

Board of Economic Inquiry, Punjab.
Rural Section Publications.

- ✓ 1. Questionnaire, 1924. pp. 38.1-21 ^(1a)
X9(U).236.1125L 62F5
2. Rates of Food Consumption by Zamindars.
✓ (No.6.) By C. S. Barry. 1925. pp.45,22-36.
X9(JB):1.23664 (3)
3. Sixty Years of Punjab Food Prices, 1861-1920.
✓ By W. H. Myles. 1925. pp.52. (No.7.) M-37-13
X9(JB):76.236 (4)
4. Economic Value of Goats in the Punjab. (5)
✓ (No.8.) By H. R. Stewart. 1926. pp.364-68
X9(7333).226
5. Some Aspects of Batali Cultivation in Lyallpur
✓ Dist. of Punjab. (No.12.) By H.R. Stewart.
• 1926. pp.32-69-86.
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6. Eighty Years of Punjab Food Prices, 1841-1920
✓ (No.13.) By Brij Narain. 1926. pp.64,87-119
X9(U):76.236
7. An Inquiry into Mortgages of Agricultural
Land in the Pothwar Assessment Circle of
✓ Rawalpindi Dist, Punjab. (No.14.) By Raja
Hasan Akhtar. 1926. pp.26.120-138.
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The Board of Economic Inquiry,
Punjab.

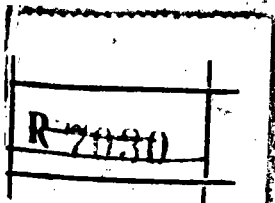
[RURAL SECTION.]

Questionnaire

for

Economic Inquiries.

1924.



With the Compliments
of
The Board of Economic Inquiry.
Panjab.

*University Hall,
Lahore.*

W. H. MYLES,
Honorary Secretary.

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PREFACE.

The Board of Economic Inquiry, Punjab, is a non-official body, and has drawn up this questionnaire to facilitate investigations into the problem of Village Economics. What have been considered profitable lines of inquiry have been dealt with in some detail. The object aimed at is to ascertain the facts of the situation and not the opinions of individuals.

Any such inquiry must be intensive. The investigator appointed to carry it out will generally find it advantageous to settle in the village for a considerable time to enlist the sympathies of the villagers and thus to put himself in the way of obtaining reliable information.

The Board desires it to be distinctly understood that, though in the questionnaire the method of attacking certain problems has been given in detail, the investigator need not confine his attention to these problems. It can hardly be expected that the same questionnaire will be equally appropriate in all the Districts of the Province. If there is in any district any problem of economic importance not mentioned in the questionnaire, the investigator should undertake its consideration in a manner similar to that suggested for other problems. What the Board desires are facts related to economic problems whether these problems are mentioned in the questionnaire or not.

Suggestions for improvement will be welcomed from any quarter, and should be communicated to the Secretary.

BOARD OF ECONOMIC INQUIRY,
PUNJAB,
UNIVERSITY HALL,
LAHORE.

W. H. MYLES,
Honorary Secretary,
Rural Section.

CONTENTS.

	Page.
Preface	i
I.—General	1-3
II.—Cropping and Cultivation	3-5
III.—Irrigation	6
IV.—Holdings	7-11
V.—Effects of Tenancy	11-12
VI.—Land Revenue and Taccavi	12-13
VII.—Indebtedness	13-14
VIII.—Mortgages	14-17
IX.—Sales	17-18
X.—Sales of Village Produce	18-20
XI.—Purchases and Industry	20-21
XII.—Price of Land	21
XIII.—Yields	22
XIV.—Rents	23-27
XV.—Expenses of Cultivation	27-30
XVI.—Consumption	30-32
Appendix A.—Questionnaire for Mortgages, Part I	33-34
Appendix B.—Questionnaire for Mortgages, Part II	35-36
Appendix C.—Questionnaire on Goats	37-38

Questionnaire for Economic Inquiries.

I.—GENERAL;

1. Physical description of village and soils.
2. Statistics of population for all censuses that have been taken. Distribution, if available, by sex, age and caste. Causes of changes in population. Mortality from plague, influenza, cholera and other serious epidemics: point out if mortality was particularly severe between certain ages, or in either sex.
3. Marriage. Age of marriage for boys and girls in the various communities.
4. What is the size of an average family?
5. Prepare a statement showing—
 - (1) The number of (a) persons, (b) families, who depend on agriculture for their livelihood, and classify as follows:—
 - (a) (i) wholly dependent,
(ii) partly dependent;
 - (b) (i) rent receivers only (*i. e.*, non-cultivating owners),
(ii) actual cultivating owners,
(iii) rent payers (tenants) only,
(iv) labourers,
(v) others, for whom details should be given.
 - (2) The number of (a) persons, (b) families, whose chief means of livelihood is cottage industry.
 - (3) The number of (a) persons, (b) families, who do not follow any productive calling and live on charity, begging, religion, etc., etc.
 - (4) The number of (a) artisans, (b) families of artisans, in the village. Give details.
 - (5) The number of (a) field labourers, (b) families of field labourers.

- (6) The number of (a) persons, (b) families, whose principal means of livelihood is agriculture, but who depend upon other occupations, such as industry, field labour, grass and wood selling, *gadda* hire, service, etc., to supplement their income from agriculture.
- (7) The number of (a) persons, (b) families, whose principal means of livelihood is any occupation other than agriculture, but who follow agriculture as a subsidiary calling.
- (8) The number of persons who live outside the village for a large part of the year and who earn their livelihood in professions such as service.
- (9) The number of—
- (i) military servants,
 - (ii) teachers,
 - (iii) pleaders,
 - (iv) civil servants,
 - (v) persons who work in cities as menial servants,
 - (vi) pensioners.

NOTE.—Distinguish between those persons who, or whose families, are resident in the village more than nine months in the year, and those who, although natives of the village, ordinarily spend less than three months in it.

- (10) Number of (a) persons, (b) families, living on money-lending and trade.

Give, if possible, details as to income-tax paid in recent years.

6. How does a cultivator employ himself in hours not spent in work connected with the cultivation of the land ?
7. How does a cultivator employ himself in slack seasons ?
- (a) when agricultural conditions are normal ; (b) when they are abnormal ?
- Does he follow any subsidiary industry ?
8. Describe fully the way in which village artisans and menials are paid by cultivators. Describe their rights and privileges in the village.

Give annual wages usually paid to each class and also *inams* and other dues paid on the occasions of social and religious ceremonies.

9. Describe fully the economic position of a field labourer in the village organization. Describe his rights and privileges in the village.

How is he paid ?

Is there a tendency for younger men to emigrate to the towns ? If so, in what capacity ?

II.—CROPPING AND CULTIVATION.

1. Give from the *Milan Raqba* statement of the Village Note Book an abstract showing for the village as a whole:—

	Total area.	Banjar Kadim.	Banjar Jadid.	Cultivated area with classes of soils.
1900				
1920 (or nearest year).				

2. Prepare from the Jinswar statements of the *Lal Kitab* a statement in the form shown on page 5, with any modification that may be necessary for the particular village, showing the average cropping for the past five years.
3. Have any important changes occurred in the cropping during the past twenty years ; if so, what ?
4. Take about 50 fields representative of different classes of soils, and from the *khasra girdawari* examine the cropping for the last eight harvests in order to see what are the most common rotations of crops.
5. Have the high prices of (1) cotton, (2) sugarcane, resulted in their cultivation being extended ?

6. What crops are manured? What manure is used? Whence is it obtained? How much is used per acre for each crop? When is it applied?
7. Give in the form of a calendar an account of the year's operations on two holdings of different sizes selected from the following, 2, 5, 10, 20, 50 acres, showing month by month the number of workers, etc.
8. What crops are irrigated by (a) wells; (b) canals; (c) other means of irrigation? Give the usual number and dates of waterings for each. What number of waterings for each of the chief crops do the zamindars consider necessary to give the best results?
9. Are the fields carefully levelled for irrigation by (a) wells and (b) canals? Is there any waste of water?
10. What is the number of ploughings usually given for each of the chief crops and when are they given? Does this vary on different classes of soils?
11. Is weeding regularly done? If so, for what crops? Who do the weeding?
12. Have any improved implements been introduced in the village? If so, whence have they been obtained?
13. Have any selected varieties of seeds as recommended by the Agricultural Department been adopted in the village? If so, what? Give details of numbers and varieties. Have the results been good? Give, if possible, the increase in yields or other advantages obtained from the use of selected seed?
14. What improved methods of cultivation, if any, have been adopted? What have been the results?
15. Where is the nearest demonstration farm? Have any demonstrations been made in or near the village? Have any of the zamindars visited an Experimental or Demonstration Farm? If there is a District Agricultural Association, do the zamindars know anything about it? Has it conferred any practical benefit on the village?
16. Where is the nearest rain-gauge? Give monthly figures of rainfall for each of the past ten years.

III.—IRRIGATION.

1. What are the sources of canal irrigation? Is the village situated near the "tail"?
2. Is irrigation by flow or lift?
3. Is canal irrigation received in both harvests? In the *rabi* is canal water obtained for sowings only, or are subsequent waterings also possible?
4. When does canal irrigation usually begin, and when does it stop? Is it continuous or by rotation on different branches or minors of the canal?
5. How is the internal distribution of water made between cultivators? Is it a fair distribution? Do cultivators who do not require water when their turn comes round sell it to others? If so, at what rates?
6. Give the number of wells (a) in use, (b) capable of use, now, and twenty years ago.
7. When are the wells usually worked? Give the number of yokes for each well and the hours of work done by each yoke in one day. What area can a well irrigate in twenty-four hours assuming the number of yokes to be sufficient to keep the well in work the whole of that time. Give depth of water, and number of hours the well can be worked.
8. Is canal irrigation assisted by wells? If so, when and to what extent, and for what crops?
9. If there are *barani*, well and canal holdings in the village compare the labour and cattle necessary for the proper cultivation of ten acres of *barani*, well, and canal lands respectively. Give the figures for labour and cattle for any of these three types of holdings that may exist in the village and illustrate them by the actuals of ten holdings of various sizes.

IV.—HOLDINGS.

1. From the total number of owners in the village as given in *Statement VI* of the Village Note Book deduct the number of those whose names have been counted more than once. Divide the total cultivated area of the village by this number and so get the cultivated area per owner. Compare the result with that obtained for a similar calculation on the figures of 1900.
2. If any of the owners own cultivated land outside the village, add the area so owned to the total cultivated area of the village, and divide by the number of owners as found in 1 above and so obtain the *total* cultivated area per owner. Note the number of owners who do not cultivate at all.
3. Give a statement showing—

Number of proprietary holdings owned :—

- (a) by a single owner.
- (b) „ 2 persons jointly.
- (c) „ 3 „ „
- (d) „ 4 „ „
- (e) „ 5 „ „
- (f) „ more than 5 persons jointly.

4. Prepare a statement as follows :—

Number of owners who own—

- (a) less than 1 acre cultivated land.
- (b) between 1 and $2\frac{1}{2}$ acres „ „
- (c) „ $2\frac{1}{2}$ and 5 „ „ „
- (d) „ 5 and $7\frac{1}{2}$ „ „ „
- (e) „ $7\frac{1}{2}$ and 10 „ „ „
- (f) „ 10 and 15 „ „ „
- (g) „ 15 and 20 „ „ „
- (h) „ 20 and 50 „ „ „
- (i) more than 50 „ „ „

NOTE—1. In the case of (a) above, give a complete list of owners with their caste, main occupation, etc.

2. In this statement if three owners own 8 acres jointly and nothing more in the village, all three will come into (b).
3. For this statement take first of all only the cultivated area of the village concerned, but in a Remarks Column show the effect of taking into account the cultivated land owned outside the village, e. g., if cultivated area outside the village is also taken into account 3 of the owners will come into class (f), and 2 into class (g).
5. For classes (a), (b), (c), (d) and (e) above, ascertain which of the owners cultivate the whole or part of their own land and in addition also cultivate other land as tenants. Then prepare a revised statement as follows :—

Number of owners who cultivate :—

(a) less than 1 acre (..acres owned ; ..acres rented).

(b) between 1 and $2\frac{1}{2}$ acres(.. ,, ,, ; .. ,, ,,).

(c) ,, $2\frac{1}{2}$ and 5 ,, (.. ,, ,, ; .. ,, ,,).

(d) ,, 5 and $7\frac{1}{2}$,, (.. ,, ,, ; .. ,, ,,).

(e) ,, $7\frac{1}{2}$ and 10 ,, (.. ,, ,, ; .. ,, ,,).

6. For (a), (b), (c), (d) and (e) in paragraph 4 above, state for each sub-division, (1) the number of owners who actually cultivate in the village ; (2) the number who cultivate elsewhere as tenants or owners ; (3) the number who, on account of old age, infirmity, youth or other disability, neither cultivate nor have other means of livelihood ; (4) the number of owners who do not cultivate, but have other means of livelihood, (a) inside the village, (b) outside it, and state what these are ; (5) the number of owners who cultivate and have also other means of livelihood, regular or casual. State what these are.

7. How many owners are resident in the village ?

How many of them cultivate ? What do the others do ?

8. How many owners are non-resident? Of the non-resident able-bodied men how many are (a) in the Army, (b) in Government service, (c) in other service, (d) casual labourers? Give a statement of pay and earnings.

9. Give a list similar to 3 above showing—

Number of cultivating holdings cultivated:—

(a) by a single cultivator.

(b) „ 2 cultivators jointly.

(c) „ 3 „ „

(d) „ 4 „ „

(e) „ 5 „ „

(f) „ more than 5 cultivators jointly.

NOTE.—Hired labourers will not be counted as cultivators for this purpose.

10. Prepare a statement similar to 4 above showing—

Number of cultivators who cultivate:—

(a) $2\frac{1}{2}$ acres cultivated or less.

(b) between $2\frac{1}{2}$ and 5 acres cultivated.

(c) „ 5 „ $7\frac{1}{2}$ „ „

(d) „ $7\frac{1}{2}$ „ 10 „ „

(e) „ 10 „ 15 „ „

(f) „ 15 „ 20 „ „

(g) „ 20 „ 50 „ „

(h) more than 50 „ „

NOTE.—1. Cultivating owners and tenants, whether owners or not, will come into this account.

2. If three tenants cultivate 9 acres jointly, each will be credited with 3 acres; if, in addition, one of them cultivates 4 acres alone, he will come into class (c).

3. Show the effect on the classification of taking into account land cultivated outside the village.

4. Where there are sub-tenants, these, and not the tenants, under whom they hold, should be counted. Hired labourers should not be included, but partners in cultivation should.

11. What is the number of:—

- i. occupancy tenants,
- ii. non-occupancy tenants under owners or occupancy tenants,
- iii. sub-tenants under tenants-at-will,
 - (a) who own no land at all,
 - (b) who own no land in the village.

How many are permanently resident in the village? Give the length of tenancy to date as follows:—

- (a) Less than 3 years.
- (b) Between 3 and 5 "
- (c) " 5 and 10 "
- (d) More than 10 "

NOTE.—Where a son or nephew has carried on the tenancy of his father or uncle, etc., the tenancy should be regarded as continuous.

12. Of the tenants, how many are village menials? How many tenants have supplementary means of livelihood and what are the supplementary means?
13. Read Chapter III of Dr. Mann's "*Land and Labour in a Deccan Village*."* Prepare a statement of proprietary holdings similar to that on page 47, and a statement similar to that on page 51 for cultivating holdings.

NOTE.—Plot in this connection means not necessarily a *khasra* number. It is used to denote an unbroken piece of land and will include several *khasra* numbers if these are continuous and held by the same owner or cultivator as the case may be.

14. Illustrate graphically the fragmentation of proprietary and cultivating holdings as in the charts facing pages 46 and 52 of Dr. Mann's book.

Take ten proprietary holdings and illustrate five on each of two sheets, choosing two extreme cases of fragmentation and the rest ordinary ones. Do the same for ten cultivating holdings.

15. Take four proprietary holdings in which there is much fragmentation. By means of the genealogical tables and the settlement records of the various settlements trace the history of each back as far as possible showing how fragmentation has been the result of (a) succession, (b) sales, gifts and exchanges, (c) partitions.

Give examples, if any can be found, of the reverse process of consolidation due to owners dying without sons, exchanges, purchases, etc.

* University of Bombay, Economic Series, No. 1, Oxford University Press, Bombay.

16. Take four cases in which partition has occurred. Show graphically the extent of fragmentation before and after partition. If possible, select two areas in which more than one partition has occurred.
17. What are the practical disadvantages of fragmentation in this village? Illustrate your answer by reference to specific instances. If possible give details of litigation arising from boundary disputes. In particular, inquire whether any land is lying uncultivated owing to excessive fragmentation. Give a list of some of the smallest plots and say what use is made of them.
18. Can you give any instances in the village in which a cultivator could actually reduce the number of workers employed on his holding if consolidation were effected?
In practice, would the cultivator reduce his labourers, or would the same labourers be used, but for less time?
19. What are the objections urged by the zemindars against consolidation of holdings? Have any of them voluntarily agreed to consolidation? Have practical benefits resulted?

V.—EFFECTS OF TENANCY.

If possible compare in as much detail as possible several holdings cultivated by their owners with several holdings cultivated entirely by tenants who are not themselves mortgagors nor relations of the owners of the holdings they cultivate. For the purpose of this comparison, tenants who do not cultivate themselves should not be included.

1. Is there any difference in the methods of cultivation, number and dates of ploughings, manuring, etc.?
2. Is there any difference in the cropping?
3. Is there any difference in perennials, such as trees, etc., on the holdings?
4. Is there any difference in efforts at improving land?
5. Is there any difference in the cattle, etc., kept?

6. Is there any difference in the buildings ?
7. Is there any difference in education of the children ?
Amplify, if possible, by reference to actual facts and figures.
8. Is there any difference in the careers of the children (*i.e.*, working as agriculturists, engaging in other business, migrating to towns, taking service, etc.) ?
9. Is there any difference in the standard of living, or of debt, and in the facility with which credit can be obtained ?
10. Do tenants join Co-operative Societies as freely as owners ?

VI.—LAND REVENUE AND TACCAVI.

1. What was the fixed land revenue imposed at previous settlements and at the last Settlement ?
2. Give the incidence per cultivated acre of the present fixed demand.
3. What portion, if any, of the fixed demand is deferred on account of (*a*) protective well leases, (*b*) other causes ?
4. Attach a list of occupiers' rates charged on canal irrigation.
5. What has been paid by the village in each of the past five years for (*a*) Land Revenue, (*b*) Cesses, (*c*) Occupiers' rates, (*d*) Total.
Give the average for the period, and the average incidence per matured acre.
6. What coercive processes, if any, have been issued during the past five years for (*a*) land revenue fixed ; (*b*) land revenue fluctuating ? Has land revenue been paid punctually ? Has the lambardar had to pay part of it out of his own pocket and then recover from owners ?
7. How is the money for land revenue obtained ? Is surplus produce sold ? Is it paid out of earnings from casual labour ? Is the money for it borrowed ? Has any money been borrowed for this purpose from Co-operative Societies ? If so, when, by whom, and how much ?

Take 30 specific cases representing large, medium and small owners and record the results.

8. In cases where money was borrowed for the payment of land revenue inquire carefully into the causes. Did the borrower sell any of his produce of the harvest in question before or after the payment of land revenue? If so, what did he do with the money so obtained? Did he buy cattle or other necessaries with it? Did he use it to pay off debts?
9. Are the dates fixed for the payment of land revenue convenient for owners? If not, what other dates would be more convenient?
10. What (a) remissions, (b) suspensions, of land revenue, have been granted during the past ten years? Why were they granted in each case?
11. Make enquiries similar to those detailed in 8 and 10 above for the payment of occupiers' rates.
12. What *taccavi* has been taken for (a) sinking of wells, (b) other improvements, (c) purchase of cattle, fodder, or seed, during the past ten years?
13. Were the instalments repaid with ease? If not, how were they paid? Were any coercive processes necessary? Was there any attachment and sale of property?
14. Is *taccavi* popular? Are loans taken from money-lenders when *taccavi* might be taken? Give specific cases, if any, and record the reason. If *taccavi* is not popular, what are the reasons, as given by the zemindars?

VII.—INDEBTEDNESS.

1. What are the chief purposes for which loans are taken? Give approximate percentage of principal in each case, showing what is due to (a) personal expenditure such as food, clothing, marriage, funeral, litigation; (b) professional expenditure such as seed, cattle, land improvement, land revenue, *taccavi* rent, purchase of land.

2. If a member of a Co-operative Society for five years or more, state :—
 - (i) amount of old debt repaid by borrowing from the society,
 - (ii) amount of old debt repaid by his own saving,
 - (iii) land redeemed by borrowing from the society,
 - (iv) „ „ „ his own saving,
 - (v) „ bought,
 - (vi) „ taken in mortgage.
 Give amount paid in each case.
3. Who are the money-lenders ? Zamindars or non-zamindars ? Give their number in each case. Are zamindars replacing non-zamindars as money-lenders, and with what results ? Give the ordinary business terms of each class. Do they vary their terms according to the security offered ? On what security is money lent ? What are the terms of repayment ? Is recovery of loans strictly enforced ?
4. Give the approximate yearly income of persons whose chief profession is money-lending ?
5. Try to ascertain the sources from which repayments are made as for example :— sale of produce, grain or fodder, sale of cattle, sale of land, mortgage of land, sale or mortgage of houses, cash earnings, or other sources.
6. From above discuss actual indebtedness you observed : how far due to poverty, ignorance, social observances, improvidence, temptation of increased credit and increased prosperity, diminished ability to repay through reduction of income, bad seasons, unsound credit. Is (a) the land revenue, or (b) enhancement of land revenue, or (c) too early a date for payment of the same, mentioned as a cause ? Do the money-lenders encourage debt ?
7. Can you give any facts as to the effect of indebtedness on the people ?

VIII.—MORTGAGES.*

GENERAL.

1. Give an abstract from *Statement No. 6* of the Village Note Book, showing quadrennially for the last 20 years—
 - (a) Number of mortgages.
 - (b) (i) Total area mortgaged.
 - (ii) Cultivated area mortgaged.

* The Special Questionnaire for Mortgages should be answered if the investigator thinks useful results will be obtained.

- (c) Land Revenue assessed on mortgaged area. ;
- (d) Proportion that total and cultivated area mortgaged bears to the total and cultivated area of village.
2. Give for each mortgage the following information :—
- (a) (i) Total area owned by the mortgagor.
(ii) Cultivated area owned by the mortgagor.
- (b) (i) Total area mortgaged.
(ii) Cultivated area mortgaged.
- (c) Date of mortgage.
- (d) Amount of mortgage debt and multiple of land revenue it represents.
- (e) Form of mortgage :—(a) whether for fixed term, in which case, length of period and year of expiry should be given ; or (b) until repayment of mortgage debt, etc., with possession or without possession.
- (f) Whether, when the mortgage is with possession, the mortgagor cultivates as a tenant, and if so, on what rent ? If not, who cultivates the land ?
3. Prepare a statement in the following form :—
- Number of proprietary holdings in which there are mortgages.
- (a) Total.
- (b) Of which cultivated area owned is less than 1 acre.
- (c) " " " between 1 and $2\frac{1}{2}$ acres.
- (d) " " " " $2\frac{1}{2}$ and 5 "
- (e) " " " " 5 and $7\frac{1}{2}$ "
- (f) " " " " $7\frac{1}{2}$ and 10 "
- (g) " " " " 10 and 15 "
- (h) " " " " 15 and 20 "
- (i) " " " " 20 and 50 "
- (j) " " " " more than 50 "
4. Prepare a statement as follows :—

Mortgages made in last quadrennium previous to 1902 in which quadrennial jamabandi was prepared, and in each succeeding quadrennial jamabandi.	Total area under mortgage.	Cultivated area under mortgage.	Mortgage debt.	Average mortgage value per acre.	Average mortgage value per acre cultivated.	Multiple of land revenue of (4).
(1)	(2)	(3)	(4)	(5)	(6)	(7)
-	200	150	20,000	100	133	160
..	..	..	15,000	75	100	120
..
..

NOTE—1. The necessary information will have to be obtained from *Statement No. 5* of the Village Note Books.

2. Where the mortgage money actually received was less than that recorded in *Statement No. 5* of the Village Note Book or in the mortgage deed, the actual, if ascertainable, should be entered in red ink below that recorded in column 4 above. Entries in columns (5), (6) and (7) should also be made on the basis of actuals, as illustrated above.

5. Redemption.—

(a) Give information for Redemptions similar to that given for mortgages in para. 3 above.

(b) Prepare a statement for Redemptions similar to that given in statement para. (4), but omit the last 3 columns.

(c) For each of the redemptions made between 1913 and the present day ascertain whether (1) redemption was automatic; (2) other land was sold or mortgaged in order to effect the redemption; (3) redemption was made by the owner, mortgagor or a subsequent vendee; (4) how the money was obtained to carry out the redemption?

(d) Have mortgages not subject to automatic redemption been redeemed and other mortgages subject to automatic redemption contracted in their place? Give in each such case briefly the terms of the old mortgage and of the new—(area, mortgage debt, interest payable, period of new mortgage, etc.).

6. For the total mortgages now in existence state what area is mortgaged to—

(a) zamindars of the village,

(b) other zamindars,

(c) money-lenders, not belonging to agricultural tribes,

(d) others.

Give any information you may acquire about money-lending mortgagees.

7. Have landowners who wish to mortgage their land any difficulty in finding mortgagees?

8. Have mortgagors who wish to change a mortgage of a more burdensome kind into a mortgage under Section 6 (a) of the Land Alienation Act any difficulty in doing so? Is there any combination among money-lenders to prevent this?

9. In cases where mortgages have been contracted during the past ten years, ascertain :—

- (a) The reason why the mortgage was made.
- (b) Did the mortgagor get the money in cash? If so, what did he do with it?
- (c) If the mortgage consideration was extinction of debts, how were these debts contracted?
- (d) Where there are several shareholders, ascertain whether the mortgage is by all or by only some of the shareholders.

IX.—SALES.

1. Prepare a statement as follows :—

Sales made in last quadrennium previous to 1902 in which quadrennial jama bandi was prepared, and in each succeeding quadrennial jama bandi.	Total area sold.	Cultivated area sold.	Sale prices	Average sale value per acre, i. e. 4/2	Average sale value per acre cultivated, i. e. 4/3	Multiple of land revenue of (4).
(1)	(2)	(3)	(4)	(5)	(6)	(7)
..	200	150	Rs. 20,000	Rs. 100	Rs. 133	160
			15,000	75	100	120
..
..

NOTE—1. The necessary information will have to be obtained from *Statement No. 5* of the Village Note Books.

2. Where the sale price actually received was less than that recorded in *Statement No. 5* of the Village Note Books or in the sale deed, the actual, if ascertainable, should be entered in red ink below that recorded in column 4 above. Entries in columns (5), (6) and (7) should also be made on the basis of actuals, as illustrated above.

2. Show for each quadrennial period the sales—
- (i) By agriculturists—
 - (a) to zamindars of the village,
 - (b) other zamindars,
 - (c) money-lenders, other than those of agricultural tribes,
 - (d) others.
 - (ii) By non-zemindars—
 - (a) to zamindars of the village,
 - (b) other zemindars,
 - (c) money-lenders, other than those of agricultural tribes,
 - (d) others.
- Give any information you may acquire about money-lending vendees.
3. Have any persons who formerly did not own land in the village or elsewhere purchased land in the village during the past twenty years? How many of these were at the time of purchase cultivating land as tenants-at-will in the village or elsewhere? What were their castes?
4. Have any small holders (owners of less than 5 acres cultivated at time of sale or purchase)—
- (1) lost land by sale during the past twenty years?
 - (2) gained land by purchase during the past twenty years?
- What was the effect—
- (1) on reducing their holdings?
 - (2) on increasing their holdings?
5. Investigate in the case of ten sales made during the past five years the causes of sale.
6. Have any sales been made during the past ten years in order to redeem mortgages on other land? If so, give details.
7. Have any mortgages been made during the past ten years in order to purchase other land? If so, give details.

X.—SALE OF VILLAGE PRODUCE.

1. Describe the methods of sale —
- (i) Give the prices at which six principal crops of the village were sold in each of the last five years.
 - (ii) Give also the prices of these six products for each year as entered in the Circle Note Book.

- (iii) State generally who are the purchasers and how the prices are fixed between them and the growers. Note specially whether the price is fixed before, at the time, or after the produce is handed over, and whether the seller exercises any real influence in deciding the prices.
- (iv) Where a grower sells to his family shop-keeper how is the account adjusted? Does the latter pay at once in cash or does he credit the grower's account? If the latter, how long after the delivery of the produce and at what rates?
- (v) Where a grower is in debt and sells to his creditor does he get as good a price as a grower who is not in debt? If not, what is the difference?
- (vi) How much of the surplus was carried by the producer for sale in a central market?
- Is there any custom of selling in a central market through brokers who act as agents for the producers?
- (vii) Describe the methods of purchase followed by purchasers in the central market—
- (a) Who pays the *arhat*?
 - (b) Who tests the accuracy of the scales and measures used?
 - (c) Who pays the weighing charges?
 - (d) Give details of all other charges.
 - (e) Does the cultivator get the rates prevailing in the central market for his products?
2. How many central markets are there in the neighbourhood? What is the distance of each from the village?
 3. How far is the nearest railway station? Is it reached by a metalled road?
 4. How many roads lead to the principal markets available to the cultivator? Are they *kachha* roads or metalled? What is their condition in rainy season?
 5. What are the means of conveyance available —
(a) *gaddas*; (b) donkeys; (c) camels; (d) others.
 6. Was any produce held up during the past five years in order to secure a better price?

How far does the local Credit Society, if there is any, help towards this end ?

7. State the dates when the land revenue is ordinarily collected in the village. Does the land revenue demand tend to make the cultivator sell his produce at once ? State the land revenue demand in terms of weight of produce at the actual village price.
8. If a Co-operative Sale Society exists, describe the benefits actually derived from it.
9. What are the articles manufactured in the village ? How are they sold ?

XI.—PURCHASES AND INDUSTRY.

1. How do villagers purchase commodities required—
 (a) for industrial and agricultural use ?
 (b) for their own household consumption ?
2. What is the number of petty shopkeepers in the village and what commodities do they sell ?
3. What are the chief markets from which commodities are purchased and what is their distance from the village ?
4. Are goods purchased on credit or on cash ? If former, how are payments made ? For how long do credit accounts run ? What disadvantages result from credit purchases ?
5. Are the goods adulterated or pure ? If the former, find out if possible the loss to the consumer due to this ?
6. Take measure and scales used by shopkeepers and test their accuracy. Note the discrepancy in each case.
7. If goods are purchased from a Co-operative Supply Society or Union, compare the prices with those of the local shops.
8. Do any village industries exist in the village ? Give details.
9. How is the cotton ginned ? Is the spinning done in the village ? If so, by whom ? Is any thread imported ? What is the number of looms ? Who does the weaving ? Is the cloth used for village consumption or is any exported ?

10. What is the number of oil-presses ? Who owns them ?
Are they all in use ? Who works them ?
11. Is flour ground in the village ? If so, how ? Who
owns and who works the mills ?
12. Is sugarcane pressed in the village ? How many presses
are there ? Who owns and who works them ?

XII.—PRICE OF LAND.

1. From the statement relating to sales obtain the percentage
increase or decrease in the sale price of land—

(a) between 1895—99	}	and the last quadrennial period.
(b) between 1905—09		
2. Compare the above percentages with the percentage
variations in cash rents between the same periods.
3. See para. 376 of Douie's "Settlement Manual." Work
out the general rise in prices by the second method ex-
plained therein, (a) since 1895—99, (b) since 1905—09,
taking for the purpose the six most important crops
in the village and using yields in accordance with
the instructions given in Question 6 of the Section
on *Yields*.
4. Compare the percentages in Question 1 with the percen-
tages in Question 3.
5. If any land now under cash rents has been purchased
during the past five years, give the following figures
separately for each transaction :—
 - (a) area of land sold ;
 - (b) total purchase price ;
 - (c) average price per acre ;
 - (d) cash rent per acre ;
 - (e) per cent. return of (d) on (c) ;
 - (f) cash rent per acre after deducting actual ex-
penses paid by the landlord ;
 - (g) per cent. return of (f) on (c).
6. Take three holdings sold during the past five years *not*
under cash rents. If reliable figures are available work
out the net per cent. return to the landlord on the
purchase price.

XIII. —YIELDS.

1. Attach to your report a list of the yields assumed by the Settlement Officer at last Settlement for each class of soil and each crop in the circle in which the village is situated; and the estimates issued by the Director of Land Records.
2. Attach a copy of the Settlement Officer's inspection note of the village.
3. Enquire into the character of each harvest for the last five years for each of the chief crops. Classify it as very good, good, above average, average, below average, poor, bad, according to its character.
4. Give the zamindars' estimate of the yield in maunds per acre of each of the main crops for each of the above harvests on each class of soil.

