The distance of the No. from the villages in miles is .
- II. The figure in Measurer's Book is correct.
- III. The map of the whole village is correct.
- IV. Boundary mark stones are in their proper position as shown in Measurer's Book.
- V. The whole of the No. is warkas land.

Survey No. 11.

This is warkas land measuring about 14 acres 20 gunthas.

	...	...	Acres. Gunthas.	
Unculturable	...	...	1	20
Culturable	...	...	13	0
			14	20



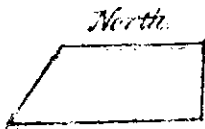
Survey No. 12.

Measured Area.		Unculturable.	Culturable
Acres.	Guntas.	...	Acres. Guntas.
7	26	...	7 26



This No. is a sacred grove or rahati, and therefore has not been classed.

Survey No. 13.



This No. being a burial-ground, has not been classed.

FORM NO. II.

Bhág Anna Statement of Rice, Rabi, and Warkas Lands in the Village of *Tiluka*, *Zilla*

Survey No.	Pót No.	REMAINING ACRES.			Bhág Annas.	REMARKS.
		Culturable.	Unculturable.	Inám.		
1	2	3	4	5	6	7
1	1	A. 0	G. 5	...	...	Bagayat Bhág Anna Statement is to be prepared according to the printed form.
	2	0	13	...	...
	3	0	15	...	...
	1	0	20	...	...
	3	0	30	...	...
	4	1	5	...	...	16 0
1	6	3	8	...	...	...
10	1	<i>Rabi.</i>			16	0
	2	0	17	...	...	13 6
	3	0	12	...	...	1 8
...
9	...	<i>Warkas.</i>			4	0
133	...	0	26	...	...	Sacred grove. Dewachi Rahati.
...	...	...	7	10	...	...

Signature of Classer or Measurer.

FORM No. III.

Statement showing mistakes discovered in the *Measurer's Field Books* and in the *Sud* for the *Village of* , *Taluka* , *District* .

Survey Number.	Pôt Number.	REMARKS.
1	2	3
3	1, 6 and 7	Pôt No. 1, measured according to <i>wahivât</i> . Pôt Nos. 6 and 7, which are newly made have been repaired.
5	4	Varkas land in this Pôt No. has been measured and shown separately as Varkas. The necessary corrections are made.

Signature of the Measurer or Classer.

FORM No. IV.

Statement showing mistakes in the *Map of Village* , *Taluka* , *District* .

Survey Number.	Pôt Number.	REMARKS.
1	2	3
13	5	Correction made in the kacha map on account of the addition of Naokird is to be made in the Pakka map.

Signatures of the Measurer and Classer.

FORM NO. V.

Statement of entries regarding Boundary Marks in the Village of
Tiluka
, District

Survey Number.	Stones were not fixed from the beginning.	Stones out of repair.	Date on which the disrepairs were noticed.	The date of inspection after the repairs of the boundary marks.	REMARKS.
1	2	3	4	5	6
1	...	1	1st November 1869.	5th November 1896.	Boundary mark No. 9, which was found in disrepair was repaired. Do. Do.
5	...	1	..	..
13	...	1	..	..

Signatures of the Measurer and Classifier.

APPENDIX B. TO SECTION IV.

KONKAN SURVEY.

Garden Soil Classification Rules.

Whenever any garden lands—Agri and Dongri-Bágáit—require re-classification, the soil should be classed in accordance with the following rules:—

Agri Bágáit.

- (1) The first class is sandy soil which consists of a mixture of sand and earth in about equal proportions or where there is more earth than sand or pure earth, depth of $1\frac{1}{2}$ cubits, value 8 annas.
- (2) The second class is a reddish soil mixed with sand, more sand than earth, $1\frac{1}{2}$ cubits depth, value 6 annas.
- (3) The third class consists of white sandy soil near or on sea shore, value 4 annas.

Faults.