Make your enquiries from various zamindars at various times and note the replies of each. Attach these to your report for purposes of comparison and give your opinion as to the reliability of the zamindars' estimate.

5. Take the Settlement Officer's assumed yields for the circle and adjust them for the village as follows:—

If Settlement Officer classed the village as *average* take the yields as they are; if he classed it as *very good, good* or *above average*, make suitable addition to the yields; if he classed it as *bad, poor* or *below average* make suitable deductions.

6. In using "yields" for general calculations use your "ascertained" yields if you regard them as reliable. Otherwise use the adjusted settlement yields described in paragraph 5 above.

XIV.—RENTS.

A.—GENERAL.

1. Prepare the following statement :—

Total cultivated area of village.	Area cultivated by owner.	Area cultivated by occupancy tenants.	AREA CULTIVATED BY TENANTS-AT-WILL.			
			Paying at revenue rates.	Paying at batai rates.	Paying cash rents.	Paying other rents.
1	2	3	4	5	6	7
	Acre per cent.	Acre per cent.	Acre per cent.	Acre per cent.	Acre per cent.	Acre per cent.

2. Is there any difficulty in obtaining tenants ?
3. Are changes frequent among tenants ? Investigate conditions regarding the period of tenancy on thirty holdings.
4. Do (a) tenants, (b) landlords prefer cash or share rents ?
Give reasons. Does their preference depend on kinds of crops or irrigation ?
5. Read Chapter XX of Douie's "Settlement Manual," and according to the principles there laid down, work out the cash rents paid on different classes of soil.
6. Have cash rents risen with the rise in the value of agricultural produce ? (Use material in *Statement 8* of the Village Note Book to answer this question).
7. Are *zabti* rents paid on particular crops ? If so, on what crops and at what rates ?
8. Is there any case of an owner taking fixed grain rents, irrespective of the state of the crop ? Cite all such rents.
9. Do landlords give any advances to tenants in cash or grain ? If so, on what terms and how do they recover ? Does the owner lend seed to his tenants and if so on what terms ?
10. Does the tenant receive from the owner any assistance or has the tenant any rights regarding assistance towards (a) material for houses, (b) grazing, (c) fuel, (d) site for house, (e) water for any purposes, (f) natural products of the soil ?

11. Is the exercise of the rights limited to the tenant's own requirements or has he any right of sale ?
12. What rights, if any, has a tenant regarding the use of trees on the land and the planting of new trees ?
13. Does the tenant make any gift of animal produce, such as milk, a goat at Bakr Id, eggs, poultry, etc., to the owner ?
14. Does the owner make any such gift to the tenant, *e. g.*, a feast at the principal holy day or after harvest ?
15. Does either owner or tenant make any gift, such as a feast at harvest time, to the labourers ?
16. Can you find any instance of aid rendered by the owner to the tenant to combat pests, such as locusts, rats, etc. ?
17. Does the tenant render any similar aid to the owner ?
18. Does the tenant render any personal service to the owner
(*a*) on special occasions such as marriage, (*b*) on shikar,
(*c*) on the entertainment of guests, (*d*) or otherwise ?
19. Where grazing is included in the tenancy, does the owner provide any part of the stock ? If so, describe the custom or contract ? Does the tenant pay rent in stock ? Does the owner share the produce, *e. g.*, milk, wool, young stock ?
20. Does the owner actually influence or direct the rotation or the selection of crops to be grown ? Have you found any instance of an owner insisting on a certain crop being grown or on a certain rotation ?
21. Can the owner graze his cattle on his tenant's fields after the crops are cut ?
22. Does the tenant get all the manure, or does the owner claim any share ?
23. Does the owner make the tenant grind his grain at the owner's mill (for districts such as Kangra, where owners keep mills) ?
24. Are there any conditions forbidding the cultivation of part of the lands under tenancy such as the reservation of lands for grazing ?
25. Can you find any other conditions of tenancy not referred to above, which are observed generally, without being anywhere recorded, *e. g.*, presumably the tenant admits the right of the owner to visit the fields and view the crops ?

26. Can you find any instance of an owner evicting a tenant for bad cultivation, faulty rotation, etc. ?

B.—BATAI RENTS.

1. What are the usual rates on different classes of soil in each harvest ?
2. How does the batai rate vary with the crop, such as wheat, sugar-cane, cotton, tobacco, fruit (mangoes) ?
3. How does the batai rate vary with the custom according as the landlord or tenant pays the revenue, water rate, local rate, other dues or some of these ?
4. Are there any additional cesses paid to the landlord ? If so, what ? (*e. g.*, *haq zimindari* 2 seers per maund).
5. Is the crop divided on the tenant's land or at the owner's house ? Does the owner or tenant carry the owner's share to his granary ?
6. Describe in detail an actual partition of the crop witnessed by yourself. Note deductions for charity ; and to whom they go.
7. What deductions are made from the common heap for menials ? Who threshes the owner's share ? What payment is made ? Who does the reaping, and how are the reapers paid ? When the tenants themselves do the reaping do they receive the reapers' dues, if any ?
8. What services, if any, do these menials render (*a*) to the owner, (*b*) tenant, in consideration of the portions received from the common heap ?
9. Who provides the seed ?
10. Is it, or any portion of it, deducted from the common heap before sharing ?
11. If so, is the quantity deducted the actual quantity used, or is a little extra deducted over and above this ? Who takes the seed so deducted ?
12. What deductions not so far mentioned are made from the common heap ?
13. Are the fodder crops shared ? If so, give the rates for various fodder crops.

14. Do landlords allow any concessions regarding fodder, *e. g.*, do they exclude from division a few kanals under fodder crops? What concessions do they allow? Does the owner allow the tenant a plot for vegetables or other produce for his own household use, taking no share for himself? Is there any crop of which the owner takes no share, (such as a catch crop, *e. g.*, *senji* after cotton)?
15. Where concessions for fodder are given, does the tenant make any gift of animal produce to the owner in return?
16. Is the straw divided? If so, of what crops and in what shares?
17. Is there any condition prohibiting fodder or straw from being sold off the land?
18. Does the landlord impose any conditions regarding the area or kind of fodder crops? If so, what?
19. What changes have occurred in batai rates during the past twenty years?
20. Do mortgagees charge higher rates of batai than owners?
21. Do all batai tenures run from year to year or is there any instance of a lease or contract for more than one year?
22. Is there any instance of a share tenant sub-letting to another? If so, does this indicate a right to sub-let? If there is no instance, is this because the owner reserves this right when letting his land?
23. Make a special enquiry of ten holdings under batai rents. Ascertain from the *Khasra Girdawari* what crops (area, irrigation, etc.) were grown on each during the past five years. Ascertain, if possible, what was (1) the tenant's share in maunds of each crop, (2) the landlord's share; in any or all of these five years. (If this information cannot be obtained, do *not* attempt to estimate it yourself.)
24. If accurate information can be obtained to Question 23, then work out the value at the prices current at the harvest in question of the (1) tenant's share, (2) landlord's share.

If information for both harvests in a year is available, then work out the value of the total rent received *per cultivated acre* :—

Total value of rent, Rs. 350.

Total cultivated area of holding, 35 acres.

Average rent per acre cultivated, Rs. 10.

XV.—EXPENSES OF CULTIVATION.

1. All classes of cultivation.

(a) PARTICULAR HOLDINGS.

Take five particular holdings for investigation. State for each of them :—

- (i) Area cultivated, with kinds of soil (nahri, chahi, etc.,) and uncultivated.
Area sown in last five years with crops sown.
Area returned as matured, kharaba, etc.
- (ii) Cultivators, with details of working members of family, including every one who assists in any process of agriculture upon the holding.
- (iii) Partners in cultivation, with details as above.
- (iv) Labourers paid in cash or kind throughout the year, with details of payments, service rendered, hours and days of work.
- (v) Cattle employed, with duties performed by them. Give details of days and hours worked throughout the year. Is any use made of them when not required for any agricultural process upon the holdings? Give details.
- (vi) State if any cattle are hired, with details of hours, days and payments.
- (vii) What manures are used? How much is bought and how much home-produced? What was the value of the former? Give details as to utilisation. Does the landlord pay for any part of the manure?
- (viii) What fodder is used for the cattle employed (para. (v) above)? How much is home-produced and how much bought? Give values, and details of disposal,

- (ix) What grain is fed to cattle? How much is bought and how much home-produced? Give values, and details of disposal.
- (x) What implements are used? Which are bought and which home-made? Give values; how long does each one last? Distinguish between those bought for cash and those supplied under custom for payment in kind.
- (xi) Give details of any implements hired, up to the final harvesting of the grain. Give details of period of hire, amount of payment made in cash or kind.
- (xii) Give details of any other miscellaneous tools used.
- (xiii) Give details of any other expenses of cultivation; salt for cattle, medicines for cattle, repairs, *rakhas*, carriage of manure to the fields if not already included.
- (xiv) Has the cultivator got a cart? If so, detail the uses to which it is put; expenses of initial cost and maintenance, earnings in cash or kind, with details of hours and days; distinguish between work on the cultivation of the holdings, and work independent of this. Estimate value of work done in connection with cultivation of the holding.
- (xv) *Seed*.—Give rate per acre for different crops on different classes of soil. Who provides it? What is its value at sowing time? Where is it obtained from?
- (xvi) *Sowing*.—Are there any expenses of sowing not included in above?
- (xvii) *Cultivation after sowing*.—Are there any expenses not included above? Give details. Give details as to weeding; who does it?
- (xviii) *Harvesting*.—Are there any expenses not included in above? What are they?
- (xix) *Deductions from common heap*.—Distinguish those which relate to expenses of cultivation. Give values.
- (xx) *Threshing, winnowing*.—Are there any expenses not included above? What expenses are incurred in carriage of crop to shop or granary or to landlord's house.

- (xxi) Give any examples of extraordinary expenses of cultivation within recent years due to calamities of season, such as flood. Has seed had to be re-sown more than once? Is there any expenditure on hedging or on protection of the holding apart from particular crops, or on making boundaries?

(b) GENERAL.

- (i) Give figures for cattle, sheep, goats, etc., for each of the last five cattle censuses.

How have increases or decreases in the cattle, etc., affected the supply of manure? If cattle, etc., have decreased, have cultivators made good the supply of manure in any other way?

- (ii) Do the owners of cattle sell the bones of dead animals? If so, to whom? If they are not sold, what use is made of them?
- (iii) Are there any grazing grounds in the village, apart from fallow lands? What is their area compared with the area of similar lands twenty years ago?
- (v) Is there a Government forest or *rakh* near by in which the village cattle graze? If so, what facilities for grazing are allowed and on what fees?
- (v) What are the sources of fuel in the village?
Is cow-dung used for fuel? If so, make an estimate of the percentage of the total cow-dung so used.
- (vi) If there is a Government forest or *rakh* near the village do the villagers obtain fuel therefrom? If so, on what conditions and on what payments?

2. Well Cultivation—

(a) PARTICULAR HOLDINGS.

- (i) When was the well sunk and how much did it cost?
Did the owner have it sunk through a contractor or did he himself superintend the work? Did he buy the bricks or have them made himself?
- (ii) How did the owner find the capital? Did he take a *taccavi* loan? Did he borrow from a money-lender? If so, how much did he borrow, what was the rate of interest and when did he pay off the loan?

- (iii) What are the expenses of maintenance borne (1) by the owner, (2) by the tenant, apart from the work done by the *tarkhan*, *kumhar* or *lohar* in return for harvest dues? To what did they actually amount during each of the past five years?

(b) GENERAL.

- (iv) What is the present cost of sinking a well? How does it compare with the cost of twenty, ten and five years ago?
- (v) Split up the cost into its component parts—price of bricks, payments to divers, to hired labourers, wood work, etc.
- (vi) What is the cost of a *chakla chob*? Of what wood is it made? How long does it last?
- (vii) How many bullocks are used (a) for the well, (b) for ploughing on an average sized well holding? Give specific examples.

3. For Canal-Irrigated Holdings.

Are the water-channels regularly cleared? Does the owner or tenant clear them? What is cost of clearance per acre irrigated (check by particular examples).

XVI.—CONSUMPTION.

1. Take the following classes of the village population for separate examination:—

- (a) Well-to-do land-owners.
 (b) Small land-owners and well-to-do tenants.
 (c) Small tenants and agricultural labourers.
 (d) Village menials.
 (e) Well-to-do non-agriculturists.
 (f) Other non-agriculturists not included in any of the above classes.

For each class give a description from personal observation so far as possible:—

- (a) of the number of meals each day at different seasons of the year;

(b) the kind of food taken at each meal, e. g., *lassi*, pulses, vegetables, *chapatties*, etc.

2. Take up the following distribution according to ages and sexes :—

Males and Females separately.—

- (a) Below 5 years of age
- (b) Between 5 and 10 years of age
- (c) „ 10 „ 15 „ „
- (d) „ 15 „ 25 „ „
- (e) „ 25 „ 55 „ „
- (f) Over 55 years.

Give the average monthly consumption of different kinds of food for each age period of each *class* of the population mentioned in Question 1. For cereals, pulses, *ghi*, millets and for other articles, which can be so expressed, express the result in seers.

3. If possible obtain actual figures of consumption of the chief articles of food, wheat, millets, pulses, etc., for ten families during a year and check your results in Question 2 against these known quantities.

In the case of wheat, for instance, it should be possible to ascertain —

- (a) Amount in stock with a family before the new wheat is brought in.
- (b) The amount, if any, of this sold during the following year.
- (c) The amount of the Rabi crop reserved for home consumption.
- (d) Sales and purchases during the year.
- (e) Amount in stock at the end of the year.

Knowing the number, sex and ages of the family and dependents fed, the results of Question 2 can be checked. If information relating to particular families can be obtained easily the figures for as many families as possible should be stated.

4. What classes of the population eat meat? What kinds of meat do they eat? Do they consume meat regularly or only occasionally? Give a rough estimate of the meat consumption of the village for a year.

5. What is the milk production of the village (a) cows, (b) buffaloes, (c) goats? Is any milk exported? Is any milk imported? How is the milk consumed as *ghí* or *lassi* or milk?

Is the milk supply adequate for the needs of the population?

6. Do the food grains produced in the village suffice for the consumption? Is there any export? If so, of what grains? What other articles of food are imported and exported?
7. How do the people vary their diet in times of scarcity? Give information for each class separately. At such times do any of the population leave the village for work outside? Where do they go and for what work?
8. Ascertain, if possible, what changes in diet have occurred during the past fifteen years?

APPENDIX A.

Questionnaire for Mortgages.

PART I.—FOR EACH MORTGAGE.

- (1) Give caste or tribe of—
- (a) mortgagor, noting whether he is—
 - (i) a member of a notified agricultural tribe in the district, or
 - (ii) not a member of such a tribe ;
 - (b) mortgagee, noting whether he is—
 - (i) a member of a notified agricultural tribe, or
 - (ii) not a member of such a tribe, but the holder of a certificate as an agriculturist under the original Alienation of Land Act (XIII of 1900), or
 - (iii) not a member of such a tribe and not the holder of such a certificate.
- (2) Is the mortgage embodied in a—
- (a) registered deed, or
 - (b) unregistered deed, or
 - (c) *only* in the mutation register and *Jamabandi* ?
- (3) Give the particulars of the mortgage—
- (a) date ;
 - (b) area mortgaged—
 - (i) uncultivated ;
 - (ii) cultivated *Barani* ;
 - (iii) „ *Nahri* ;
 - (iv) „ *Chahi* ;
 - (v) is a share in the *Shamilat* expressly included ;
 - (c) any additional security such as houses, trees, etc. ;
 - (d) sum inserted in the mortgage as consideration, with any additional details given therein ;
 - (e) sum due now as calculated from the mortgage deed and any endorsements thereon.
- (4) Classify the mortgage as to whether it is—
- (i) without possession—
 - (a) in the form of clause (b), section 6, Land Alienation Act ;
 - (b) in some other form ; give points where it differs from above ;
 - (ii) with possession—
 - (a) in form of clause (a) of section 6, Alienation of Land Act,
 - (b) in form of clause (c) of section 6, Alienation of Land Act,
 - (c) without any condition for automatic redemption, with *bai-bilwafa* clause,
 - (d) as above without *bai-bilwafa* clause,
 - (e) any other form.

[Note.—Where the *bai-bilwafa* clause has been struck out by the Deputy Commissioner classify as (c).]

(5) In (c), (d) and (e) above, note what is the condition as to interest. Is the rent to be taken as interest on the whole amount of the consideration or on only a part ?

(6) In (c), (d) and (e) above, note the condition on which the mortgage may be redeemed.

(7) Trace the history of the mortgage as far back as you can.

Give particulars of—

- (i) previous deeds,
- (ii) consideration,
- (iii) area,
- (iv) amounts of principal and interest,
- (v) any payments towards redemption or reduction of the debt,
- (vi) purpose given for further borrowing.

(8) What changes have taken place in the area mortgaged during the period of the mortgage, such as increase of cultivated area, increase of *chahi* or *nahri* ?

(9) During the currency of the mortgage, note any change in the land revenue assessed on the area mortgaged.

(10) From the revenue records of the village estimate the value of the land mortgaged at the time of each quadrennial *Jamabandi*.

(11) (a) In mortgages with possession, note who has cultivated the land during the currency of the mortgage (as entered in successive *Jamabandis*).

(b) Note the rent as entered in successive *Jamabandis*.

(c) Attempt an estimate of the value of the rent paid in kind, based upon the Director of Land Records' outturns and Tahsil prices.

(12) If original mortgagee is alive and trustworthy information is available, ascertain from what source the mortgagee obtained the consideration money, e. g., whether he borrowed it from a money-lender, or saved it from his pay in civil or military employ, or from some other source.

(13) Is the mortgagee the real party advancing the money, or is he the agent of another party (*benám*); give such particulars as you may be able to obtain in case you believe the transaction is *benámi*. Note specially if there is any attempt at evasion of the Alienation of Land Act.

(14) Is there any evidence of a prior mortgage having been redeemed under the conditions of section 6, Alienation of Land Act, and of the same land having been re-mortgaged to the same mortgagee ?

If so, give such information as may be available that throws light on the effects of the Alienation of Land Act and attempts to evade it.

(15) From the information you have gathered, note whether the mortgage was for the benefit of the mortgagor, e. g., to enable him to improve his land or increase his income or was merely an abuse of credit, enabling him to meet unproductive expenditure or to secure debts incurred on unproductive expenditure. (Classify as an abuse of credit, every contract that was not directed at the economic improvement of the mortgagor.)

APPENDIX B.

Questionnaire for Mortgages.

PART II.—GENERAL QUESTIONS FOR THE ASSESSMENT CIRCLE
UNDER INVESTIGATION.

1. Classify existing mortgages into—
 - (a) executed prior to 8th June 1901 ;
 - (b) executed subsequent to this date ;
 Sub-divide these into (a. i) and (b. i) between members of what are now agricultural tribes ;
 - (a. ii) and (b. ii) between members of what are now agricultural tribes and others ; note if any statutory " agriculturists " are among the " others " ;
 - (a. iii) and (b. iii) between parties, neither of whom are members of what are now agricultural tribes.
2. Note in the above classification, the number of mortgages (a) secured by a registered deed, (b) secured by an unregistered deed, (c) not embodied in a deed.
3. Note in the above classification the total area mortgaged, uncultivated, cultivated *barani*, *chahi* and *nahri* ; note the number which include a share in the *shamilat*.
4. Note in the above classification the total consideration money entered in the deed or mutation register, and the total which you have now found to be due.
5. Note in the above classification, the distribution of mortgages by classes (Part I, Q. 4).
6. Summarise the information collected as to the *bai-bikwafa* clause (Part I, Q. 4), with reference to the classification in paragraph 1 above.
7. Summarise the information collected as to the conditions relating to interest (Part I, Q. 5) with reference to the classification in paragraph 1 above.
8. Summarise the information collected as to redemption (Part I, Q. 6).
9. Summarise the information obtained as to the history of mortgages (Part I, Q. 7).
10. Summarise the information obtained as to changes in the area mortgaged (Part I, Q. 8), in the land revenue assessed (Q. 9); and in the value (Q. 10).
11. Summarise the information as to cultivation and rent, giving such reference to the classification as may prove of value.

12. Is the mortgage money derived from non-agriculturist money-lenders, from agriculturist money-lenders or from savings from salaries or other earnings ? (Part I, Q. 12).
13. Discuss the information gathered as to the *benámi* transactions and evasions of the Alienation of Land Act. (Part I, Q. 13, 14).
14. Discuss the economic effects on the land-owners of the power to mortgage their land (Part I, Q. 15), encouragement of extravagance, encouragement of land improvement, etc.
15. Discuss the information you have secured bearing on the rise of mortgagors from amongst agricultural tribes, from the points of view of (i) number of such mortgagors at different dates; (ii) number of mortgages at different dates; (iii) consideration money advanced. Is there any evidence of a decline in mortgages; (iv) in favour of non-agricultural mortgagors; (v) by agricultural mortgagees ?
16. Note any general conclusions which the evidence leads you to make on the subject of mortgages in the area under investigation.

CORRIGENDA.

Page 36, Question 15 (Appendix B).

- 15.** Discuss the information you have secured bearing on the rise of *mortgages* from amongst agricultural tribes, from the points of view of (i) number of such *mortgages* at different dates ; (ii) number of mortgages at different dates ; (iii) consideration money advanced. Is there any evidence of a decline in mortgages, (iv) in favour of non-agricultural *mortgages* ; (v) by agricultural *mortgagors* ?

• APPENDIX C.

Questionnaire on Goats.

1. Give the number of goats in the village, classify by sex, and add details as to variety if there is any local variety recognised.
2. Give details of the owners, with caste, tribe, main occupation, religion and note which of them are—(a) owners of land in the village, (b) co-sharers in the *shamilat*, (c) tenants without proprietary right, (d) menials who do not cultivate as tenants, (e) other non-cultivators.
3. Who looks after the goats? Note the common custom in the village for night and day herding; give the age, sex and tribe or caste of the goat-herd.
4. Where the goat-herd is not a relative of the owner, give particulars of the remuneration he receives.
5. What are the goats fed on? Note how far they are fed on grain or other food other than leaves; on leaves on owner's private land, on leaves from *shamilat*, or from road-side trees, government lands, etc.
6. Are the goats confined or let loose to browse at will? What check is exercised over browsing?
7. Do goats live on food which other domestic animals do not touch, or do they compete with other domestic animals for food? Do they eat grass in competition with sheep or cattle?
8. How far is the cost of feeding met by payment in cash, manure, service, milk, etc., and how far is it free?
9. Is any grazing fee levied by the proprietors of the village? If so, give particulars. Is any grazing fee paid to any one else, such as Revenue Department, the Forest Department, Railway, Canal Department, District Board?
10. Note any other expense involved in the keeping of goats not included above.
11. What is done with the manure? Are goats folded on the land for manurial purposes? If so, what is the custom governing this practice? Is goat manure stacked separate from cow manure?
12. What is the local opinion as to the value of manure? Is it regarded as more powerful than cow manure?
13. Is any control exercised over covering so as to secure kidding at any special season? Give details.
14. How many kids does a female goat produce in its lifetime? Does she kid once a year or twice? Does she produce more than one kid at a time?
15. When are female goats slaughtered? At what age or after which lactation?
16. What is a normal yield of milk per lactation? Can you get accurate details as to yield per day at the beginning, middle and end of lactation? What is the period of lactation?

17. What is done with the milk ? Where is it sold and for what price ?
What is a normal value to put on the milk of one lactation ?
How often a day is the goat milked ?
18. Who are the chief consumers of goats' milk ? Does it replace or supplement cow's milk ? Is it drunk by those who cannot afford cow's milk ?
19. How much milk is left for the kid ? When is the kid removed from its mother ?
20. What differences are there in the uses to which the milk of goats and cows is put ? *e.g., ghi, lassi, etc.*
21. At what age are male and female goats slaughtered for meat ? What is a normal amount of meat per animal ? At what prices is it sold ?
22. Who are the chief consumers of goats meat ?
23. Is there any special occasion on which goats are slaughtered by Hindus and Mohammedans ? If so, how many animals are slaughtered in the village on such occasions ?
24. Is the village or tract under investigation self-supporting so far as goats are concerned, or are goats imported or sold ? Give details as to number, price, etc.
25. Give details as to local uses to which goats' hair, bones, horns, hides, are put.
26. Give details as to trade in the above, with prices obtained for the produce.
27. Is there any other income from goat-keeping not included above ? If so, give details.
28. If the profits from goat-keeping were taken into consideration at Settlement, give such remarks as the Settlement Officer may have made in the Village Note Books, Assessment Reports, etc.
29. Give, if available, figures for the number of goats in the village at different periods.
30. Give details of any nomad goat-keepers who visit the village.
31. Summarise any complaints you may hear, of damage done by goats, from (a) co-sharers in the village, (b) District Board Arboricultural Staff, (c) Forest Staff, (d) or others.
32. Is there any evidence that goats have denuded any area of trees ?
33. Is there any evidence that goats have served to reduce the amount of wood fuel in the area ?
34. Is there any evidence that goat-herds damage trees by using axes or other implements, and by cutting branches instead of lopping leaves ? Describe the implements used.
35. Can you test such evidence by an actual comparison between two areas, one in which there are a number of goats and one in which there are none ?
36. Where goats are not kept, can you discover any reason ?
37. Is any attempt made to improve the breed of goats, by selecting rams, or by any other method ?

**The Board of Economic Inquiry,
Punjab.**

RURAL SECTION PUBLICATION—6.

THE



RATES OF FOOD CONSUMPTION

BY

ZAMINDARS

IN THE

Tallagang Tahsil of the Attock District

BY

C. B. BARRY, M.A., I.C.S.,

SETTLEMENT OFFICER, ATTOCK.

Reprinted, with an Introduction by H. Calvert, B.Sc., C.I.E., I.C.S.,
from The Report on the Commutation Prices for the Settlement of
the Attock District.

[The Board of Economic Inquiry, Punjab, does not hold itself responsible for
any opinions expressed or conclusions reached by the writers.]

1925.

LAHORE:
PRINTED AT THE "CIVIL AND MILITARY GAZETTE" PRESS,
BY H. A. SNEEDLEY, MANAGER.

1925.

CONTENTS.

	Page.
Introduction	i—ix
Rates of Food Consumption by Zamindars in the Tallagang Tahsil	1—14
Appendix A.—Glossary of Vernacular Terms used in the text	15
Appendix B.—Relative Food Values of Bajra, Wheat, Maize, Barley and Gram	16

INTRODUCTION.

In the course of official duties, the following note by Mr. C. B. Barry, M.A., I.C.S., came under my notice, and as it seemed too valuable to be lost in a file which few would ever see, I secured the sanction of the Financial Commissioner, and Chairman, Board of Economic Inquiry, to reprint it as one of the publications of the Board. It was prepared by Mr. Barry, Settlement Officer of Attock District, in order to enable him to check the estimates for outturns of various food crops. Exports and imports could be ascertained from the railway authorities, and if internal consumption could be calculated, it should be possible to check the estimates of outturn on an ascertained acreage.

Before issuing the note, it seemed desirable to add to it as much further information as could be obtained from authorities with varying experience of food consumption; I accordingly wrote to them and the thanks of all students of Economics and especially of the Board of Economic Inquiry are due to them for the ready response which they made. The value of this publication has been much enhanced by the information so kindly supplied.

SIR GANGA RAM has dealt with the question already in his book "The Agricultural Problem of India" and he again returned to it in his lecture on "Production *versus* Reduction" delivered at Simla in July 1923. His estimate of food consumption by the general population is reproduced here. He adds eight ounces a day to this for the adult male rural population.

Age.	<i>Quantity of food per head per day.</i>
0 to 1 year	0 oz.
1 to 2 years	1 "
2 to 3 "	2 "
3 to 4 "	3 "
4 to 5 "	4 "
5 to 10 "	6 "
10 to 15 "	8 "
15 to 50 "	16 "
Above 50 "	12 "

Sir Ganga Ram does not accept Mr. Barry's figures: "For a boy of nine, the figures are 8·1 *chhataks* which is equal to 16·2 ounces. It is impossible for a boy of nine to consume half a seer of food; but I am doubtful as to the meaning of the word 'food.' Is it the *roti* or the grain in its raw form? Because one seer of grain makes two seers of *roti*. In my calculations it is grain which is calculated and not the food in its prepared form. Moreover the urban and rural rate must be different. The urban rate cannot possibly be more than 75 per cent. of the rural rate."

COLONEL LINDSAY SMITH, I. A. S. C., Deputy Director of Supplies and Transport, Northern Command, has kindly sent me the peace and field service scales for Indian troops, together with a statement showing the food value of the peace ration. He points out that as Mr. Barry has confined himself to grain only, a fair comparison is not possible: "assuming that in the case of civilians the *atta* ration is not supplemented to any great extent by other articles, I consider that the allowance of 12 *chhataks* of *atta* is too small, as the average day's work of the civilian, especially in the case of the field labourer or artisan is probably harder than that of the sepoy in cantonments. On the other hand, should the *atta* ration be supplemented as in the case of the sepoy, then 12 *chhataks* of *atta* is considered ample, as though the civilian does harder work, there is a shrewd suspicion, though this has never been definitely ascertained, that the sepoy saves a little of his ration. As regards the field service ration, the sepoy is said to eat the whole of this, but then his work is very much more arduous than that of the civilian."

The two scales and the food value of the peace scale are here given:—

PEACE SCALE.

I. T. RATIONS.

Potatoes	..	2 ozs.
Salt	..	$\frac{1}{2}$ oz.
<i>Atta</i>	..	1 $\frac{1}{2}$ lbs.
<i>Dal</i>	..	3 ozs.
<i>Ghi</i>	..	2 ozs. or 3 ozs. meat in lieu.
Sugar	..	1 $\frac{1}{2}$ „
Firewood	..	3 lbs.

A monthly allowance of Re. 0-10-0 is granted in addition for the purchase of vegetables and condiments.

FIELD SERVICE SCALE.

Meat	..	8 ozs.
Milk	..	2 „
Onions	..	2 „
Potatoes	..	2 „
Sugar	..	2 $\frac{1}{2}$ „
Vegetables (other than potatoes and onions)	..	1 lb.
<i>Atta</i>	..	1 $\frac{1}{2}$ lbs.
<i>Dal</i>	..	3 ozs.
<i>Ghi</i>	..	2 „ + 2 ozs. thrice weekly in winter.

Salt and various condiments have been omitted from this ration.

(Issued with D. M. S. in India's No. 15333/II/I (D. M. S. 5), dated the 16th April 1925).

**Hygiene
Rations.**

PEACE SCALE OF RATIONS, INDIAN TROOPS.

Army Tables, Miscellaneous Services, 1921, Part I, Section III, Table 15.

Item.	Protein.	Fat.	Carbo- hydrate.	VITAMIN VALUES.			Calories.	Cash value in annas. Average for all India based on prices cover- ing a period of 12 months.	REMARKS.
				Vitamin A.	Vitamin B.	Vitamin C.			
<i>Atta</i> 24 oz. ..	Grm. 75·4	Grm. 8·8	Grm. 517·8	+	++	0	2,514	1·913	(a) When desired fresh meat in lieu of one oz. <i>ghi</i> may be drawn on the scale fixed annually and published in A. I. (I). For 1925-26, the scale fixed is as follows:— Beef 4 oz. or mutton 3 oz. in lieu of 1 oz. of <i>ghi</i> (vide A. I. (I) 74 of 1925. (b) A. I. (I) 66 of 1925. (c) In lieu of 2 oz. potatoes Indian troops may draw 1 oz. potatoes, and fresh vegetables, if procurable locally, up to the value of the remaining 1 oz. of the potato ration (A. I. (I) 1254 of 1924.
or Rice ration polished 24 „ ..	40·2	2·7	546·3	0	0	0	2,430	2·580	
<i>Dal</i> 3 „ ..	17·1	0·3	54·3	..	+++	0	296	·203	
<i>Ghi</i> (a) 2 „ ..	0·1	47·1	..	+++	..	..	438	2·150
Sugar (b) 1½ „ ..	..	..	42·5	..	..	..	171	·348
Potatoes (c) 2 „ ..	1·1	..	11·2	0	+	+	51	·150	
Salt ½ „ ..	..	..	..	..	..	..	..	·031
Firewood 3 lbs. ..	..	..	..	..	..	..	..	·480
Atta Eaters' Total ..	93·7	56·2	625·8	..	..	..	3,470	5·275
Rice Eaters' Total ..	58·5	50·1	654·3	..	..	..	3,386	5·942

NOTE.—Whenever an outbreak of beri-beri occurs or is anticipated, marmite may be issued at the scale of ½ oz. per man twice weekly, if and when considered absolutely necessary by the local medical authorities (A. I. (I) 1149 of 1924).

REMARKS.

This ration is rich in vitamin B (*anti-neuritic*) but poor in vitamin C (*anti-scorbutic*). The only protection against scurvy in this ration is in the 2 oz. of potato, and even this is liable to be destroyed in cooking: the substitutes authorised in notes (a) and (c) are valuable in this connection.

(Sd.) J. MACKENZIE, **LIEUT.-COLONEL,**
for Director, Medical Services in India.

LIEUTENANT-COLONEL A. W. GREIG, I.M.S., Inspector-General of Prisons, Punjab, writes as follows :—

“ The matter has been gone into so thoroughly by the author that there seems little to criticize. A few remarks on actual jail conditions as regards the diet scale may, however, not be out of place. The existing dietary scale is the outcome of prolonged experience and has proved adequate in practice ; the statistics published in the Annual Jail Report consistently show that the majority of convicts either maintain their weights or actually gain in weight in jails of the Province, and that the statistics of sickness and mortality compare most favourably with those of the Province. In my experience, complaints that the ration is deficient in quantity are uncommon, while, on the other hand, the food left uneaten after the meal parades is not great. The Medical Officer of a Jail has full discretion to alter the diet in particular instances where there is necessity (Punjab Jail Manual, paragraphs 106, 918), but alteration of the scale requires the sanction of the Local Government (Punjab Jail Manual, paragraph 916).

In the note, it is stated that the jail ration for prisoners doing hard labour, for convicts sentenced to simple imprisonment who elect to labour voluntarily, and for under-trials is 12 *chhataks* per diem, and that this is partly wheat and partly gram. This, of course, is for adult males, over 16 years of age, and it may be mentioned that, ordinarily, these 2 *chhataks* of gram are issued in the form of “ parched gram.” The mixture of wheat and gram flour is, at present, fixed in the ratio of two-thirds of the former and one-third of the latter. The daily ration of 1½ *chhataks* of *dal* should be borne in mind, although this item of diet is not taken into account in the note ; it is also noteworthy that different kinds of *dals* (*urd, mung, moth, arhar, rawan, and masur*) are issued so as to ensure a variety.

There is one point, not germane to the jail point of view, which I venture to criticize. It is stated in the note that the zamindar on days when he is not doing hard work probably eats less, and also that the shopkeeper, sitting at his shop all day and taking very little exercise, eats a good deal less than either the zamindar, when on hard work, the *lohar* and the *tarkhan* (i. e., 10 *chhataks* as compared with 14 *chhataks*). Analogy with Western races inclines me to the belief that this assumption cannot be pressed too far. All of us can recall many instances of sedentary individuals whose appetite exceeds the normal. The Indian,—like most other people—takes great pleasure in his eating, and I cannot but think that the physical exertion factor is of comparatively minor importance.

I suggest that what can be afforded is of greater importance. But, in my opinion, body weight, state of health, financial considerations, and, above all, individual idiosyncrasy are the chief determinants of the amount of food consumed. This is merely a suggestion and may be at variance with the facts as they are in the tahsil investigated by the author of the note, but the matter is one, perhaps, deserving of further enquiry."

Further light is thrown on the problem by the opinion of CAPTAIN C. J. LODGE PATCH, M.C., I.M.S., Medical Superintendent of the Punjab Mental Hospital. He thinks that the amount of grain estimated to be consumed by non-zamindars under the age of 15 is low. People differ in their opinions as to when a youth begins to eat a full ration, and he thinks Mr. Barry's assumption of fifteen years is somewhat arbitrary. He proceeds: "In our experience, within limits, the Indian eats as much as you put before him. This, I think, is why the various dietaries mentioned in Mr. Barry's note differ so much. To take a case from another of the publications by the Punjab Board of Economic Inquiry. According to Mrs. Caleb's investigations among the lower paid clerks, there are enormous variations in the different articles of food-stuffs. The personal factor is so evident in each individual family that a house-to-house enquiry is useful mainly in indicating how much an individual gets into debt or how much he saves on his income.

I give you herewith the scale of diet for the average patient in this institution:—

<i>Atta</i>	.. 10 <i>chhataks</i>	{ 9 as bread in 4 <i>chapat- tis.</i> 1 as <i>dalia.</i>
Milk	.. 1 "	
<i>Gur</i>	.. $\frac{1}{4}$ "	{ To be given with the <i>dalia.</i> (in actual practice 5 or 6.)
Vegetables	.. 4 "	
<i>Dal</i>	.. $1\frac{1}{2}$ "	
Antiscorbutics	.. $\frac{1}{8}$ "	
Salt	.. $\frac{1}{4}$ "	
Condiments	.. $\frac{1}{12}$ "	{ Coriander. Chillies. Garlic. Turmeric.
<i>Ghi</i>	.. $\frac{1}{8}$ "	{ To be added " " " winter } to the <i>dal.</i>
"	.. $\frac{1}{2}$ "	
3 times a week, meat	.. 2 "	{ given with vegetables.
4 times a week, oil	.. $\frac{1}{10}$ "	
Firewood	.. 6 "	per man.

Some say it is less than they are accustomed to ; but there are extremely few complaints, and the very great majority express themselves as satisfied with it ; from which one would conclude that it is more than they are accustomed to eat normally. It must be remembered, however, that over-feeding is necessary in the treatment of the insane, so these amounts of food-stuffs can hardly be taken as the standard under normal conditions throughout the Punjab. The dietary was prescribed some 30 years ago, when the standard of living was lower than it is to-day, and I think that, if anything, it is lower than it should be in a mental hospital. However, a very large percentage of the inmates do no work at all and the rest do not do anything like as much work as the average zamindar, so there is not the same necessity for them to be fed on the same scale, except for the therapeutic reasons I have stated in this paragraph. There are not more than 2 per cent. of the total inmates under 15 years, and less than 2 per cent. over 60 years. I append in the following table the percentage of patients belonging to the various diverse occupations, from which it will be possible to estimate how many come under the zamindar or working class and how many do not—

Artizans	.. 3	Beggars	.. 3	Cultivators	..15
Domestic servants	3	Labourers	.. 9'5	Land owners..	1
Military	.. 6	Priests	.. 1	Professional	8'5
Public servants	.. 9	Sadhus	.. 1	Shopkeepers	..10
Teachers	.. 4	No occupation	..13	Unknown	.. 13

100

It must be borne in mind that many, if not most, of the non-working class of inmates are wealthy individuals: *bantias*, money-lenders, etc., who are accustomed to doing themselves pretty well, and who are well-enough off to be able to afford to do so, and they probably live on a higher scale than the hard working and humble zamindar. Mr. Barry has obviously based his remark that the most reliable estimates are those obtained from the Reformatory and the schools, because such institutions have a fixed scale of rations. The only rough and ready test that can be applied to ascertain whether the scale is sufficient or not, is to note whether the physical condition of the individuals who are being fed on the scale in question is kept up to standard or not, *i. e.*, in the case of children under 15 whether they continue to gain steadily in weight or not. Or, in the case of adults, *e. g.*, in jails, whether they maintain their normal weight or lose in weight from month to month."

Captain Lodge Patch makes the very interesting suggestion that an attempt should be made to discover what the diet should be, rather than what it is. He would like to take some educational institution, note the actual food consumed and have the students weighed regularly. It would not be a difficult task. If the students begin to lose weight, there would be ground for believing that the diet was defective. This, however, as he points out is more a sociological problem than one for economists; but its importance justifies its mention here.

MAJOR T. A. HUGHES, M.A., M.D., I.M.S., Professor of Physiology at the King Edward Medical College, Lahore, has noted on the physiological aspect of Mr. Barry's estimate.

He writes: "I have gone through Mr. Barry's note with great interest and have calculated the caloric equivalents of the daily food rates. I have taken from an American Text Book of Physiology (Howell, 1924) the composition of wheat flour as 13·8 per cent. protein, 1·9 per cent. fat, and 71·9 per cent. carbohydrate. I have not been able to find figures for the other grains and so have taken the whole lot as wheat. On these assumptions 10 *chhataks* (20 ozs.) per day contain Carbohydrate 406 grams, protein 78 grams, fat 10·6 grams, with an energy value of 2,032 large calories. This is Mr. Barry's grain diet for an adult non-zamindar male. The figures for an adult male zamindar are one-third greater, *i. e.*—

Carbohydrate.	Protein.	Fat.	Calories.
541·3 grams.	104 grams.	14·13 grams.	2,708·5

Other figures can be similarly worked out. First as regards the total energy. The 'basal requirement diet' for an adult is about 15 calories per lb. body weight. This is the energy required to maintain essential vital activities alone, *e. g.*, the calories needed by a person fasting and lying quietly in bed. In order that muscular work may be performed and weight maintained additional calories will be required to the extent of 10—20 per cent. Allowing 10 per cent. for moderate work, 20 ozs. wheat per day would be sufficient for a man weighing 9 stone, and 26·6 ozs. (13·3 *chhataks*) would suffice for a man weighing 11 stone and allow nearly 20 per cent. for work. For heavier men doing hard work more energy would of course be required. Some diets yield 3,500—4,000 calories. I presume the population under reference consume other articles of diet and so obtain non-cereal energy, but from the figures given by Mr. Barry little extra is needed in many cases.

“As regards composition of the cereal diet, a minimum of protein is essential in every diet—about $\frac{1}{2}$ - $\frac{3}{4}$ gram. per lb. body weight. It is seen that the protein element is, therefore, ample, especially as it is probably supplemented in most cases by meat. In fact these zamindars would seem to consume quantities of protein comparable to the amounts consumed by white races, as against the small amount of protein in the diet of the Bengali for instance. The fat element is very small in amount but is most likely supplemented by *ghi* which has also a high energy yield.

“With regard to the average food rate for a population, it is usually stated that the amount per head on an average European urban community is 75 times that of an adult working man. This is almost exactly what Mr. Barry works out his average to be for non-zamindars but more than his average for zamindars.”

MR. N. C. AHUJA, one of the Investigators under the Board working in Tahsil Gujar Khan of Rawalpindi District, sends the following :—

Comparison of the consumption of wheat flour (atta) of a family in Changa with the consumption calculated at the rate of Mr. Barry's and Mr. Kitchen's assumptions.

No.	Members of the family with their ages.	On Mr. Barry's assumption (chhataks per day).		On Mr. Kitchen's assumption (chhataks per day).	Actual as weighed (chhataks per day).
1	Ch. Mohd. Ji, 60 years	12·3 (for 60 to 64 years).	13·3 (full ration of a man).	12·8 (males of 10 and over).	
2	Mrs. Mohd. Ji, 45 years	11·5	11·5	11·5	
3	Sajawal, s/o Mohd. Ji, 28 years.	13·3	13·3	12·8	For morning and evening =48.
4	Mrs. Sajawal, 25 years	11·5	11·5	11·5	
5	1 daughter of Sajawal, 7 or 8 years.	6·2 (for 7 years.)	7·2 (for 8 years.)	6·4 (all under 10).	For night =44
6	1 son of Sajawal, 6 months.	..	..	..
7	Ghulam Sarwar, s/o Mohd. Ji, 18 years (a teacher at school).	10·0 (for non-cultivator).	13·3 (for cultivator).	12·8	
8	1 daughter of Mohd. Ji, 9 years.	8·1	8·1	6·4	
9	Mother of Mohd. Ji, 90 years.	9·0 (at the rate of 5·5 mds. per annum).	9·7 (60 and over).	9·7	
	Total ..	81·9	87·9	83·9	92

“So actual consumption of this particular family was 92 *chhataks* of *atta*. Of course, this excludes *lassi*, pickles (*achhar*) and raw onions for the morning meal and pulse (*dal*) for the night meal. This is more near to 87.9 or about 88 *chhataks* of consumption on Mr. Barry’s assumption of maximum consumption.

In Changa the grains which are eaten are arranged according to the merit of consumption as follows :—

- | | | |
|-------------|--|--|
| A.—As bread | $\left\{ \begin{array}{l} (a) \text{ Wheat.} \\ (b) \text{ Bajra.} \\ (c) \text{ Maize.} \\ (d) \left\{ \begin{array}{l} \text{Barley.} \\ \text{(Jowar.)} \end{array} \right\} \\ (e) \left\{ \begin{array}{l} \text{Moth.} \\ \text{Gram.} \end{array} \right\} \end{array} \right.$ | $\left. \vphantom{\left\{ \begin{array}{l} (a) \text{ Wheat.} \\ (b) \text{ Bajra.} \\ (c) \text{ Maize.} \\ (d) \left\{ \begin{array}{l} \text{Barley.} \\ \text{(Jowar.)} \end{array} \right\} \\ (e) \left\{ \begin{array}{l} \text{Moth.} \\ \text{Gram.} \end{array} \right\} \end{array} \right.} \right\} \text{“Missi roti” (containing salt, pepper and other condiments) which is used occasionally.}$ |
| B.—As pulse | $\left\{ \begin{array}{l} (a) \text{ Massar.} \\ (b) \text{ Mash.} \\ (c) \text{ Gram.} \end{array} \right.$ | $(\text{Mung is sold generally and cheaper gram is bought}).$ |

I would like to differ from Mr. Barry if he has taken *bajra* as equivalent to wheat. *Bajra* is more sustaining though less palatable than wheat. To make *bajra* palatable *lassi* (milk curd) is required with it. Wheat is no doubt a better sustainer than maize but maize is more fattening than wheat.”

Finally it remains to explain that Mr. Barry uses the term “zamindar” loosely for any one engaged in agriculture, and not only for owners of land.

THE RATES OF FOOD CONSUMPTION BY ZAMINDARS IN THE TALLAGANG TAHSIL OF THE ATTOCK DISTRICT.

For the purpose of studying the economic position of a tahsil or an assessment circle it is of considerable importance to be able to estimate fairly accurately the amount of food-stuffs consumed by the population. The rates per head assumed in the past differ so widely that they can hardly have been based on anything more than a very summary enquiry. Thus in his Assessment Report on the Attock Tahsil (Appendix VII) Mr. Butler noted that his instructions were to assume an all-round consumption per head of 7 maunds per annum. This was the rate assumed by Mr. Purser,* in the Jullundur Settlement in 1883, but the Settlement Commissioner, Colonel Wace, considered it too high. He worked out a rough figure based on the number of men, women and children in the tahsil which came to 5·93 maunds per annum (*vide* paragraph 30 of his Review). Mr. Kitchin † adopted a similar method but allowed 24 seers per mensem for a man, 20 seers for a woman and 12 seers for a child under 10. This gave a rate varying from 5·75 maunds per head in the Gujar Khan Tahsil to 5·82 in Fatehjang. It appears also from the calculations that this estimate included *dal*, e. g., *mung*, *moth*, etc.

2. In the Tallagang Tahsil the grains which are eaten are wheat, *bajra*, gram and barley ‡. The average harvested areas of these four at last settlement shown in the form of percentages on the total annual harvested area were as follows :—

Wheat	..	..	..	51
Barley	..	..	..	1
Gram	..	..	..	14
<i>Bajra</i>	..	..	..	13
				—
Total	..	..	..	79
				—

Jowar represented about 4·5 per cent., but three-fourths of this was *chari*. I have not taken this into account as the amount

* Paragraph 41, Assessment Report, Jullundur Tahsil.

† Paragraph 52 of Mr. Kitchin's Assessment Report of the Gujar Khan Tahsil and paragraph 63 of his report on the Pindigheb and Fatehjang Tahsils.

‡ Paragraph 13 and Appendix D of Mr. Talbot's Assessment Report of the Chakwal and Tallagang Tahsils.

is very small and will about balance the small amount of gram the zamindar gives occasionally to his cattle. *Dal* is made of *mung* and *moth* and sometimes a little *mash*. The zamindar does not grow much of these crops and uses them mostly for fodder, practically none being sold. The calculations I have made thus refer only to the four food-grains mentioned above which he sometimes sells. I have taken *bajra* as equivalent to wheat. According to the Jail Manual (para. 921) 12 *chhataks** of *bajra* are equivalent to 10 *chhataks* of wheat. I understand this is based on the relative food values of these two grains, but the zamindars in this district all say that *bajra* is actually more sustaining than wheat. This was also the view taken by Mr. Kitchin.† Gram is usually eaten either with *dal* or as a mixture with wheat flour. The Jail Manual scale gives the mixture of wheat and gram as equivalent to wheat. This I have followed. The amount of barley grown is so small that I have taken it as equivalent to wheat.

3. It will be necessary to estimate the rates of consumption for men, women and children separately. I will first take the case of men. Mr. Kitchin's estimate which works out at approximately 12·8 *chhataks* per diem or 7·3 maunds per annum has already been referred to. This was for all males of 10 and over. Colonel Wace's rate was 14 *chhataks* per diem for males between 10 and 60, and 8 *chhataks* for persons of both sexes of 60 and over. The army ration is 12 *chhataks* per diem in addition to *ghee* and *dal*. In the Territorial Battalion at Campbellpur the men also pay annas 10 per mensem each to the mess out of which *masala* and sometimes a little meat is provided. The ordinary sepoy finds this ration sufficient but I am informed that the zamindar usually eats more than this. The jail ration for prisoners doing hard labour, convicts doing simple imprisonment but labouring voluntarily and under trials is 12 *chhataks* per diem. This ration is partly wheat and partly gram. When maize and barley are given the ration is larger. Male convicts doing simple imprisonment and civil prisoners maintained at Government expense get a ration of 9 *chhataks* per diem. The ration in extra-mural labour Jails is 12 *chhataks* of flour plus 4 *chhataks* of meat and men doing excavation work get 14½ *chhataks* of flour in addition to meat. I also made enquiries from the Board of Economic Inquiry, Panjab, and figures for consumption by different families were supplied by Professor Stewart of the Agricultural College at Lyallpur. He put the average consumption of an adult male at 12 *chhataks* of

* A *chhatak* is the 1/16th part of a *seer* (2 lbs.), and is thus roughly equivalent to 2 ozs.
 † Paragraph 52 of his Assessment Report on the Gujar Khan Tahsil.

wheat flour per diem. Farm beldars, he says, consume $7\frac{1}{2}$ maunds per annum which works out at about 13·3 *chhataks* per diem. An Indian Officer in the Imperial Police Service informed me that the ration he allowed his cook (aged 35) was 12 *chhataks* per diem while his orderly ate anything from 12 to 16. I have tabulated these figures for convenience below :—

Authority.	Grain ration for men.		
	Chhataks per diem.	Maunds per Annum.	Lbs. per annum.
Mr. Kitohin	12·8 (Males of 10 and over).	7·3	598·6
Colonel Wace	14 (Males between 10 and 60).	7·98	654·36
Army ration	12	6·84	560·88
<i>Jail rations.</i>			
(a) Convicts doing hard labour, etc. ..	12	6·84	560·88
(b) Convicts doing simple imprisonment	9	5·13	420·66
(c) Extra-mural labour jails ..	12 (Plus 4 chhataks of meat).	6·84 (Plus meat).	560·88 (Plus meat).
(d) Men doing excavation work ..	$14\frac{1}{2}$ (Plus meat).	8·27 (Plus meat).	678·14 (Plus meat).
<i>Professor Stewart.</i>			
(a) Average adult male	12	6·84	560·88
(b) Farm beldar	13·3	7·5	615
(c) Labourer	12·3	7	574
<i>Indian Police Officer.</i>			
(a) Cook	12	6·84	560·88
(b) Orderly	14	7·98	654·36

4. The ordinary zamindar works probably about 180 days in the year. When he is ploughing and cutting and threshing the harvest he does very long hours and probably eats 14 *chhataks* per diem or more. The other days when he is doing very little he probably eats less than 12 *chhataks*. From other enquiries I have made and from a consideration of the above figures I think a fair average rate will be $7\frac{1}{2}$ maunds per annum, *i. e.*, about 13·3 *chhataks* per diem for zamindars between the ages of 15 and 60 inclusive. This should allow for a certain amount of wastage. After the age of 60 a man begins to eat less. I have discussed this question

with a senior officer of the I. M. S. and he suggested the following figures for the older men :—

<i>Age.</i>	<i>Annual consumption of grain.</i>	
	Maunds.	
60—64 inclusive 7
65—79 „ 6·5
70 and over 6

Say, 6·5 maunds as an all-round rate for all men of 60 and over.

5. We will next consider the case of women. An officer of the R. A. M. C. worked out some figures for me based on information contained in certain physiological books. His results showed that a woman normally eats about 10 per cent. less than a man. For a zamindar's wife this would give a rate of 6·75 maunds per annum. The rate assumed by Mr. Kitchin* for women of 10 and over was 20 seers per month or 6 maunds per annum. Colonel Wace's rate† works out at 6·07 maunds per annum for women between the ages of 10 and 60. The jail ration for a female prisoner is 9 *chhataks* per diem, *i. e.*, 5·13 maunds per annum, but nursing mothers get 2 *chhataks* of flour extra. This gives a rate of 6·27 maunds per annum. The Police Officer referred to above informed me that he allowed a ration of 8 *chhataks* per diem to one of his female servants aged 50 and 12 *chhataks* to another aged 40. Taking the average as 10 *chhataks* this would give a rate of 5·7 maunds per annum. The jail ration is probably rather less than what zamindars' wives consume. In the Tallangang Tahsil the women work a good deal in the fields, especially at harvest time, and in many of the villages they have to bring water from long distances for drinking and cooking. I think a fair rate for women of the zamindar class between the ages of 15 and 50 inclusive will be 6·5 maunds per annum. After 50 a woman begins to eat less as she ages sooner than a man, so from 50 to 59 inclusive I would allow 6 maunds, and for women of 60 and over 5·5 maunds.

6. The case of children is a good deal more difficult and it is much harder to obtain any reliable figures, especially in the case of younger children. Zamindars' children below the age of 3 eat practically no solid food. I have therefore neglected them. As regards children of 3 and over, I have made enquiries from various sources and the estimates obtained are as follows :—

The Lady Superintendent of the Preparatory School for the Aitchison College at Lahore estimated that the boys of ages

* *Ibid* paragraph 25.

† Paragraph 30 of Review.

between 8 and 10 eat 9 *chhataks* of *ata* a day, apart from *ghee* and *dal*. Colonel Wace's estimate for children of 5 to 9 inclusive was 8 *chhataks*. The R. A. M. C. Officer referred to above gave me as his opinion that a child of 10 would eat half the ration of a woman. This works out at about $5\frac{3}{4}$ *chhataks* per diem which seems to me to be too low. At 14 he says a boy would eat the same as a woman, while at 15 he would eat a full ration. The Indian Police Officer referred to above allows 8 *chhataks* for each of two girls, one of whom is aged 11 and the other 14, while for two small children aged 4 and 6 respectively he allows 4 *chhataks* each. Mr. Kitchin's allowance was 6.4 *chhataks* per diem as an all-round rate for all children under 10. This is obviously too high as the number under 3 is a large proportion of the whole. A Muhammadan member of the Provincial Civil Service gave me the following figures based on actual experiments with 3 of his children :—

Age.		Daily consumption of grain.		
		Chhataks.		
(1)	7	..	..	6
(2)	9	..	..	7
(3)	11	..	..	7

(No. 3 was small for his age and about the same size as No. 2).

7. Some valuable figures were supplied by the Superintendent of the Reformatory Institution, Delhi. There are two scales in his Institution. The senior scale which is for boys of 15 and over is 12 *chhataks* of wheat and gram per diem. The junior scale for all boys under 15 is 9 *chhataks* per diem. At the time of writing the numbers of boys of the different ages were as follows :—

Ages.		Number.	
Between	12 and 13	..	.. 15
„	13 and 14	..	.. 13
„	14 and 15	..	.. 20
„	15 and 16	..	.. 27
„	16 and 17	..	.. 19
„	17 and 18	..	.. 12

In practice he says the bread ration for boys of 15 and over is found to be somewhat insufficient, but the smaller boys do not consume all their bread.

8. I wrote to the Inspector-General of Civil Hospitals and he obtained the following estimate from the Professor of Hygiene, King Edward Medical College, Lahore :—

<i>Age of child (Zamindar).</i>			<i>Proportion of full ration eaten.</i>
3—6 years	..	..	$\frac{1}{4}$ to $\frac{1}{2}$
6—9 ..	..	..	$\frac{1}{2}$
9—12 ..	..	..	$\frac{1}{2}$ to $\frac{3}{4}$
12—16 ..	..	..	$\frac{3}{4}$ to full.

Thus taking a full ration of a zamindar as 13·3 *chhataks* per diem, children of 3 to 6 would eat 3·3 to 6·6 *chhataks* per diem, children of between 6 and 9 would eat 6·6 *chhataks*, those of 9 to 12, 6·6 to 9·9 *chhataks* and those between 12 and 16, 9·9 *chhataks* to 13·3 *chhataks*. I have also made enquiries from the District Inspector of Schools, Attock District, in regard to the food consumption in the Boarding Houses in the District. The usual practice appears to be for each boy to provide 10 *chhataks* of *ata* per diem. Out of this the cook is also fed. If there is one cook for a dozen boys this would give a ration of between 9 and 10 *chhataks* per boy. In some of the Boarding Houses, *e. g.*, Tallagang, 9 *chhataks* per diem is the rate. About half the boys in this Boarding House are under 15 and about half over. The District Inspector of Schools of the Sheikhpura District estimated that the average rate for school boys was 8 *chhataks* per diem, boys of 16 and over eating 10 *chhataks* and those under 12, 6 *chhataks*. This is probably a rather low estimate. An Assistant District Inspector estimated that boys of between 12 and 13 eat 8 *chhataks* per diem. All agreed that zamindars' children working in the fields would eat a good deal more than schoolboys living in a Boarding House. One put the difference at 25 per cent., which seems a fair estimate.

9. The figures obtained from these various sources are tabulated below :—

Source of information.	Age of children.	GRAIN RATION.		
		Chhataks per diem.	Maunds per annum.	Lbs. per annum.
Preparatory School for Aitchison College, Lahore.	8—10	9	5·13	420·66
Colonel Wace	5—9 inclusive	8	4·56	373·92
R. A. M. C. Officer, Campbellpur.	10	5·75 (Half a woman's ration).	3·28	268·96
" " "	14	11·5 (Equal to woman's ration).	6·56	537·92
Mr. Kitchin's Assessment Reports.	{ All under } 10	6·4	3·65	299·3
Indian Police Officer ..	{ 11 } { 14 }	8	4·56	373·92
" " " ..	{ 6 } { 4 }	4	2·28	186·96
Provincial Service Officer ..	7	6	3·42	280·44
" " " ..	9	7	4	328
" " " ..	11	7	4	328
Delhi Reformatory Institution	{ 15 of 12 } { 13 of 13 } { 20 of 14 }	8 to 9	4·56 to 5·13	373·92 to 420·66
Professor of Hygiene, Lahore	{ 3—6 } { 6—9 } { 9—12 } { 12—16 }	Zamindars. { 3·3 to 6·6 } 6·6 { 6·6 to 9·9 } { 9·9 to 13·3 }	{ 1·87 to 3·75 } 3·75 { 3·75 to 5·62 } { 5·62 to 7·59 }	{ 153·34 to 307·5 } 307·5 { 307·5 to 460·84 } { 460·84 to 622·38 }
Various School Boarding Houses	11—18	9 to 10	5·13 to 5·7	420·66 to 467·4

10. In the Tallagang Tahsil the zamindar's children help him a good deal in his work. From the age of about 6 or 7 they are sent out to look after the goats and sheep. After that the older they grow the more work they have to do and at about 14 or 15 they help in the ploughing. It is probable that, at any rate from about 7 or 8 onwards, they eat 25 per cent. more than children of the same age who do not work in the fields. The estimates in paragraph 9 which I consider most reliable are those

of the Superintendent of the Delhi Reformatory Institution and the reports from the Educational authorities. These both refer to boys at school. I have therefore made out first a scale for non-zamindars, *i. e.*, children who are not working at agriculture, and deduced from this a second scale by making an addition which, from the age of 9 onwards, amounts to 25 per cent. From 15 a boy or girl eats the same as an adult. The two scales are shown below. I have also plotted them on squared paper (*vide* diagram attached).

Daily ration of grain in chhataks eaten by children of different ages.

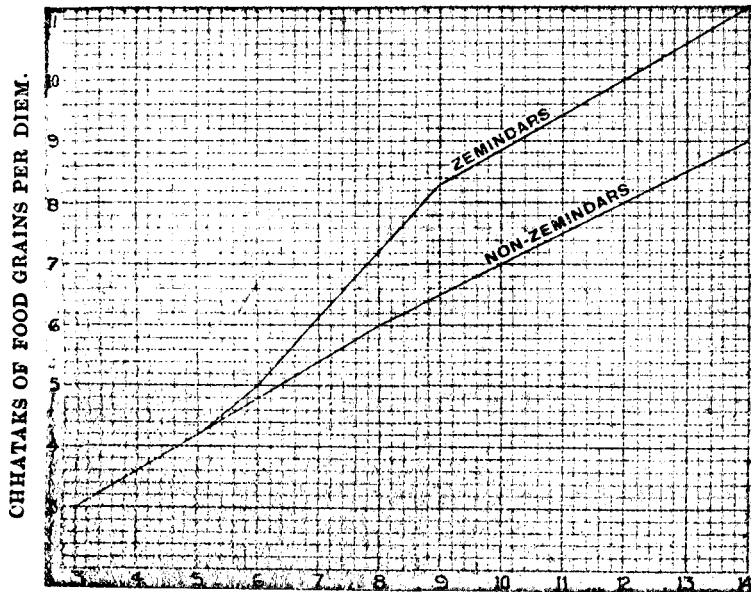
Age.	Non-zamindar.	Zamindars.	Difference.	Column (3) in maunds per annum.	Column (3) in lbs. per annum.
(1)	(2)	(3)	(4)	(5)	(6)
3	3	3	..	1·71	140·22
4	3·6	3·6	..	2·05	168·1
5	4·2	4·2	..	2·4	196·8
6	4·8	5	·2	2·85	233·7
7	5·4	6·2	·8	3·54	290·28
8	6	7·2	1·2	4·1	336·2
9	6·5	8·1	1·6	4·62	378·84
10	7	8·8	1·8	5·01	410·8
11	7·5	9·4	1·9	5·36	439·52
12	8	10	2	5·7	467·4
13	8·5	10·6	2·1	6·04	495·28
14	9	11·2	2·2	6·39	523·98

(N.B.—The first entry relates to children of all ages between 3 and 4; similarly for the others).

11. Having now arrived at an estimate of the rates of consumption of food-grains of men, women and children of different ages we are in a position to calculate with the help of the Census Tables an all-round rate of consumption per head of population. The tables do not give details by ages for each tahsil separately. I have therefore had to take the figures for the whole District. The Census of 1921 was taken towards the end of March and owing to the bad harvest of that year large numbers of people had migrated in search of work. Those who went appear to have been mainly the men in the prime of life who could earn something by labour, for the tables show that out of 1,000 head of population in 1921 there were only 137 men between

Graphs showing the Rates of Consumption of Food Grains by Children of Different Ages.

(N.B.—The ordinate at 3 represents the average consumption of all children between the ages of 3 and 4, and so on.)



AGES OF CHILDREN IN YEARS.

the ages of 20 and 40 as against 153 in 1911. I have therefore based my calculations on the 1911 figures as they seem to represent better the normal position of the District as regards population. From Table VII at page 75 of Volume XIV (part II) of the Census Report for 1911, I have calculated the number of persons per thousand at the different ages for which rates of food consumptions have been estimated above. Multiplying the number of persons of each age by the appropriate rate and dividing the sum of the products so obtained by a thousand we get the all-round rate of consumption of food-grains. The method of calculation is clear from the table below:—

Age.	Number.	Daily food rate.	Product of col. (2) and col. (3).
(1)	(2)	(3)	(4)
0—2 inclusive ..	88	<i>Chhataka.</i>	<i>Chhataka.</i>
3	30	3	90
4	30	3·6	108
5	31	4·2	130
6	30	5	150
7	30	6·2	186
8	30	7·2	216
9	30	8·1	243
<i>Total for children under 10</i>	299	3·76	1,123
10	27	8·8	238
11	24	9·4	226
12	22	10	220
13	20	10·6	212
14	18	11·2	202
<i>Total for children between 10 & 15.</i>	111	9·88	1,098
Men 15—59 inclusive ..	273	13·3	3,631
60 and over ..	33	11·5	379
<i>Total for men</i> ..	306	13·11	4,010
Women 15 to 49 inclusive ..	227	11·5	2,610
50—59 inclusive ..	30	10·5	315
60 and over ..	27	9·7	262
<i>Total for women</i> ..	284	11·22	3,187
GRAND TOTAL ..	1,000	9·418	9,418

The all-round rate of consumption of food-grains thus works out at 9·418 *chhataks* per diem or approximately 5·37 maunds per head per annum.