Agri Bágáit is divided into three classes as above, but in some places the soil on being dug out to the depth of 1 cubit is found to contain *Karal*, i. e. soft sandy stone, or has lime-stone mixed with it. For this fault it should be reduced a class. Another fault is where, on digging this soil to the depth of a cubit, hard sand-stone is found; in this case it should be reduced two classes, but if of the second class, it should be reduced only one class. Thus if in any way the depth is found deficient the class is to be reduced, but if the faults occur at a greater depth than $1\frac{1}{2}$ cubits, no notice need be taken of them.

Dongri Bágáit.

- (1) In Dongri Bágáit the soil is red and does not contain any sand. That land when level and one cubit and upwards in depth is to be considered as first class and valued at 8 annas.
- (2) Second class is more gravelly with depth from $\frac{3}{4}$ to $\frac{1}{2}$ a cubit or of full depth, but sloping and uneven surface, when it should be classed as 2nd and valued 6 annas.
- (3) Sloping ground or hill side $\frac{3}{4}$ cubit or less deep, but which is hard and consists principally of moorum, is to be considered as third class and valued at 4 annas.
- (4) Ground which slopes very much with large boulders and has a depth of $\frac{1}{2}$ a cubit or less and has stones mixed with the soil, is to be classed as 4th class and valued at 2 annas.

Faults.

In classing Agri and Dongri Bágáit if the *supari* and *cocoanut* trees are exposed to the south wind, or if the trees are affected by white ants and die in consequence, soil which would otherwise be classed as first and second class should be reduced one class, and the reason for doing so should be given in the classer's book. The above is applicable to the third and fourth class.

Irrigation from Tanks and Streams.

Whenever irrigation of garden lands from tanks and streams has not been noticed in the original classification, the water class applicable to such garden lands should be applied in accordance with the following rules :¹—

(1) When the water is received by natural flow through a *pát* and the supply of water lasts throughout the year and is ample for watering every second or third day, the water should be classed 1st = 8 annas.

(2) If as above, but water lasts only till end of April and is not afterwards sufficient for watering the garden properly, the water-supply should be classed 2nd = 6 annas.

(3) If the water can be fully supplied by natural flow through *pát* up to end of March, but afterwards decreases so much as to necessitate a reservoir for the collection and flow of sufficient water, then the water supply should be classed 3rd = 4 annas.

(4) If the supply of water by natural flow in *pát* only lasts up to the month of January or February, then it should be classed 4th = 2 annas.

(5) When the water conveyed by *pát* has to be carried across a large *nála* by means of a trough or where the water has, about the end of the season, to be raised to the level of the *pát* by hand, the valuation of the water should be reduced by one class.

(6) When the water from the tank or stream is not obtained by natural flow through *pát*, but is supplied by means of a *rāhāt* or *ukli*, the valuation should be reduced by one class.

(7) The water-supply by *pát* need not be considered the same throughout the whole length of a *pát*: for instance, the garden lands situated near the dam in the stream may get full supply and have the water classed 1st, whilst other gardens further away may not be able to get more than what should be classed 2nd; in such cases the necessary reduction in the water class should be made according to the capabilities and supply in the stream and the distance of the garden numbers from the dam, and a remark should be written in the information regarding the *pát* in the classer's books, giving reason for the decrease in the water class.

*Ghāgar Water-class.*²

Gardens irrigated from wells, tanks, streams or rivers, the water being brought in *ghāgars*, i.e. pots, and to which no water-class on this account has been applied at time of original classification, should have the water classed fourth = 2 annas.

As a rule, seedlings require some irrigation during the hot weather, and if not irrigated by any other means, are certainly watered with *ghāgars*; therefore, whether trees are irrigated or not when grown up, they must have been watered as seedlings and the *ghāgar* water class must be applied.

¹ Rule 41, Chapter VIII, Konkan Revision Classification Rules.

² Rule 44, Chapter VIII, Konkan Revision Survey Rules.

Rule 4, Chapter III, supplementary rules for Revision Classification in the Thána and Kolába Districts.