12. The rate worked out above is lower than any of the rates which have been assumed in the past. It is also lower than the rate given at page 111 of Lucas's *Economic Life of a Punjab Village*. Dr. Lucas's estimate, which appears to have been based on careful enquiries, was 10·24 *chhataks* per head per day, *i. e.*, 5·84 maunds per head per annum. This estimate includes maize as well as wheat. According to the Jail Manual 5 seers of wheat are equivalent to 6 seers of maize. I have not been able to find out the exact proportions of wheat and maize eaten by Dr. Lucas's zamindars, but if we assume two parts of wheat to one of maize then 16 seers of this mixture would be equivalent to 15 seers of wheat or wheat and gram. If Dr. Lucas's estimate is multiplied by 15/16 the result is approximately 5·47 which agrees very fairly with my figure. Mr. Kitchin's estimates also appear to include *dal*, *e. g.*, *mung*, *moth*, etc., as he has included these in working out the economic position of the different tahsils. This would account for his figure being higher than mine. Colonel Wace's estimate also, I think, includes a certain amount of maize and other things besides wheat. The different rates referred to above are collected below for facility of comparison :—

Authority.	Rates of food consumption per head of population.	
	In maunds per annum.	In lbs. per annum.
Mr. Purser, Settlement Officer, Jullundur, 1883 ..	7	574
Mr. Butler, Assistant Settlement Officer, Attock, 1904	7	574
Colonel Wace, Settlement Commissioner (paragraph 30 of his review of the Jullundur Settlement) ..	5·93	486·3
Colonel Wace, Settlement Commissioner, in his report to the Famine Commission	5·7	467·4
Mr. Kitchin, Settlement Officer :—		
Pindigheb Tahsil	5·8	475·6
Fatehjang	5·82	477·2
Gujar Khan	5·75	471·5
Dr. Lucas	5·84	478·9
Rate now proposed	5·37	440·3

13. In the table below I have compared the actual reported wheat consumption of the different families whose circumstances were inquired into by Professor Stewart of the Lyallpur Agricultural College with the consumption calculated at the rates I have assumed. It will be seen that on the whole they agree fairly well:—

No.	Members of the family.	ANNUAL CONSUMPTION OF FOOD-GRAINS.		REMARKS.
		Calculated.	Actual reported.	
1	One farm beldar ..	7.5	Mds. 7.5	
2	Tenant ..	7.5	30	The list gives merely "two adults." If the second one is a man, the total would come to 29.2.
	Wife ..	6.5		
	Child of 12 ..	5.7		
	Do. 10 ..	5		
	Do. 7 ..	3.5		
		Total ..	28.2	
3	Carpenter ..	7.5	36	
	Wife ..	6.5		
	Son ..	7.5		
	Son's wife ..	6.5		
	Child of 5 ..	2.3		
		Total ..	30.3	
4	Tenant ..	7.5	Maize 6 Mds. = Wheat .. 5 Gram .. 2 Wheat .. 28 Total .. 35	
	Wife ..	6.5		
	Child of 12 ..	5.7		
	Do. 10 ..	5		
	Do. 7 ..	3.5		
		Total ..	28.2	
5	Tenant ..	7.5	Wheat .. 36 12 Mds. of Maize = Wheat .. 10 Total .. 46	The only details given of the children are "7 children, 4 from 10—18 years and 3 under 10." I had had to guess at their ages and sex.
	Wife ..	6.5		
	Son of 17 ..	7.5		
	Daughter of 15 ..	6.5		
	Child of 13 ..	6		
	Do. 10 ..	5		
	Do. 9 ..	4.6		
	Do. 5 ..	2.3		
	Do. 1 ..	..	
		Total ..	45.9	

(continued on the next page.)

No.	Members of the family.	ANNUAL CONSUMPTION OF FOOD-GRAINS.		REMARKS.
		Calculated.	Actual reported.	
		Mds.	Mds.	
6	Zamindar owning a square ..	7.5		
	Wife ..	6.5		
	Child of 12 ..	5.7		
	Do. 10 ..	5		
	Do. 8 ..	4.1		
	Do. 5 ..	2.8		
	Do. 2 ..	..	
		Total ..31.1	36	The only details given about the children are "5 children 2-12 years."
7	Zamindar owning a square ..	7.5		
	Wife ..	6.5		
	Old mother ..	6		
	Son of 20 ..	7.5		
	Daughter of 16 ..	6.5		
	Child of 12 ..	5.7		
	Do. 7 ..	3.5		
	Do. 4 ..	2		
	Do. 2 ..	..	
		Total ..45.2	Wheat .. 35 Maize 10 Mds.= Wheat .. 8.3 Total 43.3	Details given are— "6 children, 3 from 12-20 years, the other three—2, 4 & 7.
8	Labourer ..	7.5		
9	Do. ..	7.5		
10	Tenant ..	7.5		
	Wife ..	6.5		
	Old mother ..	6		
	Child of 12 ..	5.7		
	Do. 4 ..	2		
	Do. 3 ..	1.7		
	Do. 1 ..	..	
		Total ..29.4	Wheat .. 22 Gram 2 4 mds. of Maize = Wheat 3.3 Total .. 27.3	

(continued on the next page.)

No.	Members of the family.	ANNUAL CONSUMPTION OF FOOD-GRAINS.		REMARKS.
		Calculated.	Actual reported.	
11	Tenant ..	7.5	70	Fairly well off. Says he has many guests during the year. Details of the children given are— "5 children from 10—19 years, 3 children from 1—10 years.
	Wife ..	6.5		
	Old father ..	7		
	Son of 18 ..	7.5		
	Daughter of 16 ..	6.5		
	Child of 14 ..	6.4		
	Do. 12 ..	5.7		
	Do. 10 ..	5		
	Do. 8 ..	4.1		
	Do. 5 ..	2.3		
	Do. 1	Total ..58.5	
12	Tenant ..	7.5	Wheat ..33.5 Gram .. 2.5 4 maunds of Maize=Wheat 3.3 Total ..39.8	The figure given by Professor Stewart seems low.
	Wife ..	6.5		
	Old mother ..	6		
	Labourer ..	7.5		
	Child of 13 ..	6		
	Do. 10 ..	5		
	Do. 9 ..	4.6		
	Do. 7 ..	3.5		
	Do. 5 ..	2.3		
	Do. 2 ..	..			Total ..48.9

14. It will be seen that the rate I have worked out is for zamindars of the Tallagang Tahsil where the chief staples are wheat, *bajra* and gram. If they are to be applied to any other tahsil such as Attock where a good deal of maize and barley are consumed, use must first be made of the equivalent values mentioned in paragraphs 2 and 12 above.

15. In order to form a correct estimate of the economic position of the whole tahsil it will be necessary also to calculate the rate for non-zamindars. The village menials such as the *lohar* (blacksmith), *tarkhan* (carpenter), etc., work as hard, and probably eat practically as much as the zamindars. For the purposes

of this note they will, therefore, be classed as zamindars. There remains the shopkeeper. He usually sits at his shop all day and takes very little exercise. 10 *chhataks* per diem for men between 15 and 60 and 9 for men of 60 and over should, therefore, be an ample allowance. In the case of women there should not be such a large difference as in the case of zamindars. The *banya's* womenfolk usually have to draw water from the well or frequently to go some distance and get it from the bottom of a ravine. They probably take at least as much exercise as the men in the day, or more. I have therefore allowed 9·5 *chhataks* per diem for women between 15 and 50. For children I have taken the scale worked out in paragraph 10. The result of applying these rates in the same way as has been done in paragraph 11 above is as follows :—

Age.	Number.	Daily food rate.	Product of columns (2) & (3).
(1)	(2)	(3)	(4)
		<i>Chhataks.</i>	<i>Chhataks.</i>
0-2 inclusive	88	..	..
3	30	3	90
4	30	3·6	108
5	31	4·2	130
6	30	4·8	144
7	30	5·4	162
8	30	6	180
9	30	6·5	195
<i>Total for children under 10.</i>	299	3·38	1,009
10	27	7	189
11	24	7·5	180
12	22	8	176
13	20	8·5	170
14	18	9	162
<i>Total for children between 10 & 15.</i>	111	7·9	877
Men 15—59 inclusive ..	273	10	2,730
60 and over	33	9	297
<i>Total for men</i>	306	9·89	3,027
Women 15 to 49 inclusive ..	227	9·5	2,156·5
50—59 inclusive	30	8·8	264
60 and over	27	8·5	229·5
<i>Total for women</i>	284	9·33	2,650
GRAND TOTAL	1,000	7·563	7,563

The all-round rate of consumption of the food-grains in question thus works out at 7·563 *chhataks* per head per diem for non-zamindars, i. e., approximately 4·31 maunds per annum.

APPENDIX A.

GLOSSARY OF VERNACULAR TERMS.

<i>Vernacular.</i>	<i>English.</i>
Arhar	.. A kind of pulse.
Atta	.. Flour of whole wheat.
Bajra	.. Bulrush millet (<i>Pennisetum typhoideum</i>).
Bania	.. Village shop-keeper, Moneylender.
Beldar	.. Labourer, road mender.
Chapati	.. Flat cake of unleavened bread.
Chari	.. Jowar (q. v.) grown for fodder.
Chhatak	.. An Indian weight equal to two ounces.
Dal	.. Pulse (a kind of lentil).
Dalia	.. Food prepared of mixture of flour and pulse.
Ghi	.. Indian form of butter.
Gram	.. A pulse (<i>cicer-arietinum</i>) ripening in the spring.
Gur	.. Unrefined sugar.
Jowar	.. Great millet (<i>Sorghum vulgare</i>).
Lassi	.. Milk-curd.
Lohar	.. Blacksmith.
Masala	.. Spices.
Mash	.. A kind of pulse.
Masur or Massar	.. A kind of pulse.
Maund	.. Indian weight equal to 82 lbs.
Missi Roti	.. Loaf prepared of more than one kind of flour.
Moth	.. A kind of pulse (<i>Phaseolus aconitifolius</i>).
Mung	.. A kind of pulse (<i>Phaseolus mungo</i>).
Rawan	.. A kind of great pulse.
Roti	.. Bread.
Seer	.. Indian weight equal to two lbs.
Square	.. A unit of land in a Colony of 25-27 acres.
Tahsil	.. A sub-division of a district.
Tarkhan	.. Carpenter.

APPENDIX B.

NOTE BY S. JAGAT SINGH, AGRICULTURAL CHEMIST TO GOVERNMENT, PUNJAB,
ON
RELATIVE FOOD VALUES OF BAJRA, WHEAT, MAIZE, BARLEY AND GRAM.

	Moisture.	Ash.	Fat.	Fibre.	Protein.	Soluble carbo- hydrate.	Food Units.
Bajra	14.3	2.58	5.16	1.34	8.75	67.87	102.7
Barley	8.25	2.59	.85	6.5	8.00	73.81	95.9
Gram	7.44	3.79	3.6	10.26	17.00	57.91	109.4
Maize	11.98	2.45	4.49	1.03	7.37	72.58	102.2
Wheat	10.51	1.51	.86	2.68	8.00	76.44	98.6

The table gives the chemical composition of the grain, and the calculated "food units" which indicate their relative values. In this calculation the proteins and fats are taken as $2\frac{1}{2}$ times more efficient than the soluble carbohydrates. Strictly speaking only the digestible portion of the grain should be taken into consideration for this calculation, but such figures (digestibility co-efficients) are available for ruminants only and not for human beings. The digestibility of all the grains, however, is of the same order. Gram and barley on account of their high fibre content will be slightly less digested. The figures given above under food units therefore will not be far off the mark for computing their values as human foods. Again, though considerable importance is attached to the nature of the individual protein in food, yet in a mixed dietary, especially when wheat is the predominating grain, and gram, *bajra* and barley are mere adjuncts, the significance of the nature of proteins should disappear.

In view of the above limitations I would place these grains for purposes of this enquiry as under :—

Bajra, Wheat, Maize, Gram = 100

Barley = 95

The Honorary Secretary, Board of Economic Inquiry, Panjab, will be glad to receive a copy of any of your publications in which reference is made to this work.

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**The Board of Economic Inquiry,
Punjab.**

RURAL SECTION PUBLICATION—7.

(GENERAL EDITOR : W. H. MYLES, M.A.)

**SIXTY YEARS
OF
PUNJAB FOOD PRICES.
1861—1920.**

BY

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[The Board of Economic Inquiry, Punjab, does not hold itself responsible for any opinions expressed or conclusions reached by the writers.]

1925.

SIXTY YEARS OF PANJAB FOOD PRICES

1861—1920

A STATISTICAL SURVEY

SOURCE & SCOPE OF THE DATA

A—*Area*

The source of the data dealt with in this Inquiry has been the series of volumes published by the Government of India and entitled "Prices and Wages in India."

A fortnightly return of retail prices for the commoner food grains and salt in each District throughout India was instituted by Order of the Government of India in 1872, and these returns have since 1873 been regularly published in the *Supplement* to the Gazette of India.

Prior to 1873 records of the prices of food grains and salt had for a number of years been officially collected in some of the Provinces of India; but the methods of collection were not uniform, nor had the statistics been brought together in a readily accessible form. In the Panjab these figures date back to 1861.

The District returns of retail prices instituted by Order of the Government of India in 1872 are in most Provinces supplied by district officers to the Director of Agriculture and Land Records. They are, in every case, the prices in the Headquarters of the District, and are quoted in seers and chittakhs, or seers and fractions of a seer per rupee.

The first attempt to compile these figures for the whole of India was made in 1878 when a small volume was published by the

Government of India giving yearly average prices for food grains and salt for the period 1861 to 1876 in certain Districts in India which were selected as typical. In the case of the Panjab, the Districts which figure in this volume are Delhi, Ludhiana, Amritsar, Rawalpindi, Multan and Peshawar. The figures in this volume were revised in the next publication in 1884, and prices in the selected Districts were added for the intervening period, 1876 to 1883. Since that date the record of prices has been published annually in the volume entitled "Prices and Wages in India" (1).

From the standpoint of the student it is fortunate that in the Seventh Issue of the Volume (1890) the method of recording prices for selected typical Districts only was abandoned. In that Volume, 127 new Districts were added for the whole of India, and the number for which figures were published for the Panjab and the North-West Frontier Province increased from six to sixteen. What is still more fortunate is that wherever the figures were available for the Districts added they were carried back to 1861. In the case of the Panjab the prices of certain commodities for the Districts now added had always been available since 1861, but in the first six volumes only the prices of the six typical Districts referred to above had been published. Another improvement introduced in this Issue (1890) was the grouping together of Districts of similar climatic character and rainfall (2).

In the Thirteenth Issue (1896), without any reference being made to the change, as far as we can see, a re-grouping of Districts took place for the Panjab. A completely new Group, the South-Eastern, was introduced, and Delhi, Rohtak and Karnal disappeared from the Central Group and came into the South-Eastern; Ferozepore was added to the Southern Group; Jhelum to the Central; Sialkot disappeared from the North-Western and found a place in the Sub-Montane, to which also Jullundur was added. The revised

(1) Now discontinued on the score of retrenchment.

(2) Grouping of Districts in the Panjab introduced in 1890.

<i>Southern.</i>	<i>Central.</i>	<i>Sub-Montane.</i>	<i>North-Western.</i>	<i>Western.</i>
Hissar,	Delhi.	Ambala.	Sialkot.	Shahpur.
	Rohtak.	Ludhiana.	Rawalpindi.	Jhang.
	Karnal.	Hoshiarpur.	Peshawar.	Multan.
	Lahore.	Amritsar.		Dera Ismail Khan,

grouping is shown below⁽¹⁾. Fortunately again, in the case of the Districts added, the figures for a number of commodities were carried back to 1861.

In 1905, two new Districts were added to the list in the Panjab. In that year Attock appears for the first time in the Northern Group and Lyallpur in the Western. As these new Districts had been carved out of older Districts, it was in this case impossible to carry the figures back. Kurram was added to the Northern Group in 1907, and Tochi in the same year to the Western Group and here again figures for the earlier years were not added⁽²⁾.

To sum up as regards area, we have in "Prices and Wages in India" for the years 1861 to 1904 records of retail prices deduced from the fortnightly returns for 19 Districts; for 1905 and 1906 similar records of 21 Districts; and from 1907 to date the records of 23 Districts⁽³⁾. Four of the latter are in the North West Frontier Province which is included with the Panjab in "Prices and Wages in India."

B—Commodities

The commodities for which we have information from 1861 onwards for the Panjab and North West Frontier Province in "Prices and Wages in India" are rice, wheat, barley, bajra, jowar, gram, maize⁽⁴⁾ and salt. From 1886 onwards there are records for marua or ragi, kangni and arhar dal.

(1) Grouping of Districts in the Panjab introduced in 1896.

<i>Southern.</i>	<i>Central.</i>	<i>South-Eastern.</i>	<i>Sub-Montane.</i>	<i>Northern.</i>	<i>Western.</i>
Hissar.	Lahore.	Delhi.	Ambala.	Rawal-	Shahpur.
Ferozepore.	Jhelum.	Rohtak.	Ludhiana.	pindi.	Jhang.
		Karnal.	Jullundur.	Peshawar.	Multan.
			Hoshiarpur.		Dera Ismail
			Amritsar.		Khan.
			Sialkot.		

(2) Grouping of Districts in the Panjab since 1907.

<i>Southern.</i>	<i>Central.</i>	<i>South-Eastern.</i>	<i>Sub-Montane.</i>	<i>Northern.</i>	<i>Western.</i>
Hissar.	Lahore.	Delhi.	Ambala.	Rawal-	Shahpur.
Ferozepore.	Jhelum.	Rohtak.	Ludhiana.	pindi.	Jhang.
		Karnal.	Jullundur.	Peshawar.	Multan.
			Hoshiarpur.	Attock.	Dera Ismail
			Amritsar.	Kurram.	Khan
			Sialkot.		Lyallpur.
					Tochi.

(3) The most accurate comparative survey, therefore, that could be made from these figures would be that which took into account the 19 Districts for which figures are available from 1861 onwards. In other words, Attock and Lyallpur should be deleted from 1905, and Kurram and Tochi from 1907, and the figures for the remainder, in which records are available over sixty years, averaged.

(4) The records for maize are very incomplete from 1861 to 1870, entirely wanting from 1871 to 1883, and only from 1886 are they at all complete.

Averages are given for each year for each commodity, for each of the six Groups⁽¹⁾ and for the Panjab (including four districts in the North West Frontier Province) taken as a whole. The average in each case is a simple arithmetical average, and no attempt is made to "weight" according to the population of the Districts in the Group. So in the case of the Province as a whole, the figure given is from 1861 to 1904 the arithmetical average of the prices in 19 Districts; in 1905 and 1906 it is similarly constructed from the prices in 21 Districts; and from 1907 to date it is deduced from 23 entries. This method is obviously defective in that a rise of 100 per cent. in food prices in a sparsely populated District such as Multan exercises the same influence on the general average as a rise of the same amount in a densely inhabited District such as Jullundur, though the latter may cause distress to a much larger number than the former. On the other hand, it must be remembered, as Bowley has pointed out⁽²⁾, that the reliability of an average is much more dependent upon accuracy in the original figures than upon the system of weighting adopted. If we consider the shortcomings of the original returns of District prices, it is most doubtful whether the "unweighted" system adopted could be improved upon.

The method of presenting retail prices in "Prices and Wages in India" was completely altered in 1907. Prior to that date the prevalent Indian method had been followed, and prices were expressed as seers and fractions of a seer per rupee. In 1907, for the sake of comparison of retail prices with wholesale prices, which had come to figure more prominently in later volumes than they did in the earlier issues, the system was changed, and retail prices have since that date been expressed as rupees and decimals of a rupee per maund. The price of produce is now expressed in terms of rupees, not the price of a rupee in terms of produce as before.

In any survey of prices from 1861 to date, it becomes necessary, therefore, to adopt a common notation. What has been done in the present survey is to convert the prices of the earlier period, seers and decimals of a seer per rupee, into rupees and decimals of a rupee per maund. This is the normal method of making statements

(1) Vide Footnote (2), page 3.

(2) Vide Bowley's "Elements of Statistics", Page 118.

of prices—to take the quantity as fixed and the price paid as the variable, rather than the converse method of taking the price as fixed and the quantity obtained as the variable. On the other hand, a strong case could be made out in India for taking the price as fixed and the quantity as the variable in that, in the case of retail prices, it is the method which universally prevails throughout the country⁽¹⁾.

THE SELECTION OF A BASE FOR PURPOSES OF COMPARISON

As is well known to all students of Indian conditions, food prices in India—and in this respect the Panjab has been no exception—were in the past subject to extreme fluctuations, and even now show considerable oscillations. Thus, if wheat be taken as typical, its average retail price in the Province which was Rs. 2.294 in 1861 had fallen to Rs. 1.336 in 1863; in 1869, a year of famine, it stood as high as Rs. 3.380; by 1875 it had fallen to half that figure and fell still lower in the next year, only to rise to over Rs. 3 in 1879. In 1904 the price stood at Rs. 2.264 or lower than it had been in 1861; in 1908, it had risen to Rs. 4.189, and in 1919 it touched Rs. 6.136—the record figure up to that date. Had gram been taken instead of wheat, the fluctuations to be noted would have been even greater. (Vide p. 25).

If prices subject to such fluctuations are to be reduced to percentages for the purposes of comparison, the selection of an appropriate base is of the greatest importance. The writer desirous of showing a particular result can, within reason, do so simply by the selection of the base. Thus wheat prices in 1919 were about $4\frac{1}{2}$ times as high as those of 1863; but rather less than twice what they had been in 1869, only the latter year was one of famine. In this respect there is much to be said for the selection of the year 1873 as the base for in that year the currency troubles—(with their consequent effect upon prices)—which culminated in 1893 in the closure of the mints to the free coinage of silver, had hardly developed to the extent

(1) It may be pointed out that it is not altogether a matter of indifference which notation is adopted. Not only do money prices vary inversely with quantity prices, but the percentage rise and fall varies in the two notations. Thus, if wheat is selling at 10 seers to the rupee, and it falls to 5 seers to the rupee, this is equivalent to a rise in the money price of 100 per cent.; in other words, the price rises from Rs. 4 to Rs. 8 per maund. But if wheat becomes cheaper, if the number of seers for one rupee increases from 10 to 20, *i. e.*, by 100 per cent. the corresponding money price is only 50 per cent. lower; in other words, wheat has fallen from Rs. 4 to Rs. 2 per maund.

of influencing prices. So far as Panjab food prices, however, are concerned, the year 1873 is not particularly suitable. True, it is a year of neither very high, nor very low prices. But in the dozen years which preceded it, on only four occasions did wheat prices in the Panjab fall below those of 1873, while in the other eight years they were higher. In the succeeding twenty years, wheat prices were above the prices of this year on thirteen occasions, and below them on seven; on only one occasion after 1894 do they fall to so low a figure. The selection of such a year as the basis of comparison would thus be somewhat misleading unless its peculiar position were fully realised. It would have to be pointed out that 1873 was a most favourable year, and, therefore, prices expressed as percentages of the price in that year would represent the rise as being greater than it would appear if the average price in the years around 1873 had been taken as the base.

To indicate the difference in the general impression obtained by taking at random different years from the decennium 1861-70 as the base, three tables are set out below.

RETAIL WHEAT PRICES IN THE PANJAB

Table I.	Table II.	Table III.
<i>Base-1861.</i>	<i>Base-1865.</i>	<i>Base-1869.</i>
1861 - 100	1865 - 100	1869 - 100
1871 - 83	1875 - 89	1879 - 93
1881 - 101	1885 - 88	1889 - 61
1891 - 113	1895 - 115	1899 - 76
1901 - 115	1905 - 145	1909 - 118
1911 - 125	1915 - 247	1919 - 183

If all that were presented were Table I, the casual observer might be led to believe that over 50 years prices had shown remarkably little fluctuation. If, on the other hand, only Table II were submitted, it would appear that, after thirty years of comparatively stable prices, the present century had witnessed an enormous increase. Table III, on the other hand, conveys still a different impression in that the prices in 1919, an exceptionally dear year, appear only 83 per cent. higher than those of 50 years before, but the year taken as the base in this case was one of famine. We are not trying to prove any particular variation in prices by the Tables set forth above, but simply to show the great differences in the

general impression conveyed if different years are selected as the base.

All must acknowledge the inadequacy of the method which selects prices in a single year as the base. For purposes of comparison the base must be wider. If, in the case of wheat in the Panjab, we select a triennial period, it will be found that the results are little more satisfactory. Take two triennia, one at the beginning and one at the end of the decennium 1861-70, and the greatest divergence is found in the results as is shown below.

RETAIL WHEAT PRICES IN THE PANJAB

Table IV.

<i>Base.</i>	Average yearly prices in the triennium 1862-64.
	1862-64 - 100
	1872-74 - 129
	1882-84 - 124
	1892-94 - 165
	1902-04 - 169
	1912-14 - 248

Table V.

<i>Base.</i>	Average yearly prices in the triennium 1868-70.
	1868-70 - 100
	1878-80 - 100
	1888-90 - 82
	1898-00 - 100
	1908-10 - 135
	1918-20 - 202

Unless the peculiar position of the two basal periods is clearly realised, it might be thought that in some way or other the lower figures of Table IV had been transposed into Table V, and vice versa. Think of the coin that might be made out of the figures in Table IV by the unscientific exponent! Prices in 1912 to 1914 were already 148 per cent. above what they had been in the triennium 1862-64, and we could hardly contradict him if he went on and declared that the great rise in prices with which we have recently been so familiar had in 1914 little more than begun. An opponent on the same platform might put forth the figures in Table V, and would really deserve equal attention if he demonstrated that prices in the exceptionally dear years 1918 to 1920 were only a little more than double what they had been in the triennium 50 years previously. The figures of both are above reproach, and all that can be said against either is that, with figures subject to such fluctuation as those representing Panjab food prices, the triennium is too short a period to be taken as the basis of comparison. Prices in the triennium 1862-64 were exceptionally low, while those of 1868-70 were exceptionally high; neither is suitable for being taken as the base; but it becomes obvious that when men are out to prove any

particular case they can do so easily by manipulation, and by leaving out the essential qualifications.

Bowley, in his "Elements of Statistics,"⁽¹⁾ has pointed out an extremely good instance of the weakness of a quinquennial average when the interval between recurring maxima is longer than five years. That in the case of Panjab food prices even a five-yearly average may give essentially dissimilar results is shown below where the retail prices of wheat in the Panjab are expressed as percentages of their price in two quinquennia selected from the decennium 1861-70.

Table VI.

<i>Base.</i>	Average of yearly prices from 1862-66.
	1862-66 - 100
	1872-76 - 110
	1882-86 - 114
	1892-96 - 155
	1902-06 - 159
	1912-16 - 239

Table VII.

<i>Base.</i>	Average of yearly prices from 1866-70.
	1866-70 - 100
	1876-80 - 97
	1886-90 - 57
	1896-00 - 128
	1906-10 - 140
	1916-20 - 208.

Each of the Tables is perfectly correct as it stands, but the weakness of the quinquennium is well brought out by the fact that the rise in prices in the quinquennium 1912-16 is shown to be 139 per cent., whereas the rise in the quinquennium 1916-20 when prices were very much higher is only 108 per cent. It would obviously be impossible, or at least most misleading, to take either of these Tables as the basis for a careful scrutiny of the general level of Panjab food prices.

The Tables which have been presented so far have been given with the idea of showing the necessity of carefully scrutinising percentages with reference to the base selected. If properly explained and qualified, they may serve a useful purpose; but the person desirous of applying them to any particular problem must always be on his guard. The non-observance of this precaution cannot be better illus-

(1) Vide Bowley, "Elements of Statistics", pp. 151-153.

trated than by an example familiar to most Panjab readers. In an Essay entitled "A General View of Indian Prices" ⁽¹⁾, Professor Brij Narain gives two sets of Index Numbers of Prices in India ⁽²⁾. The first has reference to Wholesale Prices—(this is definitely stated)—but there is nothing to indicate from whence it has been obtained, nor how it has been constructed. We are left completely in the dark as to whether it is an Index Number constructed by the writer himself, or borrowed from elsewhere ⁽³⁾. The second lacks even the defective explanation given with the first. Both are compared with Sauerbeck's Index Number for the United Kingdom, and it would be natural to assume that things which are comparable with the same thing are comparable with one another—(but of this more anon). All we want to affirm here is that figures quoted apart from their context lose much of their value.

The method of treatment also does not seem to us above reproach. In one of the Tables given ⁽⁴⁾ an attempt is made to establish a comparison between the rise of prices in India and in certain other countries. In the case of the latter, the year 1896 is selected as the base, but as that was a year of extremely high prices in India, it is passed over in favour of the year 1894 which is taken as the base, and its price is set down opposite 1896 as 100. After what has been said before on the necessity of the greatest care being taken in the selection of the base if the figures are not to give altogether misleading results, the reader will almost be prepared to admit that the general impression conveyed by figures so handled may be correct, but it is just as likely to be wrong.

The Table in question is reproduced in the first six columns below. Two columns have been added. Column 7 gives the writer's second Index Number of Prices in India, and in Column 8 the figures of Column 7 have been expressed as a percentage of the price in 1894 ⁽⁵⁾.

(1) *Vide* Professor Brij Narain, "Essays in Indian Economic Problems", p. 35.

(2) *Ibid.* pp. 41 and 51.

(3) We surmise that it has been adapted from the Table given by Datta in his "Enquiry into the Rise of Prices in India", Vol. I, p. 48.

(4) *Ibid.* p. 42.

(5) This procedure is not altogether justifiable from a statistical standpoint, but we have reason to believe that the figures in Column 6 have been arrived at in this identical fashion.

TABLE VIII.

Year	United Kingdom (Sauerbeck)	France	Germany	U.S.A	India	The writer's Second Index Number of Prices in India	The figures in the previous Column reduced to a percentage of their price in 1894
1	2	3	4	5	6	7	8
1894	..	..	..	..	1894	102	100
1895	..	..	..	..	=	104	102
1896	100	100	100	100	100	110	108
1897	101	102	103	99	141	113	111
1898	104	107	109	104	128	96	94
1899	111	116	114	112	127	96	94
1900	122	125	122	122	148	116	114
1901	115	118	117	120	141	110	108
1902	113	115	114	125	135	105	103
1903	113	118	121	126	130	99	97
1904	115	116	122	125	129	101	99
1905	118	118	125	128	141	110	108
1906	126	129	136	135	158	129	127
1907	131	136	146	144	162	137	134
1908	119	124	132	135	173	138	135
1909	121	126	137	140	162	124	122
1910	128	132	141	146	161	122	120
1911	131	141	154	142	164	129	127
1912	138	..	..	151	173	137	134

As a result of such a treatment, can it be said that in 1911 "the percentage rise was for India 64, Germany 54, U. S. A. 42, France 48 and England 31" (1); or that "the rise in Indian prices was greater than in any other country of the world (2)"? Let the reader compare carefully the figures in Columns 2 to 6, and he is likely to

(1) Ibid. p. 42.

(2) Ibid. p. 40.

have a lingering suspicion that the results in Column 6 are vitiated by the selection of 1894 as the base. We have already referred to the writer's second Index Number of Indian Prices. It is a matter of some surprise that when it is handled as he has done his first Index Number—and why should we not do so when both are given without reference and qualification?—the rise of prices in India, far from being "greater than in any other country of the world" is actually found to be less than in any of the other countries selected for purposes of comparison!

THE BASE SELECTED IN THIS SURVEY

One thing then is clear, that, whether we are dealing with Panjab food prices, or with any other prices, the greatest possible care must be taken to see that the base chosen represents a typical period. Had we a well defined interval between points of recurring maxima, this would be easy. But Panjab food prices, whilst exhibiting a certain amount of periodicity, do not, if taken year by year, present any well defined interval. If, however, instead of taking yearly averages, we take the average of the prices in one year with those of the two years preceding and the two years following, so as to cut out violent yearly fluctuations, a fairly noticeable rhythmic movement becomes apparent, (vide Table XII pp. 40-42). So far as any generalisation can be made, it would seem to be that, in the case of Panjab food prices, the tendency has been for eras of high prices and of low prices to follow one another at intervals of about ten years.

On this account it has been thought advisable to take for the purposes of the base the average prices in a decennium. If the cycle has a tendency to run its course in about ten years, no sounder base can be taken. We need not be unduly perturbed if in the period there is a year of great scarcity, for the myth which regarded recurring periods of severe scarcity in earlier Indian history as something very exceptional, as coming more or less within the same category as the Black Death in England in the fourteenth century, has been pretty effectively disposed of⁽¹⁾.

After much consideration, average prices in the decennium 1873-82 have been selected as the base. In that period there were four years of high prices centring round the famine of 1879, and six

(1) See in this connection, Loveday: "Indian Famines"; Moreland: "From Akbar to Aurangzeb", chap. VII; and Morison: "The Economic Transition in India", chap. V.

years of comparatively low prices. Although about this time the price of silver began to fall upon the London market as a result of its demonetization by some of what had been the great silver-using countries, there had hardly been time for the effect to be reflected on the general level of Indian prices. The average price of wheat in the Panjab in this decennium was some 2 per cent. lower than the average price in the decennium 1863-72, and some 5 per cent. higher than in the decennium 1883-92. The average price of gram was also 2 per cent. lower than it had been in the preceding decennium, and about $\frac{1}{2}$ per cent. higher than in the succeeding decennium.

AVERAGE ANNUAL PRICES OF FOOD-GRAINS IN THE PANJAB

Two Tables have been prepared showing the average yearly prices of the principal food-grains in the Panjab—including four Districts of the North-West Frontier Province. In Table IX, the average yearly prices are expressed in Rupees and decimals of a Rupee per maund. Figures are given for Rice, Wheat, Barley, Bajra, Jowar, Gram and Salt from 1861 to 1920; and for Marua, Kangni, Maize and Arhar Dal from 1886—(though a few figures are available for Maize before that date). The attention of the reader is particularly directed to the Notes to Table IX in which the scope and the limitations of the different figures are pointed out.

Table X shows the prices of the above Food-Grains and Salt expressed as a percentage of their average price from 1873 to 1882. Two additional columns have been added. The first of these gives the average percentage for the year for rice, wheat, barley, bajra, jowar and gram. The inclusion of salt, an important article of diet, would obviously not be justifiable in that its price is determined by influences entirely different from those which affect the food-grains. Even the inclusion of rice is doubtful. A glance through the Table will show that though its price does feel the influences which affect the other food grains, it feels them to a very much slighter extent. Accordingly in the second additional column, rice has been omitted, and the figure given there is the arithmetical average of the percentage prices of wheat, barley, bajra, jowar and gram.

One point, however, demands attention in the case of both the Tables. It has already been noted that in the earlier Issues of "Prices and Wages in India" prices were quoted in terms of seers

and decimals of a seer to a rupee. From 1907 onwards the other notation has been used. From 1883 to 1905, I have unearthed the prices quoted in both notations. When the one is converted to the other, we seldom get exact agreement. In most cases, the figures expressed in rupees and decimals of a rupee per maund are a trifle higher than those deduced from the records quoted in seers and decimals of a seer per rupee. To prevent this from exercising any influence upon the result, the mean difference between the price as given in rupees and decimals of a rupee per maund and that calculated from the quotation in seers and decimals of a seer per rupee has been taken for the 12 years following 1882. This correction has been carried back to all the years before 1883. The figures, therefore, from 1861 to 1882 are in every case adjusted, and the amount of the adjustment—generally so small that it might have been neglected—is in each case stated in the Notes to Table IX.

The effect of the inclusion of Attock and Lyallpur in 1905, and Kurram and Tochi in 1907, upon the percentage has been fully considered, and a percentage has been constructed with these districts deleted. These figures are in each case entered within brackets. The general effect of the inclusion of these districts has been to lower the percentage as compared with what it would have been had the 19 districts only been considered throughout. The effect on the individual commodities is shown below; the number of occasions where the percentage with the new districts included is greater than with them excluded is shown +, where less +, where equal =.

	+	=	-
Rice	2	4	11
Wheat	1	4	11
Barley	1	1	14
Bajra	2	5	9
Jowar	4	9	3
Gram	15	1	1

In the case of rice, wheat, barley and bajra, the effect of the inclusion of the new Districts has been to lower the percentage; in the case of jowar it would appear to have had little effect; while in the case of gram the effect has been to raise the percentage. The explanation of the rise in the case of gram would appear to be the inclusion of Kurram where the price of gram is always high. In Attock the price of gram conforms fairly closely to the average for the Province, and in the case of Lyallpur it is generally below the average level.

TABLE IX

AVERAGE ANNUAL PRICES IN THE PANJAB EXPRESSED

Year	Rice †	Wheat †	Barley †	Bajra §	Jowar §
	(1)	(2)	(3)	(4)	(5)
1861	3'534	2'314	1'622	1'783	1'837
2	2'972	1'505	0'904	1'271	1'127
3	2'645	1'356	0'837	1'081	0'945
4	3'138	1'475	0'961	1'405	1'231
5	3'754	1'859	1'170	1'556	1'405
6	3'818	1'773	1'141	1'640	1'393
7	3'553	1'920	1'386	1'734	1'529
8	4'075	2'482	1'718	2'459	2'275
9	4'892	3'350	2'241	3'040	2'599
1870	4'286	2'550	1'723	2'085	1'715
1	4'075	1'920	1'272	1'788	1'396
2	3'840	1'983	1'354	1'803	1'728
3	3'516	1'823	1'217	1'455	1'346
4	3'754	1'763	1'212	1'644	1'477
5	3'516	1'633	1'148	1'408	1'333
6	3'423	1'563	1'060	1'323	1'233
7	3'592	1'736	1'112	1'439	1'310
8	5'040	2'510	1'687	2'646	2'426
9	4'781	3'113	2'233	2'657	2'569
1880	4'892	2'768	1'863	2'265	1'913
1	4'101	2'331	1'540	2'147	1'832
2	3'672	1'893	1'194	1'685	1'354
3	3'607	1'825	1'136	1'393	1'176
4	3'655	1'679	1'146	1'468	1'260
5	3'489	1'625	1'057	1'340	1'206
6	3'634	2'072	1'251	1'859	1'618
7	3'740	2'743	1'883	2'532	2'308
8	3'905	2'580	1'866	2'429	2'072
9	3'954	2'054	1'343	2'005	1'575
1890	3'816	2'210	1'487	1'900	1'687
1	4'095	2'691	1'797	2'469	2'282
2	4'311	2'964	1'941	2'546	2'089
3	4'354	2'457	1'533	2'062	1'683
4	3'906	1'674	1'039	1'733	1'283
5	3'724	2'108	1'407	1'981	1'651
6	4'243	3'175	2'433	3'174	2'725
7	5'449	3'849	2'971	3'882	3'417
8	4'196	2'459	1'582	2'053	1'834
9	3'874	2'548	1'817	2'358	2'056
1900	4'683	3'349	2'660	3'373	3'238

(Continued on

TABLE IX

IN RUPEES AND DECIMALS OF A RUPEE PER MAUND

Gram *	Marua †	Kangni ‡	Maize β	Arhar Dal *.*	Salt †
(6)	(7)	(8)	(9)	(10)	(11)
2'052					3'244
1'209					3'422
1'994					3'527
1'171					3'686
1'351					3'795
1'351					3'795
1'697					3'970
2'147					3'777
3'658					3'852
2'435					3'832
1'808					2'611
1'909					3'638
1'468					3'929
1'266					3'740
1'271					3'777
1'111					3'451
1'278					3'097
2'482					3'097
2'685					3'393
2'227					3'322
1'915					3'795
1'502					2'736
1'323					2'667
1'267			1'291		2'688
1'248			1'219		2'660
1'409	1'792	2'111	1'605	2'102	2'661
1'927	2'341	2'597	2'264	2'569	2'623
1'979	2'273	2'314	2'272	2'613	2'989
1'584	1'928	2'111	1'642	2'548	3'048
1'797	1'913	2'113	1'683	2'540	3'019
2'033	2'055	2'532	2'330	3'137	3'031
1'997	2'209	2'748	2'231	3'227	3'066
1'576	2'089	2'686	2'128	3'048	3'095
1'176	1'485	2'218	1'296	2'898	3'062
1'603	1'942	2'465	1'682	3'103	3'058
2'573	2'429	3'137	2'569	3'324	3'070
3'829	3'420	3'807	3'393	4'943	3'176
2'107	1'689	2'747	1'733	4'567	3'206
2'318	1'927	2'584	1'824	3'822	3'172
3'465	2'483	3'313	2'888	4'523	3'165

next page)

TABLE IX—(continued)

Year.	Rice †	Wheat †	Barley †	Bajra §	Jowar §
	(1)	(2)	(3)	(4)	(5)
1901	4'354	2'648	1'699	2'004	1'848
2	4'290	2'523	1'805	2'265	1'867
3	4'180	2'451	1'765	2'143	1'835
4	4'028	2'204	1'467	1'733	1'396
5	4'274	2'666	1'698	2'183	1'873
6	4'628	2'730	1'968	2'849	2'507
7	5'238	2'903	1'965	2'338	2'147
8	6'492	4'189	2'987	3'790	3'515
9	5'705	3'942	2'401	2'801	2'588
1910	5'215	3'118	1'878	2'486	2'288
1	5'219	2'882	1'942	2'542	2'240
2	5'510	3'283	2'507	3'228	2'984
3	5'590	3'514	2'512	3'173	2'593
4	5'785	3'820	2'731	3'579	3'204
5	6'053	4'545	2'904	3'915	3'754
6	5'888	3'895	2'962	3'676	3'136
7	5'607	4'193	2'899	3'068	3'175
8	7'250	5'068	3'546	4'785	5'561
9	9'609	6'136	4'463	7'141	6'100
1920	9'454	5'620	3'836	5'490	4'630

NOTES ON TABLE IX

† *Rice, Wheat, Barley, Salt.*

Prices from 1861 to 1904, are deduced from the records of 19 Districts; for 1905 and 1906 of 21 Districts; and for 1907 to date of 23 Districts.

Rice figures from 1861 to 1882 are higher than the calculated by Rs. 0'075

Wheat.....Rs. 0'020

Barley.....Rs. 0'019

Salt.....Rs. 0'373

§ *Bajra & Jowar.*

Prices from 1861 to 1904 are the average of 19 Districts; from 1905 to date the average of 21 Districts (Kurram and Tochi not being added in this case in 1907).

Bajra figures from 1861 to 1882 are higher than the calculated by Rs. 0'035

Jowar.....Rs. 0'029

TABLE IX—(continued)

Gram *	Marua †	Kangni **	Maize	Arhar Dal ***	Salt †
(6)	(7)	(8)	(9)	(10)	(11)
2'206	1'806	2'636	1'908	4'271	3'173
2'120	1'735	2'653	1'779	3'900	3'164
1'912	1'576	2'577	1'801	3'790	2'806
1'539	1'435	2'487	1'419	3'786	2'746
1'949	1'645	2'802	1'799	4'052	2'310
2'358	1'776	3'218	2'351	4'537	2'318
1'447	1'838	3'076	2'103	5'243	1'816
3'888	2'784	3'870	3'183	6'187	1'721
2'950	2'637	3'263	2'707	5'670	1'703
2'201	2'667	3'190	2'093	4'255	1'704
2'134	2'421	3'033	2'039	4'027	1'688
2'608	2'227	3'847	2'606	4'023	1'693
2'782	2'353	3'650	2'579	4'342	1'689
3'416	2'248	3'353	3'104	5'385	1'712
3'418	2'787	3'860	3'724	6'550	1'747
3'301	3'132	4'242	2'788	6'096	2'311
3'432	2'823	3'749	3'019	5'286	2'699
4'055	2'888	4'507	4'161	6'033	3'570
5'696	4'372	7'168	4'743	10'296	3'572
5'560	4'391	6'681	4'470	10'865	3'388

NOTES ON TABLE IX

* Gram.

Prices from 1861 to 1904 are the average of 19 Districts; for 1905 and 1906 of 21 Districts; and from 1907 of 22 Districts, (Tochi which was added in 1907 showing no entry for gram).

Gram figures from 1861 to 1882 are higher than the calculated by Rs. 0'020.

† Marua.

The records throughout are very incomplete, and since 1908 there has been no entry except for the District of Jharg, and this is the figure that since that date is quoted for the province.

** Kangni.

In 1886 the figure is the average of 17 Districts; by 1900 this had fallen to 14; in 1911 only 8 were left, and this in 1917 fell to 7.

β Maize.

There are records for 4 Districts from 1861 to 1870. From 1886 to 1904 the prices quoted are the average of 18 Districts; in 1905 and 1906 of 20 Districts from 1907 of 22 Districts, (Hissar never having been included).

*** Arhar Dal.

The maximum number of entries is 15 and the average is generally deduced from less.

TABLE X

PRICES OF FOOD-GRAINS IN THE PANJAB EXPRESSED AS A

Year	Rice	Wheat	Barley	Bajra
	(1)	(2)	(3)	(4)
1861	88	109	114	96
2	74	71	63	68
3	66	64	59	58
4	78	70	67	75
5	93	88	82	83
6	95	84	80	88
7	88	91	97	93
8	101	117	120	132
9	121	158	157	163
1870	106	120	121	112
1	101	91	89	96
2	95	94	95	97
3	87	86	85	78
4	93	84	85	88
5	87	77	80	75
6	85	74	74	71
7	89	82	78	77
8	126	119	118	142
9	118	147	157	142
1880	121	131	131	121
1	102	110	108	115
2	91	90	84	90
3	89	86	80	75
4	91	79	80	79
5	87	77	74	72
6	90	95	88	100
7	93	130	132	136
8	97	122	131	130
9	98	97	94	107
1890	95	105	104	102
1	102	127	126	132
2	107	140	136	136
3	108	116	108	111
4	97	79	73	93
5	92	100	99	106
6	105	150	171	170
7	135	182	208	208
8	104	116	111	110
9	96	121	127	126
1900	116	158	187	181

Continued on

TABLE X

PERCENTAGE OF THE PRICE IN THE DECENNium, 1873-82

Jowar	Gram	Salt	Arith. Aver. of first six com- modities	Arith. Aver. of Cols. (2) to (6)
(5)	(6)	(7)	(8)	(9)
109	119	94	106	109
67	70	100	69	68
56	58	103	60	59
73	68	107	72	71
84	79	110	85	83
83	79	110	85	83
91	99	116	93	94
136	125	110	122	126
155	212	112	161	169
102	141	111	117	119
83	105	76	94	93
103	111	106	99	100
80	85	114	83	83
88	74	109	85	84
79	74	110	79	77
74	65	100	74	72
78	74	90	79	78
145	144	90	132	134
153	156	99	146	151
114	129	97	124	125
109	111	110	109	111
81	87	79	87	86
70	77	78	79	78
75	74	78	80	77
72	72	77	76	73
96	82	77	92	93
138	112	76	123	130
123	115	87	120	124
94	92	89	97	97
100	104	88	102	103
136	118	88	123	128
124	116	89	126	130
100	92	90	106	105
77	68	89	81	78
98	93	89	98	99
163	150	89	151	161
204	222	92	193	205
109	132	93	112	114
122	135	92	121	126
193	202	92	173	184

next page)

TABLE X—(continued)

Year	Rice	Wheat	Barley	Bajra
	(1)	(2)	(3)	(4)
1901	108	125	119	107
2	106	119	127	121
3	104	116	124	115
4	100	107	103	93
5	106(106)†	126(127)†	119(119)†	117(118)†
6	115(115)	129(130)	138(139)	153(155)
7	130(132)	137(140)	138(142)	125(127)
8	161(168)	198(205)	210(216)	203(204)
9	141(145)	187(192)	168(172)	150(150)
1910	129(131)	147(150)	132(134)	133(133)
1	129(130)	136(139)	136(138)	136(137)
2	137(138)	156(156)	176(179)	173(172)
3	139(141)	166(166)	176(179)	170(171)
4	143(146)	181(183)	191(197)	192(193)
5	151(152)	215(214)	204(207)	210(210)
6	146(148)	184(184)	208(214)	197(196)
7	139(139)	198(200)	203(207)	164(164)
8	180(181)	240(241)	249(251)	256(258)
9	238(240)	290(291)	313(310)	382(386)
1920	235(234)	266(266)	269(270)	291(294)

† Figures in brackets indicate what the percentage would have been had the districts 1907. The figures in brackets are strictly comparable with those from 1861

TABLE X—(continued)

Jawar	Gram	Salt	Arith. Aver. of First six commodities	Arith. Aver. of Cols. (2) to (6)
(5)	(6)	(7)	(8)	(9)
110	128	92	116	118
111	123	92	118	120
109	111	82	113	115
83	89	80	96	95
112(113)†	113(112)†	67	115(116)†	117(118)†
149(153)	137(137)	64	137(138)	141(143)
128(129)	142(139)	54	133(135)	134(135)
210(210)	226(223)	50	201(204)	209(212)
154(153)	171(166)	50	162(163)	166(167)
136(136)	128(122)	50	134(134)	135(135)
133(133)	124(119)	49	132(133)	133(133)
178(177)	152(146)	49	162(161)	167(166)
154(153)	162(157)	49	161(161)	166(165)
195(195)	198(196)	50	183(185)	191(193)
224(214)	198(194)	51	200(200)	210(210)
187(187)	192(188)	67	186(186)	194(194)
189(189)	199(194)	79	182(182)	191(191)
332(332)	236(233)	104	249(249)	263(263)
364(364)	331(326)	104	320(320)	336(336)
276(274)	323(318)	90	277(276)	286(284)

of Attock and Lyallpur not been included in 1905, and Kurram and Tochi in giving as they do the percentage calculated from the record of 19 districts

**CURVES REPRESENTING THE PRICES OF FOOD-GRAINS IN THE
PANJAB, PRICES BEING EXPRESSED AS PERCENTAGES OF THE
AVERAGE PRICE FROM 1873 TO 1882, (VIDE TABLE X)**

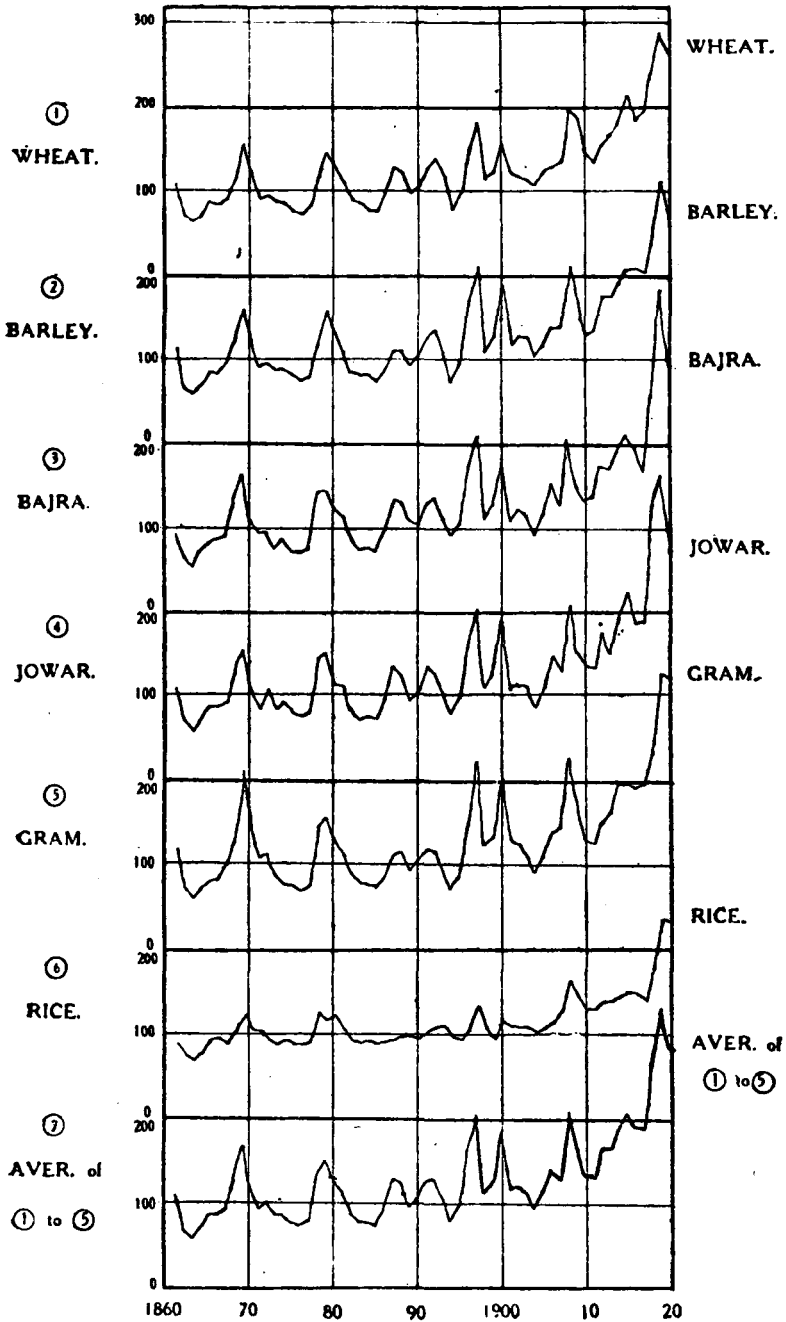
The figures given in Table X for wheat, barley, bajra, jowar, gram and rice, together with the average figures constructed from the first five commodities have been presented graphically in Diagram I. The first six curves represent the prices of wheat, barley, bajra, jowar, gram and rice expressed as a percentage of the average price of each in the ten years 1873-82. The seventh curve presents the arithmetical average derived from the first five commodities, (rice has not been included).

A study of the figures in Table X, or of the curves in Diagram I, suggests the following observations :—

1. Speaking generally, wheat, barley, bajra, jowar and gram tend to move in price as though they were one commodity. Economists in India have long been familiar with the way in which the prices of food-stuffs rose and fell together, but it is doubtful whether the closeness of the relationship has been fully realized. Though the curve for barley were mistaken for that of wheat, no very serious error would result. Or to put the same point in another way, if a student were given the price of barley in 1861, and the curve showing the percentage variations in the price of wheat, he might construct a table showing the price of barley over sixty years, and it would be nearer the truth than most people, and perhaps even the economists, would imagine possible.

2. The case of rice is obviously altogether exceptional. Its price feels those influences which affect the prices of the other food-grains, but to a very much slighter extent. Except in very limited areas rice does not form the staple diet anywhere in the Panjab, and so marked is the difference between it and the other food-grains that a second index number has been constructed from which rice has been expressly omitted. This index number naturally shows greater fluctuations than when rice is included. An explanation of the greater stability of rice prices as compared with those of other food-grains may be hazarded, and the problem may be tackled from the standpoint of the demand and supply of that commodity.

DIAGRAM I.
PRICES OF FOOD-GRAINS IN THE PUNJAB
EXPRESSED AS PERCENTAGES OF THEIR
AVERAGE PRICE FROM 1873-82.



The prices of the other food-grains have been largely at the mercy of the seasons. Rice requires for its successful cultivation abundance of water, and may therefore be presumed to be grown where artificial irrigation of some kind can be taken advantage of. Assuming that the supply of water where rice is grown is so abundant that it is not likely to fail even in the worst seasons—e. g., hill streams fed from springs or from melting snow—this would account for its supply being much more constant from season to season than in the case of the other food-grains where a larger proportion is still grown on *barani* ⁽¹⁾. From the side of demand, the price of rice is invariably higher than that of wheat—(vide Table IX) so in periods of scarcity rice does not come within the category of the second line of defence in the same way as barley, bajra, jowar or gram. Although, when wheat has risen 100 per cent., and rice only 50 per cent, the latter may for the time being be comparatively a better bargain, it may mean nothing to the man who is being forced by the rise in the price of wheat to take to cheaper grains.

3. The curves show well defined positions of maxima in 1869, 1879, 1897, 1908 and 1919, with less obvious maximum points in 1887, 1892, 1900 and 1915.

Well defined minimum positions appear in 1863, 1876, 1885, 1894, 1904 and 1911, with less clearly defined turning points in 1889, 1898 and 1917.

These figures do indicate a tendency for high prices to appear about the time when the figure in the decennium changes, and for lower prices to prevail about the middle of the decennium. This matter will be taken up in more detail later when we come to deal with triennial, quinquennial, and decennial averages ⁽²⁾. The extraordinarily high prices which prevailed around 1920 *might* thus be the sum of two movements firstly, the cyclic influence of which there are indications, and secondly, the altogether abnormal circumstances produced by the war, and their effect on the world's output of food

(1) Percentage of the Panjab crop irrigated in 1922-23.

Rice	.. 79'2 per cent.	Bajra	.. 12'4 per cent.
Wheat	.. 52'4 .. "	Jowar	.. 21'3 .. "
Barley	.. 27'9 .. "	Gram	.. 21'6 .. "

The percentage of irrigated wheat in 1925 was 57'6. Rice-eaters usually prefer to eat the grain after it has been kept for a year, as this makes it more digestible; this suggests the storage of a large supply which would serve to keep prices steady under a short harvest.

(2) *Vide p. 40 et seq.*

crops. In another fifty years, however, it will be time enough to speak with authority upon this point.

The curve representing the arithmetical average of the percentages of wheat, barley, bajra, jowar and gram shows that food prices were below the 1873-82 average from 1862 to 1867, from 1871 to 1877 (the price in 1872 touched the average), from 1882 to 1886, in 1889, in 1894 and again in 1904.

Prices stood more than 50 per cent. above the average of 1873-82 in 1869, 1879, in 1896 and 1897, in 1900, in 1908 and 1909, and from 1912 to 1920 they have never fallen below this level.

The first time in which these prices rose more than 100 per cent. above the 1873-82 average was in 1897. They again touched that level in 1908; they rose slightly above it in 1915; and from 1918 to 1920 they have stood much above it.

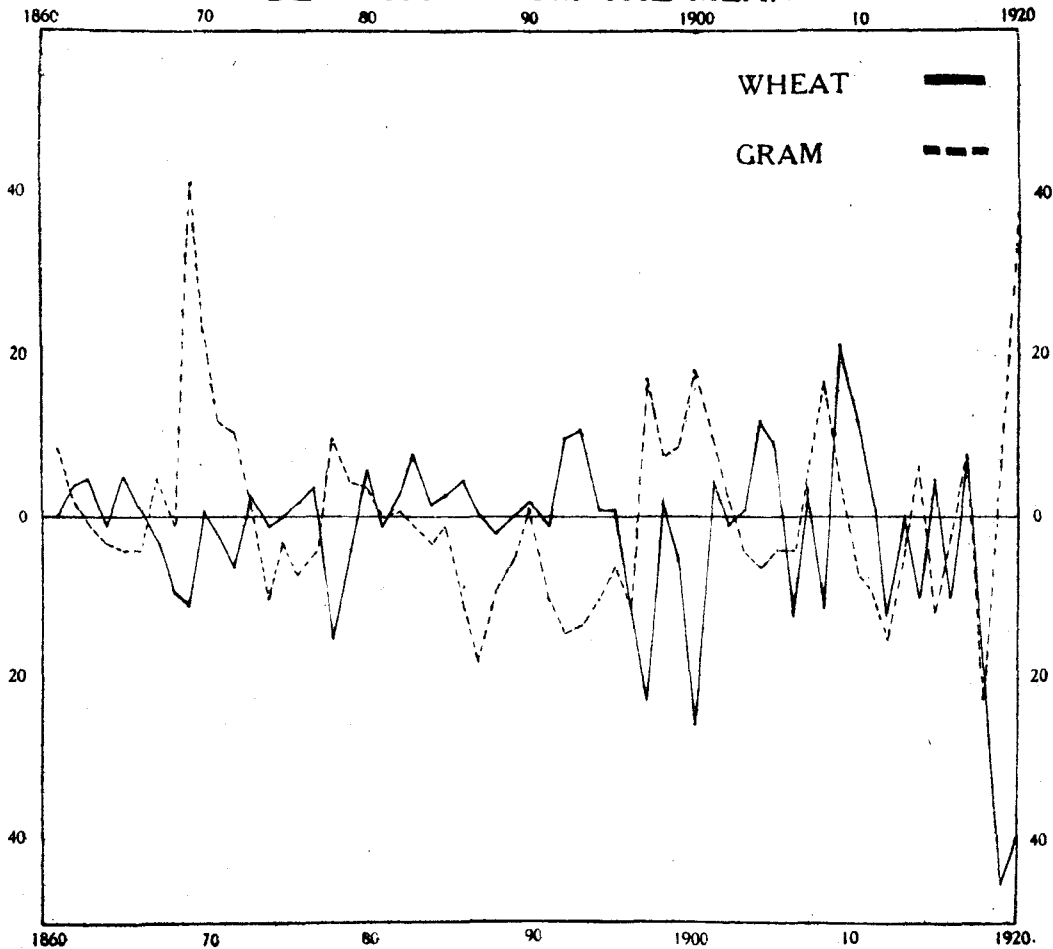
In 1918 food prices broke all previous records by standing 163 per cent. above the average; in 1919 this record was eclipsed when the figure was 236 per cent. higher. The year 1920 saw a slight fall, 186 per cent. higher, to be followed in 1921 by a higher level of food prices than had been known before or has been known since.

4. In spite of the remarkable similarity between the curves showing the percentage prices of wheat, barley, bajra, jowar and gram, a close study of them will show that, on the whole, wheat has been subject to smaller fluctuations in price than either of the other food-grains. This point becomes much clearer from the logarithmic curves of food-prices⁽¹⁾, but as many people either pass by such curves in silence, or misread their significance in spite of all explanations, attention may be called to the fact here. If the non-mathematical reader will simply compare the curve showing the percentages of wheat prices with that showing the same data in the case of gram, he will be forced to admit greater stability of wheat prices. If the mathematical reader will turn to the logarithmic curves, and measure off for himself, he will be satisfied that wheat is the commodity which shows the smallest fluctuations.

To make this point still clearer, I have calculated the deviation of wheat and gram prices from the yearly average for all five commodities. The method of calculation should be clear from the following table which it is not thought necessary to complete.

(1) *Vide* curve facing p. 31.

DIAGRAM II DEVIATION FROM THE MEAN



Year	Average of five commodities	Wheat		Gram	
		Percentage.	Deviation	Percentage.	Deviation
			+ -		+ -
1861	109	109	.. 0	118	9 ..
1862	67	71	4 ..	70	3 ..
1863	59	64	5 ..	58	.. 1
	etc.	etc.	etc.	etc.	

The figures showing the deviation as calculated above for the whole period from 1861 to 1920 have been plotted in Diagram II. What becomes at once apparent from this curve is that with a few exceptions where one curve is positive, the other is negative. If negative figures in the case of gram are plotted as positive and *vice versa*; if, in mathematical language, in the case of gram, y is plotted as $-y$, the curves show a remarkable similarity. When these curves representing the deviations of wheat and gram from the average are compared with that representing the general level of food prices, it will be seen that, with a few exceptions, when prices are high the deviation in the case of wheat tends to be negative, and in the case of gram to be positive. On the other hand, when prices are low, the tendency is for the deviation in the case of wheat to be positive and in the case of gram to be negative. In other words, the curves of average prices tends to exaggerate the fluctuations in the case of wheat, and to understate them for gram: the fluctuations in the case of wheat are generally less than would be indicated by the average, and in the case of gram they are greater.

Exactly the same conclusion is arrived at if the deviation in the case of wheat and gram is calculated from the prices of each in the basal period, 1873-82. There are a few exceptions, but the general result is undoubtedly that, whether the deviation is positive or negative, it is greater in the case of gram than in the case of wheat.

If the deviations of the prices of wheat, barley, bajra, jowar and gram from their price in the basal period, 1873-82 be totalled over the sixty years and divided by 60, we get the following results:—

Commodity	Deviation (+) i.e., where the price exceeds the price in the basal period (1873-82)	Deviation (—) i.e., where the price is less than the price in the basal period (1873-82)	Total Deviation
Wheat	33.3	5.6	38.9
Barley	36.2	6.6	42.8
Bajra	36.3	5.9	42.3
Jowar	36.5	7.1	43.6
Gram	37.3	7.5	44.8

It will be noticed that wheat shows the smallest fluctuations, both positive and negative. When the general level of prices is high, wheat rises generally less than would be indicated by the average deduced from the price of wheat, barley, bajra, jowar and gram ; when, on the other hand, the general price level is low, the price of wheat does not sink to the same extent as does that of other commodities.

There are no doubt various reasons for this phenomenon. A few are suggested below, but no attempt is made to assess their relative importance.

(a) The stocks of wheat carried over from year to year tend to be greater than in the case of the coarser grains⁽¹⁾. The shortage of one season may thus be partly supplemented by supplies carried over from the previous year, and hence in a time of scarcity wheat prices rise by a smaller percentage than the prices of the other food-grains. So, when the price of food-grains is very low, part of that year's supply of wheat may be carried over as reserve, and thus the price falls by less than the average.

(b) Another consideration which must exercise an important influence is this, that the percentage of the irrigated area to the total area under wheat is very much greater than in the case of the other food-grains⁽²⁾, (rice being of course excepted). The coarser food-grains are largely *barani* crops, and, as such, must feel the effects of a bad season very much more than wheat where a larger percentage is irrigated. The difference between the out-turn of such crops in good and bad years must be very much greater than the difference in the case of wheat, and this in itself may be a salient factor in leading to greater fluctuations in their price.

(c) The market for wheat is wider than that for the other food-grains and the assumption is commonly made that the wider the market for a commodity so much less is the tendency to fluctuations

(1) I am informed by Professor Stewart of the Agricultural College, Lyallpur, that it was estimated that in April, 1924—i.e., when the new wheat crop was being harvested—1/16th of the previous wheat crop in the Lyallpur District had not come upon the market. At the same time the Commercial Correspondent of "The Civil and Military Gazette" in the issue of 15th April, 1924, referred to the wheat market as very dull with no supply coming on the market.

(2) *Vide* footnote (1) on p. 23. In British India, 45·2 per cent. of the area under wheat was irrigated in 1924-25.

in its price⁽¹⁾. In good years wheat is much more largely exported from the Panjab than any of the other food-grains⁽²⁾. As soon as the price of wheat in the Panjab falls to a certain level, it becomes a feasible proposition to export it to Liverpool, and the price in the Panjab must then be largely influenced by the world price. With other food-grains such as bajra, jowar and gram which are largely consumed within the Province, this steadying influence is much less operative, and this would account for them falling by a larger percentage than wheat. When, on the other hand, food-prices are high, that wheat which in a year of plenty would have been exported will be directed to internal consumption, and hence through the export reserve—"reserve", we shall call it, to avoid the use of the much contested word, "surplus",—wheat rises in times of scarcity by a smaller percentage than the other food-grains which possess no such reserve. The weakness of this explanation—(and it cannot fail to be a potent influence under present conditions)—is that in the earlier years of the period of which we are treating when the export of wheat from the Panjab was of comparatively little importance, the phenomenon was quite as noticeable as it is now. Another explanation is therefore hazarded.

(d) It has long been recognised in the Panjab that so far as the consumption of food-grains is concerned, the law of substitution is continually at work. "Poor people, finding that the price of wheat is high, and they cannot afford to buy it, substitute coarser grains for it in their consumption"⁽³⁾. In England the process is often found at work as between wheat, potatoes and meat, but is perhaps more familiar in the case of drink than in the case of food. A rise in the price of beer leads to the substitution of spirits, and vice versa. There, however, in normal times wheaten bread is so distinctly one of the cheapest foods available that the substitution of the flour of coarser grains for wheaten flour which

(1) "This illustrates well the great law, that the larger the market for a commodity the smaller generally are the fluctuations in its price, and the lower is the percentage on the turn-over which dealers charge for doing business in it." Marshall's "Principles of Economics", 6th Edition, p. 328.

(2) The percentage of the various crops exported from the Panjab in 1920-21 taking net exports, (i.e., exports less imports) is given below:—

Rice	1.6 %	Bajra	} 5.7 %
Wheat	46.4 %	Jowar	

(3) Brij Narain: "Essays on Indian Economic Problems", p. 492.

is familiar in the Panjab, is practically unknown. In this connection it is interesting to recall that in the discussion in the House of Commons on Whitbread's 'Minimum Wages Bill' at the end of the 18th century, Pitt severely censured the use of wheaten bread by the poorest of the community: he recommended as a way out of the difficulties of the time that the poor should change their diet, and in particular, that those in the South should follow the example of the North, and eat oatmeal. The idea never took on: the people clung to what Pitt stigmatised as "groundless prejudice". During the late war the English public became familiar with bread made from adulterated flour, but the change had to be made by legal enactment. It was perhaps one of the most unpopular measures of the war⁽¹⁾.

In the Panjab the process of substitution takes place in response to changes in price. We have what might be called the "marginal consumer" of wheat, who, when the price of wheat is low, makes wheat his staple food, but who, when the price is high, is forced to transfer to the coarser grains. Even in the case of other classes, who could hardly be called marginal consumers, there is a tendency for their consumption of wheat to contract when its price rises; this brings in its train a rise in the demand for the coarser and cheaper grains. It cannot be repeated too often that in any study of prices the demand with which we are concerned must be an "effective demand", *i. e.*, a desire to possess backed up by the means of purchase. If wheat has risen in price to such a level that a particular class can no longer afford to buy it, that class becomes non-effective from the standpoint of directly influencing the price. Now, in so far as this process of substitution goes on as between wheat and the coarser grains, it would tend to account for the phenomenon we are attempting to explain. When food prices are high, a class which was previously consuming wheat is forced to curtail its consumption of that commodity, and take refuge in the coarser grains. The contraction of the demand for wheat, and the consequent rise in the demand for the coarser grains, would tend to bring about the result of wheat prices rising by a smaller percentage than those of the

(1) I have myself, in censoring soldiers' letters in France, come across the statement that when they came on leave from the front, they would take to their folks at home, as the souvenir which would be most appreciated, a loaf of white bread. The Army in France was throughout the war supplied with wheaten bread.

coarser grains. On the other hand, when food prices are low, a larger number of consumers come into the field with an effective demand for wheat: and classes previously consuming wheat extend their consumption of that commodity, taking at the same time less of the coarser grains. The natural effect is that wheat prices tend to fall by a smaller percentage than those of the other grains.

LOGARITHMIC CURVE OF PANJAB FOOD PRICES

A curve representing either absolute prices, or these prices expressed as a percentage of their price in a given year or of the average of their prices in a series of years, (vide Curve facing p. 22) is possessed of one great disadvantage. If the prices of food-grains rise, say from Re. 1 per maund to Rs. 2 per maund, this would be represented by a given vertical distance. Assume for the moment that the level has become stabilised around Rs. 2 per maund, and then rises to Rs. 4 per maund. This would be represented by a vertical distance twice as great as the first change, and yet in both cases the rise has been one of 100 per cent. So if prices are expressed as percentages of their price in a basal period, when the percentage figure rises from, say, 100 to 150, the vertical distance by which this change will be represented must be the same as if the figure rose from 400 to 450. If we assume that in the first case that the price level had before the change been oscillating around 100, and in the second case around 400, it needs no demonstration to show that the change in the first case is one of larger dimensions than in the second, though they would both be represented by the same vertical distance in the diagram.

To make this point more definite, the reader might kindly refer to the Curve showing percentage prices in the case of wheat (Diagram 1). Two parts of the curve that present a distinct resemblance are those between 1863 and 1869, and between 1904 and 1908. The form of the curve and the amount of the rise appear very similar in these two portions. As a matter of fact the percentage actually rose from 64 to 158 in the first period, and from 107 to 198 in the latter. The absolute rise is approximately equal. But it is obvious that, although the absolute difference between 64 and 158 and between 107 and 198 is approximately equal, the first is likely to be a more serious economic phenomenon than the second.

The first is equivalent to a rise of 147 per cent., while the latter is little more than half that figure, *viz.*, 85 per cent. Or take, say the rise in the general average between 1894 and 1897, as compared with that between 1917 and 1919. In the first case the rise was from 78 to 205, or 163 per cent.; while in the latter it was from 191 to 336, or 76 per cent.

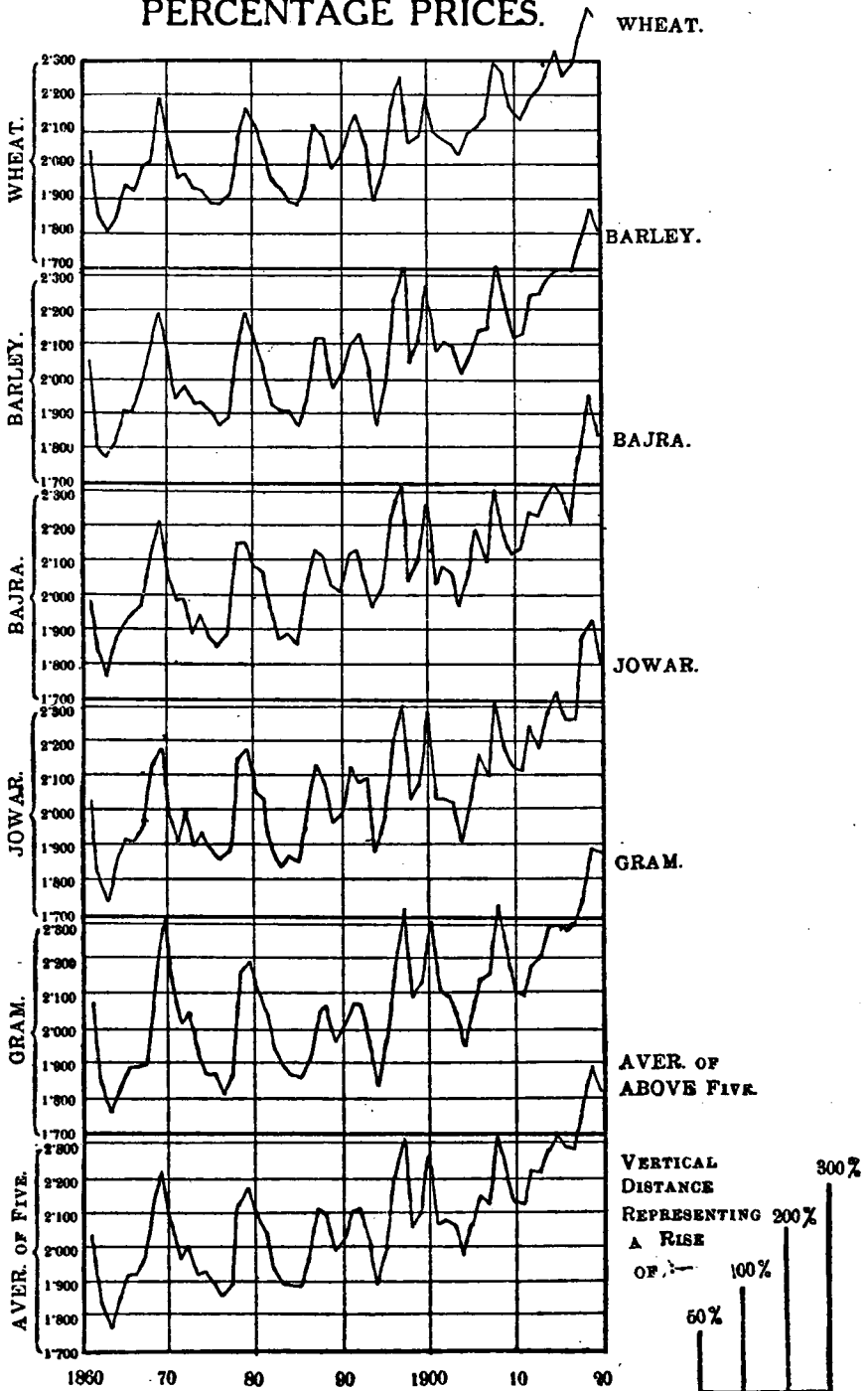
When a mountaineer looks at the cross section of a piece of country he has to traverse, there are two considerations he will bear in mind. The first is the number of feet he will have to climb day by day, and the second is the altitude from which he will have to start. A climb of 5,000 feet is a thing he would treat lightly if he were starting from an altitude of 5,000 feet. He knows, however, that a similar climb from an altitude of 15,000 feet will be an altogether different and more difficult proposition, even although he has had time to linger at 15,000 feet and get accustomed to the rarified atmosphere. Would he not laugh to scorn the person who suggested to him that the climb in the first case might be presented as one of 100 per cent., while in the case of the latter it was no more than 33 per cent.?

The case of prices is almost the converse of that stated above. There the rise in the general level from 5,000 to 10,000 is likely to be a more serious economic phenomenon and to produce more hardship and suffering than if the level rose from 15,000 to 20,000—the assumption being made in each case that before the change prices were more or less stabilised around the first mentioned figure. When dealing with prices the consideration of first-rate importance is not the absolute change so much as the ratio of the change, the ratio which the new price bears to the old one. With an ordinary curve, either of absolute prices, or of these expressed as percentages of a base, this consideration cannot be fully brought out.

Here, however, the difficulty can be surmounted by plotting *not* the prices, nor their percentages, but the logarithms either of these prices or of their percentages. Such a curve is a curve of ratios, and the reader must be on his guard against interpreting it in any other way. In such a curve the same vertical distance represents an equal percentage increase or decrease at any part of the scale, and the vertical distance equivalent to a rise of say, 50%, 100%,

DIAGRAM III LOGARITHMIC CURVES OF PERCENTAGE PRICES.

LOGARITHMIC SCALE.



200%, etc., can be shown by drawing lines of the appropriate length beside the curve.

Such a curve showing the logarithms of the percentage prices of the principal food-grains in the Panjab, and of the average got from wheat, barley, bajra, jowar and gram has been prepared— (Diagram III). A close study of this diagram, and a comparison with that representing percentages (vide Curve facing p. 22) brings out certain interesting results.

The first point which is most clearly demonstrated is that towards the end of the period food prices in the Panjab have been subject to much smaller fluctuations than in the earlier period. In the case of most of the commodities, the ratio of the increase of price between 1904 and 1920 has been roughly equivalent to that between 1863 and 1869; in the one case the change is spread over sixteen years, and in the other over six. The greater stability of the level of food prices may be said to be one of the chief results brought out by the logarithmic curves. When ratios are taken and not absolute prices, the crests in the earlier period become much magnified, and those in the latter period look less deadly because the point of departure is so much higher.

A second point, to which reference has already been made⁽¹⁾, which is brought out most clearly is the smaller fluctuations in the case of wheat than in the case of the other food-grains. The same vertical distance in all cases means an equal percentage increase. Any one who will take the trouble to measure and compare the peaks in the case of wheat with those for the other commodities will see that almost invariably wheat shows the smallest fluctuations.

PRICE OF WHEAT IN THE SIX GROUPS OF DISTRICTS IN THE PANJAB

For wheat the average yearly price in each of the six Groups of Districts in the Panjab⁽²⁾ has been plotted. The figures for the Northern and Western Groups are not strictly comparable over the whole period in that in 1905 Attock was added to the former and Lyallpur to the latter, while in 1907 Kurram made its appearance

(1) *Vide p. 24 ante.*

(2) *Vide p. 3 ante.*

in the first and Tochi in the second. Otherwise the districts included in each Group are as given in footnote on page 3.

The most outstanding feature of the diagram, as might be expected, is the much greater dispersion of the curves in the earlier years of the period. In 1869, for example, while wheat in the Northern Group (Rawalpindi and Peshawar) stood no higher than Rs. 2'560 per maund, the figure for the Southern Group (Hissar and Ferozepore) was no less than Rs. 4'088 a difference of Rs. 1'5 per maund, or approximately Rs. 41 per ton. In 1879, on the other hand, the tables are practically turned; in that year the price of wheat in the Northern Group had risen to no less than Rs. 4'928 per maund, while it stood no higher than Rs. 2'783 in the South-Eastern Group (Delhi, Rohtak and Karnal)—a difference of Rs. 2'145 per maund, or approximately Rs. 59 per ton. From about 1885 onwards the prices in the different districts tend much more strongly towards equality. The cause is undoubtedly to be found in the improved means of transportation within the Province⁽¹⁾. Such dispersion as is noticeable in the years before 1885, even when the prices of wheat are not particularly high, becomes a much more uncommon feature after that date. Even so far as absolute prices are concerned, the earlier period can boast of peaks quite as fearsome as any to be found up to 1920.

For purposes of comparison, I set out below the differences between the prices in different districts when these differences were at a maximum in the years before and after 1885.

Year	District Group	Price of Wheat in rupees per maund	District Group	Price of Wheat in rupees per maund	Difference between (3) & (5) in rupees
(1)	(2)	(3)	(4)	(5)	(6)
1863	S. E.	1'563	So.	1'146	'817
1869	So.	4'088	N.	2'560	1'528
1871	N.	2'406	S. M.	1'605	'801
1879	N.	4'928	S. E.	2'783	2'145
1880	N.	4'543	S. E.	2'363	2'180
1884	S. E.	1'951	N.	1'361	'590

(1) For a short summary of the progress of railway construction in the Panjab, see Calvert's "The Wealth and Welfare of the Panjab", p. 53.

Year	District Group	Price of Wheat in rupees per maund	District Group	Price of Wheat in rupees per maund	Difference between (3) & (5) in rupees
(1)	(2)	(3)	(4)	(5)	(6)
1889	S. E.	2'286	S. M.	1'900	'386
1894	S. E.	1'917	C.	1'540	'377
1896	S. M.	3'71	C.	3'097	'613
1903	N.	2'662	S. M.	2'258	'404
1907	S. E.	3'373	N.	2'692	'681
1908	S. E.	4'679	W.	3'818	'861
1913	N.	3'831	S. M.	3'345	'486
1919	So.	6'523	W.	5'753	'770

The years selected in both parts of the Table are those in which the difference between the prices in different districts is the greatest. In other years it may be presumed that the difference is less

In the second part of the Table there is nothing at all comparable with the differences to be observed in the first part. The maximum difference in the second part is in 1908 when the price of wheat per maund in the South-Eastern Group was some 14 annas higher than in the Western Group. In 1880, on the other hand, the difference between the Northern and the South-Eastern Group was no less than two rupees, three annas per maund. The cost of transporting wheat from Multan to Ambala is now approximately 7 annas 11 pies per maund; from Rawalpindi to Delhi 9 annas, 6 pies per maund.

Thus in so far as the difference between the prices in different districts depends upon the cost of transportation, we might say that the "wheat points" within the Province—(to adopt a simile from the transactions of the foreign exchanges)—are not likely to be further apart than 10 annas. In other words, if the price in one district exceeds that in another by more than 10 annas, wheat is likely to start moving from the one to the other. This applies of course to the headquarters of districts, and not to regions far remote from the railway line.

As regards the relative level of wheat prices in the different Groups, it is almost impossible to generalise from the diagram. No one Group evinces a clear tendency to be either above or below the others throughout the period. Generally speaking, the price in the Sub-montane Group as might be expected, has shown a tendency throughout the period to be below, rather than above, the others; the price in the South Eastern Group tends more often than not to be above than below the average. A rather striking fact is the alteration in the relative position of the Western Group. In the earlier part of the period, in fact till about the beginning of the present century, this Group invariably showed a comparatively high level, which was particularly pronounced in times of scarcity. From 1905 onwards it practically leads the way as the district with the lowest level. This is undoubtedly to be ascribed to the opening up of the new Canal Colonies, and the introduction of Lyallpur in 1905 as one of the Districts in the Western Group.

RELATIVE PRICES OF RICE, WHEAT, BARLEY,
BAJRA, JOWAR AND GRAM

REMARKABLE STABILITY

In Table XI, the prices of the various food-grains have been expressed for each year as a percentage of the price of wheat in that year. The decennial averages obtained from that Table are reproduced below; also the average for the first thirty and the second thirty years; and the average for the sixty years taken as a whole.

		Rice	Wheat	Barley	Bajra	Jowar	Gram
<i>Aver.</i>	1861-70	184	100	66	88	78	85
	71-80	198	100	68	88	80	83
	81-90	183	100	66	89	76	76
	91-00	162	100	69	95	81	81
	1901-10	166	100	67	85	74	80
	11-20	155	100	71	93	86	84
<i>Aver.</i>	1861-90	188	100	67	88	78	81
	1891-1920	161	100	69	91	80	82
<i>Aver.</i>	1861-1920	175	100	68	90	79	81

Two significant results may be noted. In the first place the comparative stability of the prices of barley, bajra, jowar and gram with reference to wheat is most striking. In each case there seems a slight tendency for these to rise in value relatively to wheat, but the change is so small as to be neglected for practical purposes. In the case of barley, bajra, jowar and gram the average prices in the second thirty years stand to those in the first thirty as 67 to 69, 88 to 91, 78 to 80, 81 to 82. When the great changes that have taken place in the agriculture of the Province through the extension of irrigation and means of transportation are borne in mind, this result is even more striking. No argument is more common than that the extension of irrigation has made it more difficult to procure feeding stuffs for cattle. Undoubtedly the conversion of grazing land into arable has limited the facilities for the rough grazing of stock, but in so far as typical feeding stuffs are concerned, they have shown little tendency to rise in value as compared with wheat. Relatively to wheat their value over the sixty years has been comparatively stable. Such difficulty as is alleged to exist in procuring them must thus have arisen from the rise in the general level of food prices, and not in the rise of these with reference to wheat.

The second point which deserves notice, though it is somewhat difficult to account for, is the fact that in terms of wheat, rice has fallen in value. For the six decades for which figures are available, the percentage price of rice in terms of wheat has been 184, 198, 183, 162, 166 and 155. Compared with the remarkable relative stability in the case of the other food-grains, this relative decline in the value of rice is even more noteworthy. It may be connected with improved railway facilities which make the import of rice into the Province from Bengal and the United Provinces more easy, or with the extension of irrigation which confers a greater advantage upon rice than upon the other food-grains.

TABLE XI

TABLE SHOWING THE YEARLY PRICES OF RICE, BARLEY, BAJRA, JOWAR
AND GRAM EXPRESSED AS A PERCENTAGE OF THE PRICE OF
WHEAT IN THAT YEAR

Year	Rice	Wheat	Barley	Bajra	Jowar	Gram
1861	153	100	70	77	79	89
2	198	100	60	84	75	80
3	195	100	62	80	70	73
4	212	100	65	96	84	80
5	201	100	63	84	76	73
6	215	100	64	93	79	76
7	188	100	72	90	79	88
8	164	100	69	99	92	86
9	146	100	67	91	77	109
70	168	100	68	82	67	95
<i>Aver. 1861-70</i>	<i>184.0</i>	<i>100.0</i>	<i>66.0</i>	<i>87.6</i>	<i>77.8</i>	<i>84.9</i>
71	212	100	66	93	73	94
2	194	100	68	91	87	95
3	192	100	68	93	83	72
4	213	100	68	93	83	72
5	215	100	70	86	81	78
6	218	100	68	85	79	71
7	207	100	64	83	75	74
8	201	100	67	105	97	99
9	154	100	72	85	83	86
80	176	100	67	82	69	80
<i>Aver. 1871-80</i>	<i>198.2</i>	<i>100.0</i>	<i>67.6</i>	<i>88.3</i>	<i>80.1</i>	<i>83.0</i>
81	176	100	66	92	79	82
2	194	100	63	89	71	79
3	198	100	62	76	64	73
4	219	100	68	88	75	76
5	214	100	65	82	74	77
6	175	100	60	90	78	68
7	136	100	69	92	84	70
8	152	100	72	94	80	76
9	193	100	66	98	77	77
90	173	100	67	86	76	81
<i>Aver. 1881-90</i>	<i>183.0</i>	<i>100.0</i>	<i>65.8</i>	<i>88.7</i>	<i>75.8</i>	<i>75.9</i>
91	152	100	67	92	85	75
2	146	100	65	86	70	67
3	178	100	62	84	69	64
4	234	100	62	113	77	70
5	177	100	67	94	78	76
6	133	100	76	100	86	81
7	142	100	77	101	89	99
8	170	100	64	84	74	86
9	152	100	71	93	81	91
1900	140	100	80	101	97	104
<i>Aver. 1891-1900</i>	<i>162.4</i>	<i>100.0</i>	<i>69.1</i>	<i>94.5</i>	<i>80.6</i>	<i>81.3</i>

(Continued on next page)

TABLE XI—(continued)

Year	Rice	Wheat	Barley	Bajra	Jowar	Gram
1901	165	100	64	76	70	83
2	170	100	72	90	74	84
3	171	100	72	87	75	78
4	178	100	65	77	62	68
5	160	100	64	82	71	75
6	169	100	72	114	92	86
7	180	100	68	80	74	84
8	155	100	71	91	84	93
9	145	100	61	71	66	75
10	168	100	60	80	73	71
<i>Aver. 1901-10</i>	<i>166.1</i>	<i>100.0</i>	<i>66.9</i>	<i>84.8</i>	<i>74.1</i>	<i>79.7</i>
1911	182	100	67	88	78	74
2	168	100	77	99	91	80
3	159	100	71	90	74	79
4	152	100	71	94	86	90
5	134	100	64	86	83	75
6	151	100	76	95	81	85
7	134	100	69	73	76	82
8	144	100	70	95	110	80
9	156	100	73	116	99	92
20	168	100	68	98	82	99
<i>Aver. 1911-20</i>	<i>154.8</i>	<i>100.0</i>	<i>70.6</i>	<i>93.4</i>	<i>86.0</i>	<i>83.6</i>
<i>Aver. 1861-1920</i>	<i>175</i>	<i>100</i>	<i>68</i>	<i>90</i>	<i>79</i>	<i>81</i>

THE GENERAL LEVEL OF PANJAB FOOD PRICES

The yearly prices of wheat, barley, bajra, jowar and gram have already been expressed as a percentage of the average price of each of these food-grains in the ten years 1873-82, (vide Table X). An arithmetical average of the five percentages so obtained for each year has been constructed, and this figure year by year may roughly be said to indicate the price variations in Panjab food prices (vide Col. 9 of Table X). This average figure has been presented graphically in the lowest curve in the diagram facing page 22.

It has already been pointed out⁽¹⁾ that the percentage variations in the prices of the five food-grains are so similar that no very serious error would have been incurred had wheat alone been taken as representative of the others. It seems advisable, however, to take advantage of all the reliable data available, and take the average as deduced from the five commodities.

A study of either the actual figures showing this average, or of the curve constructed from them, shows clearly the fluctuations from year to year. These yearly oscillations, however, particularly in the earlier years, are so violent that from either the figures or the diagram, as they stand, it is not easy to get any idea of the *general* trend of food-grain prices. It is equally difficult to say definitely from them whether there has been in evidence a well defined cycle of high and low prices. If we take maximum turning points, for example, we find these clearly marked in the years 1869 and 1879. In the next decade prices fall very low in 1885, and then it looks as though the story of the two previous decades were to repeat itself ; but prices after rising until 1887 then fall, and rise again to another maximum in 1892. Similarly in the last decade of the century, high prices show a double peak with its apices in 1897 and 1900. If we are to investigate the *general* trend of these prices, and the problem of the periodicity of high and low prices, some method must be adopted which will minimise annual fluctuations, and show more clearly the general tendency.

The simplest and most convenient method for this purpose is to take for each year, not the price of that year, but the averag

(1) *Vide* page 22 ante.

of that price with that of one, two, three, four or five years before and after the year in question. In this way, any exceptional fluctuation in one particular year will be softened down, and the larger the number of years we take the smaller will become the yearly fluctuations. A three-yearly average, for example, still shows considerable short-period fluctuations; these are smaller than those in the curve of yearly prices, but for the purpose now in view the three-yearly average is only a little more useful than the yearly percentage. As the period is widened, however,—as we take a five-yearly, a seven-yearly or a ten-yearly period—annual fluctuations become less prominent, and the *general* tendency, upwards or downwards, becomes more prominent.

A table constructed in this manner is set out overleaf.

TABLE XII
PANJAB FOOD-GRAIN PRICES
Three-Five-Seven-Ten-Yearly Averages

Year	Average price of wheat, barley, bajra, jowar and gram as a percentage of their average price from 1873 to 1882	Averages			
		Three Yearly	Five Yearly	Seven Yearly	Ten Yearly
1861	109				
2	67	78			
3	59	66	78		
4	71	71	73	81	
5	83	79	78	83	98
6	83	87	91	98	96
7	94	101	111	106	100
8	126	130	118	110	102
9	169	138	120	112	103
1870	119	127	121	112	103
1	93	104	113	111	102
2	100	92	96	104	100
3	82	89	87	90	101
4	84	81	83	84	99
5	77	78	79	90	100
6	72	76	89	97	101
7	78	95	102	103	102
8	134	121	112	107	100
9	151	137	120	108	99
1880	125	129	121	109	99
1	111	107	110	109	101
2	86	92	95	100	106
3	78	80	85	92	

(Continued on next page)

TABLE XII

PANJAB FOOD GRAIN PRICES.—(continued)

Year	Average price of wheat, barley, bajra, jowar and gram as a percentage of their average price from 1873 to 1882	Average.			
		Three Yearly	Five Yearly	Seven Yearly	Ten Yearly
1884	77	76	82	93	105
5	74	81	90	95	99
6	93	99	100	96	97
7	130	116	104	100	99
8	124	117	109	107	103
9	97	108	116	115	106
1890	103	109	116	117	106
1	128	120	113	109	109
2	130	121	109	106	115
3	105	104	108	115	123
4	78	94	115	129	122
5	99	113	130	127	125
6	161	155	131	127	133
7	205	160	141	138	132
8	114	148	158	144	131
9	126	141	149	147	132
1900	184	143	132	140	134
1	118	141	133	125	135
2	120	118	126	125	133
3	115	110	113	127	126
4	95	109	118	120	136
5	117	118	120	133	140

(Continued on the next page)

TABLE XII

PANJAB FOOD-GRAIN PRICES—(continued)

Year	Average price of wheat, barley, bajra, jowar and gram as a percentage of their average price from 1873 to 1882	Averages.			
		Three Yearly	Five Yearly	Seven Yearly	Ten Yearly
1906	141	130	139	139	135
7	133	101	153	142	136
8	209	169	157	148	141
9	166	170	155	155	146
1910	135	145	162	158	156
1	133	145	153	167	165
2	107	155	158	167	170
3	166	175	173	171	176
4	191	189	186	179	182
5	210	198	190	197	199
6	194	198	209	222	214
7	191	216	239	239	
8	263	263	254		
9	336	295			
1920	286				

A diagram has been prepared in which have been plotted :—

- (a) the yearly percentage figures,
- (b) „ three-yearly average,
- (c) „ five-yearly „
- (d) „ ten-yearly „
- (e) a hand drafted smoothed curve through the ten yearly average.

All of these curves are deserving of close study. The first shows clearly the huge annual fluctuations in the prices of the food-grains, and differentiates clearly the fat years from the lean. It tells its own tale of years when the monsoon was favourable and when the reverse. But it gives us only the roughest indication as to whether the *general* level of prices was rising or falling.

The curve showing the three-yearly average shows smaller oscillations, but takes us only a short way in the quest we are after.

The curve presenting the five-yearly average is of particular interest in that it seems to indicate a well-defined periodicity. The tendency for an era of high prices to occur towards the end of each decennium seems clearly brought out by this curve. Well-defined maximum turning points are shown by it in the years 1869-70, 1879-80, 1889-90, 1898, 1908-10,—(and we may surmise that another will be found around 1920). The reader must not be distressed though such a curve as this gives a maximum turning point when prices actually were low. If two periods of maxima occur at short intervals, *e.g.*, in 1887 and in 1892, the method of a five-yearly average may show the maximum as it does in 1889-90 when prices actually were low. This objection can only be removed by varying the length of the period chosen. The tendency, however, which the curve shows for eras of high and low prices to recur about every ten years seems to us of particular interest—but we shall return to this point later.

In the curve showing the ten-yearly average, the influence of particular years, whether of plenty or of scarcity is much less marked. In its construction fat years have been set against lean years; the cheap prices of 1863 and 1876 have been balanced by the dear prices of 1869 and 1879. By so doing, we have arrived at

a curve which gives us roughly the *general* trend of food prices. This curve has been smoothed by a hand-drafted line, and this shows us clearly the *general* level of food prices when yearly fluctuations have been largely eliminated.

A study of this new smoothed curve makes four points abundantly clear, and each demands an explanation :—

1. Firstly, there is the remarkable stability in the *general* level of prices from 1861 to 1887⁽¹⁾, in spite of years of severe famine and years of plenty.

2. Secondly, the rise in the *general* level of food prices which set in about 1887, and continued till 1896.

3. Thirdly, the comparative stability which set in in 1896 and continued until about 1905.

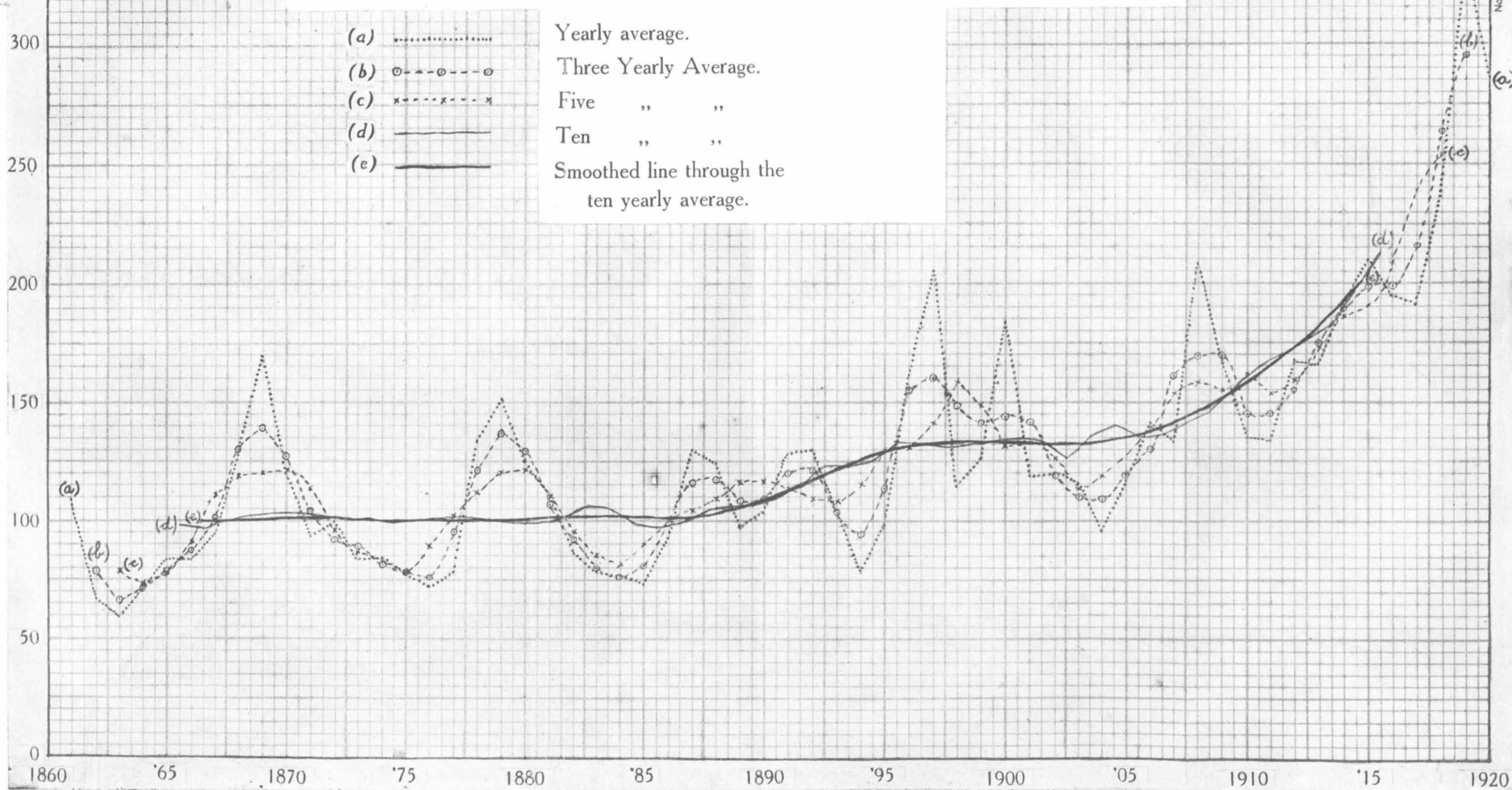
4. Fourthly, the rapid rise in the *general* level which began about 1905, and which seems still in operation as far as our figures take us, viz, 1920.

To offer an adequate explanation of these phenomena is a more difficult problem. If we are right in supposing that the cycle of

(1) I have confined my survey to commodities for which I could get reliable quotations of prices for the Province taken as a whole, viz., wheat, barley, bajra, jowar and gram. To that extent my survey is of a limited nature, and may be attacked on the grounds that the commodities selected are not representative. In a statistical survey, however, it is better to work from a limited mass of fairly reliable data, than from a much larger mass of which the accuracy is more doubtful.

My observations, however, bring me to a conclusion diametrically opposed to that generally accepted, and which is arrived at in an entirely different way by Professor Brij Narain in his "Essays on Indian Economic Problems". In an Essay on "Prices before 1861", after a survey of different Settlement Reports, he comes to this conclusion :—"Prices continued to be low till about 1860, after which they began to rise. For the first two or three years after 1860 the rise was due to famine, as also in 1863-69, but it is broadly true that after 1865 prices show a marked upward tendency." (p. 60). Again on p. 67, he says, "To sum up: There are two chief features in the early history of our prices (*i. e.* Panjab prices), the heavy fall of prices in the first three years after the annexation of the Panjab, and the gradual rise of prices since 1860." Again on the same page he speaks of "*the rise in the price of agricultural produce . . . after 1860.*" (The italics in each case are mine). The conclusion is arrived at after a review of various Settlement Reports. He finds himself called upon to account for this rise in prices. The phenomenon brought out by my statistical survey is the reverse of that stated above, viz, the remarkable stability of the general level of food prices in the Panjab from 1861 to 1887.

SMOOTHED CURVE OF PUNJAB FOOD PRICES.



high and low prices runs its course in about ten years, it is obviously futile to attempt to explain the rise in the general level that has taken place since 1887 by any enumeration of good and bad seasons. It seems much more likely that it is connected with the improvement of communications in the Province, and the linking up of its markets with those of the West. Such an event would naturally tend to bring the price level in India nearer equality to that of the West. But such an Index Number as that of Sauerbeck's shows the general level of prices in England falling till 1896, after which it tended to rise. In the Panjab, so far as food-grains were concerned, the reverse is seen to be the case. The price level rose till 1896 while in England it was falling; once it started to rise in England, a period of comparative stability set in in the Panjab.

We are, therefore, forced to look for some cause of a general nature which was peculiar to the Panjab, or at least to India, as opposed to England. The cause to which the economist naturally turns, and one over which the business man is generally very sceptical, is the quantity of money in circulation. The business man, if he is, say, a dealer in wheat is so much accustomed to study particular causes—a failure in the monsoon in some other part of India, a shortage in the supply within the Province, the abundance or otherwise of the American wheat crop, etc.—that he is inclined to treat with scorn the influence of a general cause such as the increase of currency in circulation. Have we not all met the successful business man, the man who has done well and is the reverse of a fool, who, perhaps out of deference to the economist, will in a general sort of a way recognise that there may be some connection between the volume of currency in circulation and the general level of prices; but who, at the same time, confesses himself utterly unable to grasp the fact that there can possibly be any connection between the volume of currency and the prices of the commodities in which *he* deals? Yet such general causes are quite well known and universally recognised in other spheres of life. The mean level of the water in an inland lake may be presumed to be the same when it is smooth as a mill-pond, and some eight hours later when a hurricane is raging and mighty waves have formed. Against the crest of the wave must be set the trough, and the mean level will be approximately the same. But if for the

inland lake we substitute a harbour by the sea, and make the same assumptions, it would be exceptional if the mean level were the same at two times eight hours apart. And why? Because in this case an influence of a *general* nature, namely, the tide, had been silently operating, and may have exercised a much greater influence on the mean level than the waves which have arisen on the surface. Of such a nature is the influence of the quantity of money in circulation on the general level of prices.

The economic student who looks at our smoothed curve of food prices is almost certain to recall the great imports of silver which set in after the demonetization of that metal in the early seventies by Germany and the United States, and the depreciation of that metal in terms of gold. He will recall the financial difficulties of the Government of India which led eventually in 1893 to the closing of the Indian Mints to the free coinage of silver, and *a priori* he may look for a reflection of these alterations in the price level. He may find indications of what he seeks in the rising price level from 1887 to 1896, and in the period of comparative stability from 1896 to 1905.

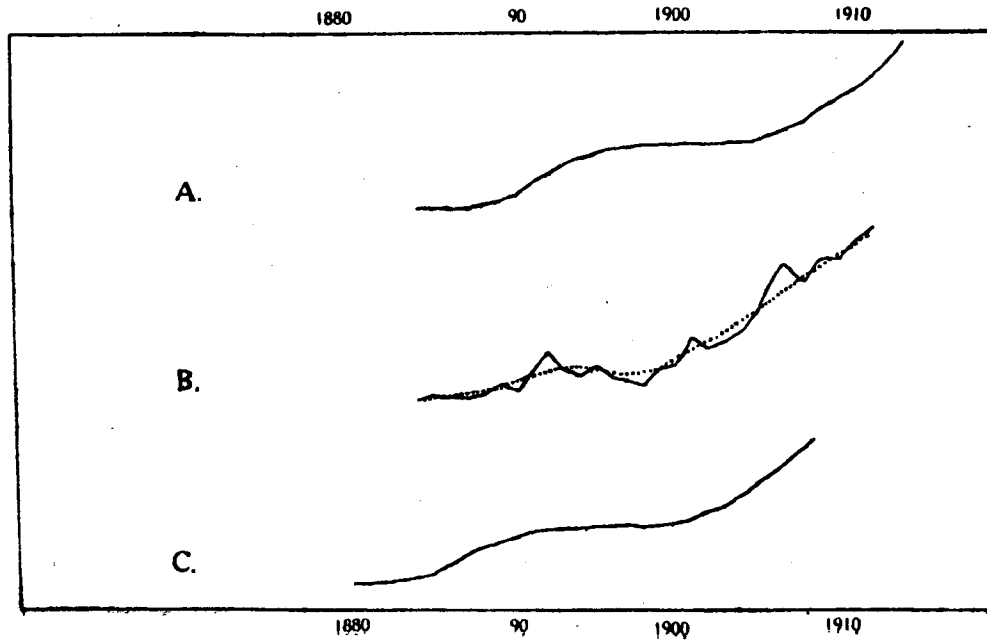
The correlation of the general price level of food-grains in the Panjab with the amount of currency in circulation in the Province, is, however, a problem of considerable difficulty. The writer knows of no figures which even attempt to give an estimate of the total amount of currency in circulation in the Province year by year, and the Currency Office in Lahore confesses itself unable to help. Even the total amount of currency in circulation in India in different years is a matter of conjecture, and different estimates show considerable discrepancies. I suggest borrowing the estimate given by Mr. Datta in his "Inquiry into Prices in India" (1). He gives a table showing the estimated total amount of currency (including currency notes) in circulation in India from the year 1884 to 1912. If we make the assumption, and it is rather a big one, that any increase or decrease of currency in circulation in India will reflect itself proportionately in the Panjab, we may take the figures given by Mr. Datta, and compare them with the general price level we have established.

(1) For the method in which the figures were arrived at see Datta "Inquiry into Prices in India", p. 92.

DIAGRAM VI

SHOWING

- A. SMOOTHED CURVE OF PUNJAB FOOD PRICES.
- B (i). ——— TOTAL AMOUNT OF CURRENCY
IN CIRCULATION.
- (ii). SMOOTHED CURVE OF SAME.
- C. SMOOTHED CURVE OF PUNJAB FOOD PRICES
PLOTTED WITH A 5 YEARS' LAG.



A diagram has been prepared showing :—

- (1) the smoothed curve of Panjab food prices,
- (2) the amount of currency in circulation (as given by Datta),
- (3) the smoothed curve of Panjab food prices plotted to make allowance for a five-years lag.

If curve (1) be compared with curve (2), a fairly close resemblance is noticeable. The main point of difference is that, while the form of the two curves is largely similar, the variations in curve (2) lag behind those in curve (1). For purposes of comparison, curve (1) has been plotted a second time as curve (3), but in this case the figures have been put forward five years.

To the economic student the close resemblance of these curves is more than a coincidence. The rising flood of the currency in circulation till 1892, the fall after that date until 1898, and the rise from then onwards all have their counterpart in our smoothed curve of prices, though the latter seems to lag a few years behind. But to attempt anything more than the suggestion of the relationship would necessitate a complete paper to itself.

PERIODICITY IN PANJAB FOOD PRICES

It has been suggested previously that the figures given by the three-yearly, five-yearly and seven-yearly averages seem to indicate fairly clearly a well-defined cycle of high and low prices, the period of which is about ten years. This point may now be taken up more fully.

The maximum points as given by each of these averages are set out below :—

Three-yearly	Five-yearly	Seven-yearly
1869	1870	1869-1870
1879	1880	1880-1881
1888	1889 & 1890	1890
(1892	..	1894)
1897	1898	1899
..	..	1903)
1908	1908 & 1910	..
(¹)	(¹)	(¹)

(1) Figures are not yet available to enable us to construct such averages at the end of the period, but the presumption is that a similar maximum turning point will be found somewhere between 1919 and 1921.

In the above, there are certain discrepancies, but on the whole the fact seems to be well established that during the period 1861 to 1920, there has been a most pronounced tendency for high prices to prevail, so far as Panjab food prices are concerned, when the figure in the decennium is about to change. The entry 1892 under the three-yearly average may be said to be due to a short-period fluctuation which a three-yearly average is too short to eliminate—at this time we had a “double peak”. The entries 1894 and 1903 under the seven-yearly average, both of which may be regarded as exceptional, can easily be explained. Both of these were years of very low prices, but the period of seven years is sufficiently long to embrace the falling prices from one maximum, and the rising prices to another, and thus in these cases years of actual low prices have appeared as maximum turning points.

If we delete these exceptional cases, and summarise the remainder, we arrive at the following:—

Maximum Turning Points

Number of occasions where the digit was:—

1	2	3	4	5	6	7	8	9	0
$\frac{1}{3}$	0	0	0	0	0	1	$2\frac{1}{2}$	5	5

(NOTE.—Where two years appear under the maximum, *e. g.*, 1869 & 1870 in the first entry in the seven-yearly column, each has been entered as $\frac{1}{2}$.)

The ten-yearly average shows considerable deviations, and in many cases gives the maximum in the wrong place. But if the ten-yearly period is granted, this discrepancy is to be expected. Economic laws differ from the laws of the natural sciences in that they merely express tendencies which will occur in the absence of disturbing causes. In Astronomy, for example, once the path of a particular star, and the rate at which it travels, have been determined, its position at any time in the future can be foretold with almost mathematical accuracy. But all kind of counteracting influences may intervene to upset the working of economic laws. An increase in the quantity of money in circulation within a country might be expected, other things remaining the same, to raise the general level of prices, but the volume of trade might increase, the rapidity of circulation might decrease, and various other influences

intervene to neutralise the influence of the increase in quantity. So, as regards the recurrence of any particular economic phenomenon, whether it be a period of trade depression or an era of high prices, though the period in general may be perfectly well-defined, it may at any time be upset by altogether unforeseen circumstances. The tendency may be for high prices to recur in the Panjab every ten years, but that tendency may on any particular occasion be accelerated or checked by circumstances of an exceptional nature. The period, instead of being ten, might be nine or eight. In that case it must be obvious that a ten-yearly average may give altogether unexpected results, for it may bring the period of maximum when prices actually were at their lowest between the two points of maxima.

The minimum turning points as given by the three-yearly, five-yearly and seven-yearly averages give results equally significant to those of the maximum. The following table gives the minimum turning points :—

Three-yearly.	Five-yearly.	Seven-yearly.
(1863	1864	1864)*
1876	1875	1874
1884	1884	1883
1894	1893	1892
1904	1903	1904
1910 & 1911	1911	1912**

* Not altogether reliable as the earlier figures necessary are not available.

** No fall, but rise apparently checked.

If these figures be summarised in the same way as before, we get the following :—

Minimum Turning Points.

Number of occasions where digit was :—

1	2	3	4	5	6	7	8	9	0
1½	2	4	8	1	1	0	0	0	½

Where we take the two summaries side by side, they seem to warrant the conclusion that during the past sixty years the tendency has been unmistakable for an era of low prices to prevail in the

Panjab so far as food-grains were concerned around the year with the digit 4, and for an era of high prices to prevail when the digit was 9 or 0. This is a study of what has been, and not of what is to be in the future. We refuse to be led into the field of prophesy; suffice it to say that the decade in which we live bids fair at the moment to run a similar cycle. The year 1924 has certainly witnessed a very great decline from the high prices which prevailed from 1919 to 1921.

If we are correct in our surmise that high and low prices tend to recur every ten years, then we should get a curve of a somewhat regular nature if we total the percentage figures for the digit 1, for the digit 2, etc. This has been done in Table XIII below:—

TABLE XIII.

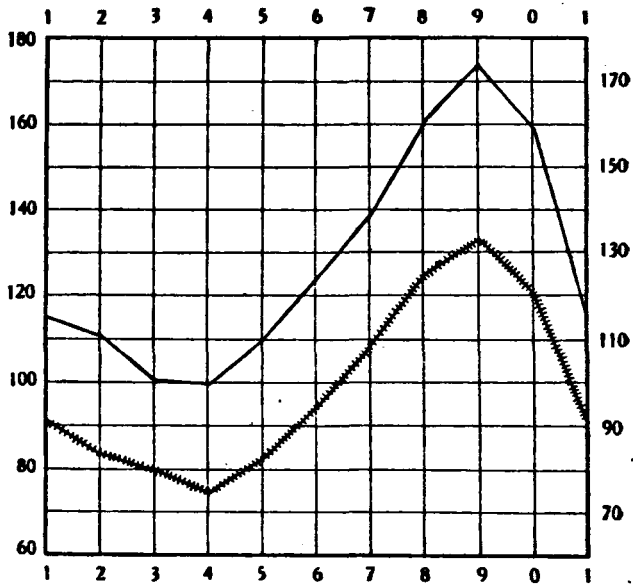
Percentage when digit is :—

Year	1	2	3	4	5	6	7	8	9	0
186—	109	67	59	71	83	83	94	126	169	119
187—	93	100	82	84	77	72	78	134	151	125
188—	111	86	78	77	74	93	130	124	97	103
189—	128	130	105	78	99	161	205	114	126	184
190—	118	120	115	95	117	141	133	209	166	135
191—	133	167	166	191	210	194	191	263	336	286

6/692	670	605	596	660	744	831	970	1045	952
115	112	101	99	110	124	138	162	174	159

This table shows a tendency for prices to be at their lowest in the year with the digit 4, and at their highest in the year with the digit 9. This method of procedure is, however, subject to one great objection, in that the percentage figures in the last decade are very much higher than in the first and as a consequence they exercise a much greater weight on the result, whereas we should like the figures of each decade to exercise the same influence. This difficulty may be overcome by totalling the figures in each line and then expressing each particular figure in the line as a percentage of this total. This has been done below in Table XIV,

DIAGRAM VII
AVERAGE PERCENTAGE
PRICE WHEN DIGIT IS



————— Not Adjusted.

..... Adjusted.

TABLE XIV.
FIGURES OF TABLE XIII ADJUSTED, SO THAT EACH LINE
TOTALS 1,000.

Percentage when digit is:—

Year	1	2	3	4	5	6	7	8	9	0
186—	111	68	60	72	85	85	96	129	173	122
187—	93	100	82	84	77	72	78	134	151	125
188—	114	88	80	79	76	96	134	128	100	106
189—	77	96	98	59	74	121	154	86	95	138
190—	87	89	85	70	87	105	99	155	123	100
191—	63	62	78	89	98	91	89	123	157	134
6/545	503	483	453	497	570	650	755	799	725	
	91	84	80	75	83	95	108	126	133	121

The results arrived at when the figures are adjusted in this way are not very dissimilar in their results from those given by Table XIII—a result to be anticipated if the figures in the latter decades are due to general influences which are as pronounced in the first years as in the last of the decade. Again a clearly defined minimum is observable when the digit is 4. In this case the maximum is clearly found when the digit is 9.

The figures arrived at in Table XIII and in Table XIV have been presented graphically, and the diagram illustrates even more clearly what has been said above. One point that seems borne out by it is that the descent from a period of high prices is more rapid than the ascent, but this we do not stress, nor do we at present attempt to explain it.

To sum up our observations on periodicity we may say:—

1. that from a review of the years for which we have definite information a cycle seems well established ;
2. that the length of that cycle would appear to be ten years;
3. that the tendency has been for an era of high prices to prevail about the end of each decade, and the year when it

has in general been at a maximum has been that with the digit 9;

4. that an era of lower prices usually set in with each new decade, and the tendency has been for prices to reach a minimum in the year with the digit 4 ;
5. that influences of a non-periodic nature have at times upset the regularity of the cycle, but of its existence there seems little doubt ;
6. that the tendency in the present decade seems to be in harmony with the general trend outlined above.

**The Board of Economic Inquiry,
Punjab.**

RURAL SECTION PUBLICATION—8.

(GENERAL EDITOR: W. H. MYLES, M.A.)

**THE
ECONOMIC VALUE**

OF

GOATS

IN THE PUNJAB.

BY

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[The Board of Economic Inquiry, Punjab, does not hold itself responsible for any opinions expressed or conclusions reached by the writer.]

1926.

THE ECONOMIC VALUE OF GOATS IN THE PUNJAB

BY

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The interest of the Board of Economic Inquiry, Punjab, in the economics of goat-keeping originated in a suggestion made to it that the economic value of goats should be investigated by the Board. It was pointed out that in the district of Gurgaon, whence the request originated, owners of goats make no provision for grazing, that the goats are largely maintained at the expense of the public, and that they and their herds devastate the country side with tooth-axe, rendering impossible the growing of such things as trees and shrubs by Government or the District Board. Finally it was stated "that the goat is vermin and should be taxed or legislated out of existence."

Before deciding to pursue the investigation further, it was resolved that the views of those people competent to speak with any authority on goats should be invited. The present note is, therefore, in the main a summary of the expressions of opinion of these people. An endeavour was made to obtain the views of those interested in the subject of goat-keeping from different aspects. Thus the Imperial Dairy Expert, and the Assistant Controller of Military Dairies, have written from a milk-producing point of view; the Conservator of Forests, Punjab, from that of goat grazing in forest areas; the Civil Veterinary Department, Punjab, and Live Stock Experts from that of breeding, feeding and milk production. The present writer has added the results of some investigations he has made into the value of goats' milk in comparison with cows' or buffaloes', the

value of their manure, etc., and the trade returns of the Punjab and India dealing with live goats, skins, etc.

That the goat cannot be classed as vermin in the ordinary sense of the word is clear from the expression of all the persons consulted. It serves a real purpose and is an important factor in the internal economy of the Punjab villages. So long as the animal is confined or kept under proper supervision it is of great value and should be fostered as such. When, however, it is allowed to roam at large and in its destruction of trees and shrubs is liberally assisted by the *dhanga* of the goat-herd it then becomes a nuisance. This was the original meaning of the mover of the investigation and in this everyone naturally concurs.

The goat has been termed the "poor man's cow," for, because of its hardiness, its power to survive where a large and more costly animal would die of starvation, its capacity for living on and turning into milk and meat food material which would otherwise be wasted, and, lastly because of its low cost, it provides for the poorer classes a supply of milk which poverty would otherwise put beyond their means. That, therefore, it cannot and should not be legislated out of existence is undisputed. The remedy for the damage done to the public must be sought in other means.

* "From the forest point of view the goat is the worst enemy of the forests in India. This animal has laid waste all the low hill forests in the Rawalpindi, Kangra and Hoshiarpore districts, and much of the denuded state of the plains of the Punjab is due to the goat and the goat-herd, for the latter uses the *dhanga*, stripping the trees of nearly all their branches, and thus causing their ultimate death. A forest cannot thrive and cannot reproduce itself unless closed strictly to goat browsing, but even so the nomad herds of goats in their annual migration from high level forests in Jammu, Chamba and Bashahr States to the

* Chief Conservator of Forests, Punjab,

sub-montane regions are doing incalculable damage with which the Forest Department finds itself unable to cope.

“ But there is undoubtedly another side to the question. The goat is valuable to the agriculturist for manure, for milk, for fleece, for spinning warm clothing, and for the hide for leather manufacture. To a less extent the goat is required by the *bona fide* agriculturist for meat. It is, however, not so much the goat owned by the *bona fide* agriculturist which does most of the damage in the forests of the Province as the nomad herds I have referred to. They are maintained purely for profit from the sale of fleece and hides. I believe that the goat skin trade of the Province is of very great importance ”.

From the foregoing extract it is clear that there are grave conflicting interests at stake in the solution of the problem. Even the goat's severest critic has to admit its economic value and usefulness in certain directions.

During the last ten years goats in India varied between 24 and 31 millions, the average being 27·8 millions. Sheep during the same period were constant at 22·23 millions. In the Punjab the number has been practically constant during the last 25 years and has been on the average 4·1 millions. According to the census taken in February, 1923, the number in the Province was 4,367,470. In comparison sheep numbered 4,073,488. Goats in the Punjab represent, therefore, 14% of the total in India.

In the census returns of 1909-1914 sheep in the Province were in excess of goats by about 350,000. In 1919 this excess had risen to almost one million. Since then, however, goats appear to have been rapidly increasing. As the latest census (1923) shows not only that this deficit has been wiped out but that goats now exceed sheep by some 300,000. The explanation of this increase is to be found in the fact that goats can survive and even do well in times of scarcity, and statistics show that whenever there is a year

of scarcity goats rapidly increase in number.

From a food consuming point of view the goat is the most economic of all milk producing animals. It is very prolific and cheaply reared. It eats a class of fodder which cows, or even sheep, will not touch and thrives where these animals starve to death. The goat is, therefore, the cheapest of all milk producers. In certain parts of the Punjab it is specially bred for milk, *e.g.*, in Gurdaspur, Gujrat, Sialkote and the Salt Range. Breeders in these districts derive a good livelihood and large profits by supplying to large towns. The trouble, however, lies in the fact that owing to the large demand for goat meat, etc., goat-herds keep a larger number of animals than local growing conditions warrant. With the advance of canal irrigation, grazing areas in the Province have been reduced and goat and sheep rearing has had to concentrate more and more on hilly areas. In the plains it is only bred by the poorer classes, mostly menials owning little or no land and depending entirely on common grazing grounds or what can be picked up by the way.

There is a large annual trade in goats' meat in the Punjab. It is usually preferred by Indians to mutton, and generally, as goats are brought to slaughter in better condition than sheep, their meat commands a better price. A goat in prime condition in the Lyallpur district brings as much as Rs. 15 for slaughter. The Superintendent, Civil Veterinary Department, put this as high as Rs. 25 in some districts. Reproduction amongst goats is usually so controlled by keepers of herds that the majority come into milk during February or March. Enquiries show that on an average the milk yield may be taken at 5 lbs. per day during the first 3 months and 2 lbs. per day for a further two months. The total milk yield, therefore, during a lactation would be from 600-700 lbs. No milk records regarding goats are available to the writer, nor is it likely any are to be found in India ; but enquiries from a number of large

owners of goats put the yield at the figure given. Valuing the milk at as. 2/6 per seer, it is seen that the average goat brings its owner Rs. 50 to Rs. 55 for milk during a year. This sum is mainly profit as the goat has been fed on whatever it could pick up.

It was stated by some of those whose views were obtained that goats' milk is very rich in fat, containing about 1% more fat than cows' milk, that its casein is digested in one-third the time required for cows' milk, and that on the addition of 5% sugar it becomes identical with human milk. On account of these facts it is claimed that it is, therefore, specially suited for children, invalids and aged people. The writer obtained a number of samples of goats' milk from goats which had been in milk for periods varying from 8 days to 6 months and found a fat content as low as 1.9% in one sample and as high as 6.7% in another. The average of 17 samples taken on different days showed a fat content of 3.7%. From this it seems certain that goats' milk whilst as rich as the milk of an average European cow is somewhat below that of the average Indian cow.* Its fat globules, are however, smaller than those of either the cow or the buffalo and are, therefore, more digestible. This fact increases the value of goats' milk.

That the manure of the goat is valuable and that its value is realised is shown by the fact that zamindars are willing to fold a herd of goats on their land and to pay the goat-herd Re. 1 for a herd of 100 goats per night. It is considered by the zamindar that a sufficient dressing of manure is given if 2,000 goats are folded on an acre of land for one night. This practice is commonly followed in Kangra, Hoshiarpur, Montgomery and Sialkote districts. In most cases no regular payment is made but the safety of the flock is guaranteed and other privileges such as grazing, the lopping of trees and sometimes food and tobacco are

* Milk of Indian breeds of cattle is about 4.5%

given. Occasionally 16 seers of grain are also given for one night for a herd of 200 goats. Normally the zamindar spends nothing whatever on manure for his land and that he does actually part with something in return for the manure dropped by the goats indicates that he is slowly moving in the right direction.

Chemically the solid excrement of the goat is much richer in nitrogen and phosphoric acid than that of either the cow or the horse. The urine also is exceedingly rich in both nitrogen and potash and very much more valuable than that of any other animals.

A study of the trade returns shows that the Punjab is not self-supporting in goats. In live goats there is a large import trade annually into the Province and some export. Imports are largely from other Provinces in India but there is also a small trade across the frontier. The latest figures available to the writer are those for 1920-21. During that year the trade was as follows :—

<i>Goats and sheep</i>	Imports.	Exports.
From other Provinces	100,756	2,158
From Central Asia and Tibet.	13,227	..
	113,983	2,158

Excess of imports over exports=111,825.

Statistics do not differentiate sheep from goats, but as the numbers of sheep and goats in the Province are about equal it may safely be assumed that approximately 50,000 goats are imported into the Province annually. The value of these is about 3½ lakhs of rupees.

A very large trade is annually carried on in the import and export of raw skins. This is supplemented by a small trade in dressed skins. During the five years 1916—21 the figures were as follows :—

<i>Raw skins (sheep and goats).</i>		
r Total import of raw skins	=	669,174 Cwts.
Total export of raw skins	=	823,725 ..

Excess of exports over imports	=	154,551	Cwts. .
Average annual net export	=	31,000	
Assuming goats to be half the total as above			
Raw goats skins net annual exports	=	15,000	„
<i>Dressed skins (Sheep and goats).</i>			
Total import of dressed skins (1916—21)	=	247	„
Total export of dressed skins (1916—21)	=	2,372	„
Excess of exports over imports	=	2,125	„
Average annual net exports	=	425	„
Average annual net exports (goats only)	=	200	
			(approximately)

Valuing all skins at Rs. 50 per cwt., the average value of the export trade in goats' skins to the Punjab annually, is over $7\frac{1}{2}$ lakhs of rupees. The Punjab, therefore, annually imports live goats to the value of about $3\frac{1}{2}$ lakhs of rupees and exports goats' skins to the value of $7\frac{1}{2}$ lakhs of rupees.

The foregoing figures give some idea of the value of the goat to the Punjab both in food and as an item of trade. If by some legislative enactment the goat could be done away with tomorrow, or even after a considerable period of time, what would replace it as an instrument of production of meat and milk, not to mention hides? If it were proposed that the stock of cows or buffaloes could be increased, the goat cannot possibly be replaced by these for they are already in greater numbers than can be properly supported by the available supply of suitable foods. For this reason, and mainly because of the ability of the goat to turn material which would otherwise be wasted into valuable economic products it is not practicable to enforce any legislation that would have the effect of the abolition of the goat.

Goats can be grazed with absolutely negligible results by way of damage, especially in jungle areas. They do well on the indigenous scrub jungle of Eastern Punjab. The goat should not be eliminated nor should it be allowed to devastate public and private property. If the grazing grounds are common to the village or group of villages, each land-owner ought to be restricted to a given number

(8)

of goats and if the lands are waste the number of goats to be grazed thereon by nomads should be controlled and a fee charged, be it ever so small. Where no grazing grounds exist and no waste land is available goat keeping by nomad herders possessing no land should be regulated and controlled by local legislation. We cannot do without the goat in the Punjab but the number to be kept and the conditions under which they could be kept, might be regulated so that this animal will be a benefit to the community and to the State, as well as to the owner.

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**The Board of Economic Inquiry,
Punjab.**

RURAL SECTION PUBLICATION—12.

(GENERAL EDITOR : W. H. MYLES, M.A.)

SOME ASPECTS

OF

BATAI CULTIVATION

IN THE

LYALLPUR DISTRICT

OF THE

PUNJAB.

BY

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[The Board of Economic Inquiry, Punjab, does not hold itself responsible for any opinions expressed or conclusions reached by the writer.]

1926.

CONTENTS.

	Pages.
Introduction	1—9
Results of the Investigation :—	
Part I.	
<i>Statements—</i>	
I.—Work (in days) done by each tenant throughout the year	10—15
II.—Work (in days) done by tenants each month ..	16—19
III.—Average work monthly in days	20
IV.—Total work done during the year	21
V.—Landlord's Expenditure and Income	22
VI.—Prices taken in 1923-24	23
VII.—Tenant's Expenditure and Income	24
VIII.—Seed Rates used	25
IX.—Summary	26
Part II.	
Accounts of a Farm of four Squares near Lyallpur, farmed by direct cultivation for the year 1923-24.	
<i>Statements—</i>	
A. Details of Labour throughout the year	28
B. Area Cultivated and Income	29
C. Details of Expenditure	30—31
D. Income and Expenditure	32

SOME ASPECTS OF *BATAI* CULTIVATION IN THE PUNJAB.

In the Punjab much of the land is in the hands of large landlords who rent it out to tenants on what is known as the *batai* system. This means that in return for the use of the land, together sometimes with certain minor concessions, the tenant produces crops as though the land were his own and hands a part, often half of the produce after harvest, to the landlord. So far as the writer is aware, no accurate accounts of farming by such a system have ever been kept and no authentic data have ever been published showing the actual returns got by landlord and tenant respectively under this system.

A contrast is offered by the European *Metayer* System under which the division of the produce of the land between tenant and landowner is also regulated by custom. The principle of the system corresponds with that of the *batai* system in that the tenant pays to the landlord, not a fixed rent, either in money or kind, but a proportion of the produce. It differs, however, from the *batai* in that the division of the produce between the two parties is not made until what is considered necessary for the upkeep of the stock has first been deducted from the common heap. The landlord's proportion, after this deduction, is often one-half, but may be as much as two-thirds according to custom. Again, whereas in the *batai* system the landlord usually contributes only minor concessions such as half the land revenue, and, where the land is canal irrigated, half the water rate, the *Metayer* landlord in some districts provides the whole of the stock, in others half, and again in others the stock and the seed, the tenant supplying the implements.

One of the great disadvantages in such systems lies in the reduced incentive to efficiency and improvement on the part of the tenant. Whereas the entire results accruing from the adoption of better methods of cultivation, better seed and up to date implements are reaped by the peasant proprietor, the *batai* tenant is always confronted with the fact that the benefits resulting from any expenditure on his part in the direction of improvement go as much to swell the income of the landlord as to increase his own return. It is felt that this is one of the factors contributing to the slow rate of progress in the improvement of agriculture

in this country. It is slowly becoming evident to the more enlightened landlords that it is on themselves must fall the provision of improved implements, etc., if they would get the maximum return from the soil. Where so provided for his free use, the tenant can have none but the strongest self interest in using them since by so doing he increases his return at no additional cost to himself. Those landlords who have incurred such expenditure have found that it has well repaid them.

In his pamphlet "Expenses and Profits of Cultivation in the Punjab," Mr. W. S. Hamilton, formerly Director of Agriculture, Punjab, worked out in 1916 the expenses and profits connected with a few of the main crops in certain districts of the province. The figures given, however, are those obtained by personal enquiry by him from a number of cultivators as they sat and talked beside the village well. They cannot, therefore, be accepted as more than approximate. More recently Roberts and Faulkner in their book "A Textbook of Punjab Agriculture" have worked out the costs of production of, and profits from most of the common crops of the Punjab. The figures they use are the result of observation and of a number of years' experience of farming rather than of a system of carefully kept accounts. The outturns taken are those of what are usually regarded as "average" crops and not of actually obtained yields.

The present work has been undertaken by the writer not with the special idea of working out costs of production and profits from individual crops but in order to obtain reliable information, through a system of accurately kept accounts, on such points as the following:—

- (1) What is the income from an holding farmed on the *batai* system?
- (2) What share of that income is got by the tenant who actually cultivates the land, and what by the landlord?
- (3) What are the amounts of the various items of expenditure on crop production?
- (4) How are these expenses divided between landlord and tenant respectively?
- (5) What is the amount of time spent by an average tenant in the cultivation of his holding?

In the canal colonies of the Punjab the land is divided up into squares or rectangles of 25 *killas* each (*killa* = $1\frac{1}{2}$ acre), and for the cultivation of a square two pairs of bullocks, with ploughs, and three men are usually considered necessary. Holdings are, as

a rule, either one-plough or two-plough areas, being either approximately 12 or 25 acres each.

The area selected for the present investigation, which so far as the writer is aware, is the first of its kind ever carried out, was a stretch of land in the Lyallpur colony with ordinary cultivators as tenants. The scope of the enquiry was limited to eighteen tenants, two with two-plough holdings and the remainder with one plough each. The total area involved is 232 acres and is all under one landlord who farms by direct cultivation the remaining 100 acres of his estate.

For the purpose of the investigation account books were drawn up and separate accounts kept for each of the eighteen tenants for a complete year from 1st June 1923 till 31st May 1924, June being the month best suited to begin a farm book-keeping year. The accounts recorded the daily work of the tenant and each member of his family of working age, and showed the nature of the work done, the area, field and crop concerned, and the men and bullocks involved. They also showed all items of expenditure, all details of sales, valuations, etc. They are, therefore, as detailed and accurate as figures dealing with such matters can be.

The various statements which are appended have been worked out in considerable detail, are self explanatory for the most part, and require little amplification. The eighteen tenants have been lettered from A to R for purposes of reference. Tenants A and B each cultivate one square (approximately), whilst each of the others has only one plough and tills half a square. Statement I. sets out the amount of work done by each tenant throughout the year. This work is expressed in the case of man labour in terms of days of about eight hours each for one man, and bullock labour in terms of days' work for one pair of bullocks. Thus in Statement I. the total cultivation performed by Tenant A amounted during the year to 363 days of one man and 183½ days of one pair of bullocks. Other work done by each tenant on his farm but not actually connected with cultivation of the land is given under the heading "Other employment." At certain times of the year or for certain operations on the farm the number of men and bullocks is insufficient to do the work with the despatch demanded, and, accordingly, men and cattle, usually on loan, are obtained from outside to assist. In return the tenant and his animals give similar assistance to his neighbours. The amount of labour thus exchanged or hired for the cultivation of the land is given under the headings "Labour from outside", "Labour performed outside," and "Bullocks from outside."

Statement II. shows the amount of labour actually put into his holding by each tenant month by month. It will be observed that this is very variable. Taking the month of June, as many as $13\frac{3}{4}$ days' labour was performed by tenant R, whilst L worked only 4 days, and K and M 5 days each. The details in Statement II. have been summarised in Statement III., from which it will be seen that during some months in the year work on the farm is slack whilst other months are very full. The average done by the eighteen tenants in February amounted to only $3\frac{1}{2}$ days each. April, however, is a busy month as the 'harvesting of the winter crops and the sowing of the summer crops fall at that time. In the latter month $34\frac{3}{4}$ days' work of one man was performed.

The labour performed by each tenant during the year is summarised in Statement IV. Bearing in mind that tenants A and B have approximately double the area of any of the others the man labour performed on half a square varied from 124 days in the case of tenant M to $215\frac{3}{4}$ days in that of F. The average for all is only 170 days. Considerable variation also appears in the bullock labour from 58 to 105 days with an average of 81 days in the year. The assistance in farm operations required from outside averaged 29 days which are included in the 170 days' total work. Similarly, although bullocks are employed less than one-quarter of the days of the year, $14\frac{1}{2}$ days of the work of that time were rendered by bullocks from outside. The assistance both in men and bullocks from outside will be better understood when it is explained that on a farm of half a square the tenant himself may be the only person capable of performing farm work and he possesses only one pair of working bullocks, as has already been stated. For certain operations, such as the crushing of sugarcane for which three men and two pairs of bullocks are required if the work is to progress continuously, he must get assistance, although there will subsequently be days when both he and his cattle will be idle. The nature of the operations, however, demands that the work should be pushed ahead and the tenant cooperates with his neighbours.

From these Statements the striking fact stands out that the tenant has work on his land for less than half the year for himself, whilst for three-quarters of it he feeds his working bullocks without having any work for them to perform. In the neighbourhood of towns he and his cattle often can get work in the slack seasons, but in the absence of any cottage or other industries usually he remains idle. Cultivation by power driven machinery has not been favoured hitherto as it was considered that bullock labour is cheaper, but in the light of the facts revealed in the present investigation—that to get three months' labour from his cattle the

farmer must feed them the whole year—it would appear that the subject of power cultivation merits further consideration.

On canal irrigated land it is usual to produce more than one crop annually on a part of the land. The intensity of cropping, therefore, usually exceeds 100 per cent. Statement V. (Column 4) shows that on the land which formed the subject of this enquiry the minimum cropping was $92\frac{1}{2}$ per cent., the maximum 132 per cent. and the average 114 per cent. The fertility of all the land was equal so far as the landlord knew, but, as is seen in Column 5 of the same Statement, the total returns obtained are very variable.

In connection with Statement V. and subsequent tables, it should be mentioned that the returns do not include the dues paid to *kamins*. The custom followed by these tenants was that usually practised in villages, *viz.*, the shares of the *kamins* were deducted from the common heap before division between landlord and tenant. In the village under investigation the only *kamins* were the carpenter and blacksmith. Each of these received the following per plough :—

- (1) Wheat, 25 seers of grain, plus one bundle of the harvested crop extra. This bundle may be taken as 16 seers of grain and 24 seers of *bhusa* (chopped and crushed straw).
- (2) Maize, 15 seers grain.
- (3) Toria, 2 ,, ,,
- (4) Cotton, 2 ,, *kapas* (*i. e.*, unginmed cotton).
- (5) *Gur*, 2 ,, (*gur* = crude sugar).
- (6) In addition to the foregoing per plough each *kamin* got sufficient fodder (both *bhusa* and green fodder) from all the tenants combined to feed one cow throughout the year.

In the determination of incomes actual outturns from the various fields were obtained on the spot and the value of each assigned as shown in Statement VI. The rates prevailing in the nearest market town were obtained for each crop during the months when the crop is mainly on the market. The average rate over this period was taken as that at which the crop should be valued. Thus, wheat is sold largely in May, June and July and the average rate for the three months is used to calculate the value of the wheat crop. Other crops are assessed similarly and valued as shown in this Statement.

Having obtained the gross income from each holding the amount was divided, one-half representing the tenant's gross share and the remainder that of the landlord. In this instance the

landlord in return for half the produce granted the use of the land, and, as his share of the expenses, bore half the dues claimed by Government in the form of land revenue and water rates for canal water, which was provided by Government canals. The total of these amounts to about Rs. 11 per acre, or, divided between landlord and tenant, Rs. 5-8-0 each. This is the only item of expenditure borne by the landlord whose income will be found in Statement V. (Column 10). This income varied between Rs. 25 and Rs. 40 per acre, and on the average of all the tenants was Rs. 30 per acre.

The tenant's side of the transaction appears in Statement VII. His gross income, being half the total return, is equal to that of the landlord, but his expenses include, in addition to land revenue and water rates equal to those paid by the landlord, seed and upkeep of bullocks. The seed rates used and the rates at which they have been calculated are set out in Statement VIII. Broadly speaking, seed costs about Rs. 2 per acre, but the actual expenditure of each tenant under this head is shown in the Statement.

The expenditure on the upkeep of bullocks is worthy of study. That incurred by tenants A and B is for two pairs each and all the others for one pair. In the case of tenant M who was a poor cultivator with a pair of bullocks worth only Rs. 60 and who fed them badly, the expenses amount to Rs. 56 only for the year, *i. e.*, about $2\frac{1}{2}$ annas per day. On the other hand, tenant H kept a pair worth Rs. 200, and, as he fed them well, his expenses for the year were Rs. 168, or treble those of the bad tenant M. Several of the tenants spent over Rs. 100 on the upkeep of a pair of bullocks. This high figure, in comparison with others, resulted from two factors :—(a) Each tenant grew fodders to the half of which the landlord was entitled. Those tenants who kept good cattle purchased the landlord's share and fed it all, in addition to their own share, to their stock, whilst the indifferent tenants handed over the half share to the landlord and allowed their cattle to suffer accordingly. (b) In the upkeep is calculated an item,—Interest and Depreciation—at 20 per cent. per annum, on the value of the cattle. Where the tenant kept good animals the amount involved is considerable, and where the cattle are of little value it is negligible. These factors cause large differences in the cost of upkeep of working cattle amongst the various tenants.

The system adopted in working out the cost of upkeep of bullocks is as follows :—

- (1) All the green fodders consumed on the farm were valued at Rs. 40 per acre. This rate is low but it is used here as it was the actual rate charged by the landlord when taking his half share, and was kept low purposely as a concession to his tenants.

To this was added the value of the *bhusa* consumed by the stock. This was calculated at ordinary market rates. These gave all the fodders consumed.

- (2) From the record of the total stock kept by a tenant the proportion of the fodder consumed by the working bullocks was calculated.
- (3) It is the custom to feed concentrates (gram, oilcake, etc.) to working cattle on the days on which they actually work and not on other days. Accordingly, these were reckoned at 4 seers (8 lbs.) per pair of bullocks for the number of days set out in Statement IV.
- (4) Depreciation was added at 12 per cent. on the capital value of the bullocks and interest on capital at 8 per cent., giving a total of 20 per cent. The items of fodders, concentrates and depreciation represent all the expenditure under this head.

When all items of expenditure from the gross income have been deducted, the tenant's net income will be seen in Statement VII., Column 6, and the income per acre in Column 8. It varies from Rs. 14 to Rs. 31 per acre with an average of Rs. 19-3-0. Statement IX. sets out the balance sheet of the *batai* system of farming and requires no explanation. Whilst the tenant profits on an average to the extent of Rs. 19 per acre in return for his labours, the landlord reaps Rs. 30. It is not the object of this paper to criticise the contrast but to determine it.

In order to compare the returns got by the landlord himself on the 100 acres which he directly cultivated with those got by his tenants a separate investigation was conducted for the former similar in all respects to that already described for the tenants' area. The results are set forth in Part II of the Statements attached. The points to be specially noted are—

- (1) The man labour performed on the area controlled by a plough and a pair of bullocks was 338 days against 170, the average for the tenants, and 215 days in the case of the best tenant. Similarly the bullock work done on the same area was 161 days in contrast with 81 for the average tenant, and 105 for the best tenant. He thus gave his land twice the amount of cultivation both by man and bullocks given by the tenants. (Statement A).

- (2) The intensity of cropping (*i. e.*, the proportion of the land cropped to the total holding), adopted by the landlord is just equal to the average of all the tenants. (Statement B).
- (3) Expenditure of landlord contains an item for upkeep of implements which does not appear in the accounts of his tenants. This is due to the fact that the landlord owned and used certain improved western implements (enumerated on Sheet C of Part II) which he purchased for cash and which required upkeep. Tenants, on the other hand, only possessed the usual country implements made by the village carpenter and blacksmith for which there is no cash payment on upkeep. According to custom these artisans are paid in kind out of the common heap, before distribution between landlord and tenant. For *kamins'* dues the landlord's directly cultivated area was treated as one of seven ploughs and dues paid by him on the same scale as by the tenants. The amounts and values of these dues are not included in the Statements.
- (4) The gross income obtained by the landlord from his 100 acres of directly cultivated land is Rs. 128 per acre against Rs. 71, the average obtained by his tenants, and Rs. 93 by tenant P who got the highest gross return.
- (5) Whereas the total expenditure on cultivation, reckoning both tenant's and landlord's shares, averaged only Rs. 22½ on the tenants' area, the landlord expended Rs. 57 per acre on the area cultivated by himself.
- (6) The net profit got by the landlord by direct cultivation was almost Rs. 71 per acre, whilst the total net profit got out of the tenants' area was only Rs. 49 per acre (Statement D).

In the income from the directly cultivated area there are two items which are not common to all such farms and which tend to swell the income above that usually obtained. It will be noticed on Sheet B that Rs. 845 were obtained from the garden through the sale of oranges and Rs. 240 from that of onions. As the holding was near a large city fruit and vegetables were grown, but where facilities for marketing are not so good this sum of Rs. 1,085 would not, as a rule, be realised. In its place there would be some of the ordinary crops, worth probably Rs. 200.

The substitution of this for fruit and vegetables would reduce the income in the present instance by some Rs. 8 per acre. Apart, however, from this item, the system and rotation are in all respects such as are followed in any part of the canal colony. The additional gross, as well as net, income which the landlord gets in direct cultivation over his tenants appears to be the result of better cultivation, use of better implements and better management. There is no appreciable difference in the soil as originally tenants selected the areas they are cultivating by lot.

The enquiry, the results of which are here set out, does not claim to be anything but the beginning of a most important investigation. It is the first attempt ever made, so far as is known, to collect accurate and reliable data on a subject of immense importance to the province. It represents the beginning of a number of such enquiries in different parts of the colony and in different colonies. At present it is limited to one particular part of one canal colony. Whilst it is felt to be as accurate as such an enquiry can be for that particular locality, before proclaiming it as the absolute state of affairs in all colonies, or indeed in all parts of the Lower Chenab Canal Colony where it was conducted, it is necessary to confirm it by other similar investigations elsewhere. These have been set up already and are proceeding in several places situated upwards of 200 miles apart. The methods adopted are entirely new, and, having now been standardised, lend themselves to a rapid analysis of the results of future enquiries as soon as data for these have been completed.

I desire to express my indebtedness to my assistant, S. Kartar Singh, L. Ag., B. Sc. (Agri.), Assistant Professor of Agriculture, Lyallpur, for his help in arranging for this investigation, in checking and inspecting the daily accounts of the tenants from time to time and in otherwise assisting me towards its completion.

STATEMENT 1.
WORK (IN DAYS) DONE BY EACH TENANT THROUGHOUT THE YEAR.

		June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	TOTAL DAYS.	
A.	Farm cultivation	15½	16½	21½	33½	14½	35½	12½	35	6½	40	79	53	363	
	Other employment .. ..	..	..	..	..	..	..	3	..	..	..	..	..	3
	Labour from outside	½	..	3	..	2	3½	1	..	..	..	29½	3	42½
	Labour performed outside .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Bullocks	2½	9½	18½	26½	7½	28½	3	22	3½	27	6½	28½	183½	
	Bullocks from outside	3	..	2	3½	1	9½
B.	Farm cultivation	22½	21½	20½	32½	12½	29	17½	23	3	28	62½	49	321½	
	Other employment	7	..	..	..	..	..	..	..	..	..	..	..	7
	Labour from outside	½	..	..	..	..	3½	..	..	..	1½	15	3	23½
	Labour performed outside .. ..	..	..	..	..	..	..	14	9	5	..	..	..	28
	Bullocks	4	12½	16	21½	5½	23½	12	9	..	18	6½	26	155½	
	Bullocks from outside	3½	1½	4½
C.	Farm cultivation	11½	4½	5½	16½	7½	16½	10	10½	1½	17½	29½	24	155	
	Other employment	One boy herding sheep throughout.										
	Labour from outside	1½	..	..	1	1	3	3	..	..	5½	16½	8½	39½
	Labour performed outside	2	15	12	6	35
	Bullocks	1	3	4½	15	3½	14	6	3	..	11	5½	11	77½	
	Bullocks from outside .. ..	..	..	..	1	1	3	3	..	..	5½	2½	5	20½
Bullocks performed outside .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

D.	Farm cultivation	13½	7½	15	18½	9	15½	11½	13½	1½	26	26½	15½	173½
	Other employment	8	7	1	..	..	..	..	..	..	..	..	..	16
	Labour from outside	2	1	½	..	..	1	3	..	..	7	9½	2	25½
	Labour performed outside .. .. .	..	..	..	..	..	3	16½	14	6	..	..	..	39½
	Bullocks .. .. .	..	3	10½	14½	5½	12½	6	3½	..	14½	3½	6½	79½
	Bullocks from outside .. .. .	..	1	½	..	..	1	3	..	..	7	1½	2	15½
	Bullocks performed outside .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..
E.	Farm cultivation	10½	11½	12	18½	5½	19½	8½	8½	10½	31	35	34½	205½
	Other employment	6	..	..	..	..	..	..	..	..	..	..	..	6
	Labour from outside	(boys)	1	..	..	..	2½	2	1	3	8½	5½	..	23½
	Labour performed outside .. .. .	..	..	..	..	..	4	14	15	3	..	..	..	36
	Bullocks	1½	7½	8½	13½	2½	16	5½	1	6	21	4½	13½	101½
	Bullocks from outside .. .. .	..	1	..	..	..	2½	2	..	3	8½	1½	..	18½
	Bullocks performed outside .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..
F.	Farm cultivation	7	16½	14½	21	7½	30	10	7½	1½	29½	41½	30	216½
	Other employment	2	2	..	..	..	..	..	..	..	..	..	..	4
	Labour from outside	(boys)	1	1	4	1	4	3	2	..	..	3½	..	19½
	Labour performed outside .. .. .	..	..	..	..	..	3	15	15	6	..	..	..	39
	Bullocks	1	9½	11	14	3½	23	6½	1	..	9½	8	14	101½
	Bullocks from outside	1	1	2	1	4	3	3½	..	15½
	Bullocks performed outside

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STATEMENT I.—(CONTINUED.)

	June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	TOTAL DAYS.
G. Farm cultivation	11	9½	10½	17½	3	19½	20	9½	1½	1½	35	13½	162½
Other employment .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..
Labour from outside .. ..	..	..	..	..	..	8	6	..	..	..	3	1	18
Labour performed outside .. ..	..	..	..	..	..	3	18	13	5	..	..	..	39
Bullocks	1	6	7½	11½	1½	17½	12	1½	..	..	8	7	73½
Bullocks from outside .. ..	..	..	..	..	..	8	6	..	..	..	3	1	18
Bullocks performed outside .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..
H. Farm cultivation	6½	7½	16	21	7½	36½	5	19½	1½	6	44	24	194½
Other employment .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..
Labour from outside .. ..	..	1½	2½	2	..	14½	1	4	..	..	3½	..	29
Labour performed outside .. ..	..	..	..	..	..	3	20	11	6	..	..	..	40
Bullocks	½	4½	13	17	4½	28	2	9	..	2½	12	12	105
Bullocks from outside .. ..	..	1½	1½	2	..	14½	1	4	..	..	3½	..	28
I. Farm cultivation	6½	10½	11	18½	3½	20½	38	8½	1½	2½	39½	16	176½
Other employment	4	..	..	..	..	1	..	..	..	..	..	..	5
Labour from outside .. ..	..	2½	4	2	..	8	12	..	..	½	8½	..	37½
Labour performed outside .. ..	..	..	..	..	..	4	16	17	6	..	..	..	43
Bullocks	½	4½	8½	13½	½	16	24	1	..	1	11½	8	89½
Bullocks from outside .. ..	..	1½	3	2	..	8	12	..	..	1½	2½	..	30½

J.	Farm cultivation	8½	8½	11½	16	4½	15½	1½	10½	2½	10½	27½	25	141½
	Other employment	1	..	..	..	..	1	..	..	..	..	..	..	2
	Labour from outside .. .. .	..	..	2	1½	1	3½	..	..	..	4	8½	12	32½
	Labour performed outside .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..
	Bullocks	2½	5½	8½	11	3	12½	½	3	1½	4½	7½	9	68½
	Bullocks from outside .. .. .	..	..	½	..	1	3½	..	..	..	..	½	..	5½
K.	Farm cultivation	5	8½	11½	10½	5	15	13	13	7	5½	40	20½	154½
	Other employment .. .. .	..	4	..	..	..	..	..	..	..	..	..	..	4
	Labour .. .. .	..	1	4½	2½	2	5	1	..	..	..	12½	..	28½
	Labour performed outside .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..
	Bullocks	½	6½	8½	8½	3	10	7	10	2	..	8½	10	75½
	Bullocks from outside .. .. .	..	1	4½	2½	2	5	1	..	..	..	4½	..	21½
L.	Farm cultivation	4	12½	9½	11½	7	17½	10½	18	11½	6½	38½	28½	175
	Other employment .. .. .	..	..	..	..	..	½	..	..	..	..	..	..	½
	Labour from outside .. .. .	..	2	4½	2	1½	7	4	8	5	..	13½	9	57
	Labour performed outside .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..
	Bullocks	5½	7½	7	4½	13½	4	6	5	..	4½	16	73½
	Bullocks from outside	1½	4	1	1½	6	2½	1	17½

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STATEMENT I.—(CONTINUED.)

		June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	TOTAL DAYS.
M.	Farm cultivation	5	12	10	9½	5	16	3½	1	1½	21	25½	14	124
	Other employment .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Labour from outside .. ..	..	..	5½	..	..	6	..	..	..	6	5½	½	23½
	Labour performed outside .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Bullocks	1	5½	9½	4	1	11½	..	..	..	13½	5½	6½	58½
	Bullocks from outside .. ..	..	..	5½	..	..	6	..	..	..	6	3½	½	21½
N.	Farm cultivation	11½	6½	14½	11½	6	11½	1	9½	13½	2½	29½	29	147½
	Other employment .. ..	..	..	..	..	..	1	..	..	..	..	..	..	1
	Labour from outside .. ..	..	..	5	3½	..	5½	..	2	8	..	14½	13	51½
	Labour performed outside .. ..	..	..	..	..	..	4	17	12	4	..	..	..	37
	Bullocks	2½	3½	12½	7½	2½	9½	..	2½	8	2	6½	14½	71½
	Bullocks from outside .. ..	..	..	1	1½	..	5	..	..	4	..	..	..	11½
O.	Farm cultivation	8½	9½	11½	18½	4	19½	1	25	1½	8	35½	25½	168
	Other employment	1	..	..	..	..	..	..	..	..	..	..	..	1
	Labour from outside	1	..	1½	2	..	7	..	16	..	1	16	..	44½
	Labour performed outside .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Bullocks	2	4½	8½	13	1	15½	..	8	..	6	5½	12	76½
	Bullocks from outside .. ..	..	..	½	..	..	6	..	..	..	1	..	..	7½

P.	Farm cultivation	12½	9	10½	17	3	18½	6	19	1½	9	42½	27	175½
	Other employment	8	10	2	..	..	..	..	..	..	..	..	..	20
	Labour from outside	2	..	½	2	..	6	2½	11	..	4½	25	12½	66½
	Labour performed outside .. ..	..	..	..	..	..	..	..	5	..	..	..	1	6
	Bullocks	2½	4½	8	12	1½	14½	3½	9	..	5½	6	13½	30½
	Bullocks from outside .. ..	..	..	..	..	..	6	2	4	..	2½	½	½	15½
	Bullocks performed outside .. ..	..	..	..	..	..	..	..	..	..	..	..	½	½
Q.	Farm cultivation	9½	9	14½	13½	5½	14	4½	32½	1½	1½	32½	25½	163½
	Other employment	9	6	1½	..	..	..	..	..	..	..	..	..	16½
	Labour from outside	½	..	1½	..	..	½	..	8	..	..	12	12	34½
	Labour performed outside .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Bullocks	½	6½	11½	9½	2½	10½	2	18	..	..	5	..	66½
	Bullocks from outside .. ..	..	..	1	..	..	½	..	8	..	..	..	..	9½
R.	Farm cultivation	13½	15½	12½	23½	2½	15	15	35	1½	2½	33½	24½	194½
	Other employment	1	1	1	..	..	..	..	..	..	..	..	..	3
	Labour from outside .. ..	..	..	½	1	..	5	4	8	..	..	8½	..	27½
	Labour performed outside .. ..	..	..	..	..	..	..	12	7	5	..	..	..	24
	Bullocks	4½	6½	9	14½	1	7½	10	19	..	½	4½	10½	38
	Bullocks from outside .. ..	..	..	½	1	..	5	4	8	..	..	½	..	19½

STATEMENT II.
WORK (IN DAYS) DONE BY TENANTS EACH MONTH.

		A.	B.	C.	D.	E.	F.	G.	H.	I.	J.	K.	L.	M.	N.	O.	P.	Q.	R.	TOTAL DAYS.	AVER-AGE DAYS.	
JUNE.	Farm cultivation ..	15½	22½	11½	13½	10½	7	11	6½	6½	8½	5	4	5	11½	8½	12½	9½	13½	182½	9	
	Other employment ..	..	7	..	..	6	2	..	..	4	1	..	..	..	1	2	9	1	..	39	2
	Labour from outside ..	..	½	½	1½	8	..	..	..	..	..	..	..	..	..	1	2	½	..	14	½
	Labour done outside ..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..
	Bullocks	2½	4	1	..	1½	1	1	½	½	2½	½	..	1	2½	2	2½	½	4½	28	1½
	Bullocks from outside
JULY.	Farm cultivation ..	16½	21½	4½	7½	11½	16½	9½	7½	10½	8½	8½	12½	12	6½	9½	9	9	15½	196½	9½	
	Other employment ..	..	..	..	7	..	2	..	..	..	..	4	..	..	..	..	10	6	1	30	1½
	Labour from outside ..	..	..	..	1	1	1	..	1½	2½	..	1	2	..	..	..	..	..	..	9½	½
	Labour done outside
	Bullocks	9½	12½	3	3	7½	9½	6	4½	4½	5½	6½	5½	5½	3½	4½	4½	6½	6½	110½	5½
	Bullocks from outside	1	1	1	..	1½	1½	..	1	1½	8½	½
AUGUST.	Farm cultivation ..	21½	20½	5½	15	12	14½	10½	16	11	11½	11½	9½	10	14½	11½	10½	14½	12½	232½	11½	
	Other employment ..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	2	1½	1	5½	½
	Labour from outside ..	..	3	..	½	..	1	..	2½	4	2	4½	4½	5½	5	1½	½	1½	¾	37½	2
	Labour done outside
	Bullocks	18½	16	4½	10½	8½	11	7½	13	8½	8½	8½	7½	9½	12½	8½	8	11½	9	180½	9
	Bullocks from outside	..	3	½	..	1	..	1½	3	¾	4½	4	5½	1	½	..	1	½	27	1½

SEPTEMBER.	Farm cultivation	33½	32½	16½	18½	18½	21	17½	21	18½	16	10½	11½	9½	11½	18½	17	13½	23½	329½	16½
	Other employment .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Labour from outside .. ..	..	..	1	..	..	4	..	2	2	1½	2½	2	..	3½	2	2	..	1	23½	1½
	Labour done outside .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Bullocks	26½	21½	15	14½	13½	14	11½	17	13½	11	8½	7	4	7½	13	12	9½	14½	235½	11½
	Bullocks from outside .. ..	..	..	1	..	..	2	..	1½	2	..	2½	1	..	1½	..	..	..	1	12½	½
OCTOBER.	Farm cultivation	14½	12½	7½	9	5½	7½	3	7½	3½	4½	5	7	5	6	4	3	5½	2½	112½	5½
	Other employment .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Labour from outside	2	..	1	..	..	1	..	..	1	2	1½	..	..	..	..	..	..	..	8½	½
	Labour done outside .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Bullocks	7½	5½	3½	5½	2½	3½	1½	4½	½	3	3	4½	1	2½	1	1½	2½	1	65	2½
	Bullocks from outside	2	..	1	..	..	1	..	..	..	1	2	1½	..	..	..	..	..	..	8½	½
NOVEMBER.	Farm cultivation	35½	29	16½	15½	19½	30	19½	36½	20½	15½	15	17½	16	11½	19½	18½	14	15	365½	18½
	Other employment .. ..	..	..	..	..	..	..	..	1	1	..	½	..	1	..	..	..	..	..	3½	½
	Labour from outside	3½	3½	3	1	2½	4	8	14½	8	3½	5	7	6	5½	7	6	¾	5	93½	4½
	Labour done outside .. ..	..	..	2	3	4	3	3	3	4	..	..	..	..	4	..	..	..	..	26	1½
	Bullocks	26½	23½	14	12½	16	23	17½	28	16	12½	10	13½	11½	9½	15½	14½	16½	7½	239	14
	Bullocks from outside	3½	2½	3	1	2½	4	8	14½	8	3½	5	6	5	6	6	6	¾	5	91	4½

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STATEMENT II.—(CONTINUED).

		A.	B.	C.	D.	E.	F.	G.	H.	I.	J.	K.	L.	M.	N.	O.	P.	Q.	R.	TOTAL DAYS.	AVER- AGE DAYS.	
DECEMBER.	Farm cultivation ..	12½	17½	10	11½	8½	10	20	5	38	1½	13	10½	3½	1	1	6	4½	18	188½	9½	
	Other employment ..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	½
	Labour from outside ..	1	..	3	3	2	3	6	1	12	..	1	4	..	..	..	2½	4	4	42½	2
	Labour done outside	14	15	16½	14	15	18	20	16	17	12	157½	8
	Bullocks ..	3	12	6	6	5½	6½	12	2	24	½	7	4	..	..	..	3½	2	10	104½	5½
	Bullocks from outside ..	1	..	3	3	2	3	6	1	12	..	1	..	..	..	..	2	..	4	38	2
JANUARY.	Farm cultivation ..	35	23	10½	13½	8½	7½	9½	19½	8½	10½	13	18	1	9½	25	19	32½	35	299	15	
	Other employment ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Labour from outside ..	..	..	..	..	1	2	..	4	..	..	..	5	..	2	16	11	8	8	57	3
	Labour done outside ..	..	..	9	12	14	15	13	11	17	..	..	..	..	12	..	5	..	7	130	6½
	Bullocks ..	22	9	3	3½	1	1	1½	9	1	3	10	6	..	2½	8	9	18	19	126½	6½	
	Bullocks from outside ..	..	..	..	..	..	..	..	4	..	..	..	..	..	..	..	4	8	8	24	1½
FEBRUARY.	Farm cultivation ..	6½	3	1½	1½	10½	1½	1½	1½	1½	2½	7	11½	1½	13½	1½	1½	1½	1½	71½	3½	
	Other employment ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Labour from outside ..	..	..	..	..	3	..	..	..	..	..	..	5	..	8	..	..	..	..	16	1
	Labour done outside ..	..	..	5	6	6	3	6	5	6	6	..	..	..	4	..	..	..	5	62	2½
	Bullocks ..	3½	..	..	..	6	..	..	..	..	..	1½	2	5	..	8	..	..	..	25½	1½
	Bullocks from outside ..	..	..	..	..	3	..	..	..	..	..	..	..	..	4	..	..	..	..	7	½

MARCH.	Farm cultivation ..	40	28	17½	26	31	29½	1½	6	2½	10½	5½	6½	21	2½	8	9	1½	2½	143½	12½	
	Other employment ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Labour from outside	1½	5½	7	8½	½	4	6	..	1	4½	38½	2
	Labour done outside	6	6	½
	Bullocks ..	27	18	11	14½	21	9½	..	2½	1	4½	..	..	13½	2	6	5½	..	½	136½	6½
	Bullocks from outside	1½	5½	7	8½	½	6	..	1	2½	32½	1½
APRIL.	Farm cultivation ..	79	62½	29½	26½	35	41½	35	44	39½	27½	40	38½	25½	29½	35½	42½	32½	33½	696½	34½	
	Other employment ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Labour from outside ..	20½	15	16½	9½	5½	3½	3	3½	8½	8½	12½	13½	5½	14½	16	25	12	8½	210½	10½	
	Labour done outside ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Bullocks ..	6½	6½	5½	3½	4½	8	8	12	11½	7½	8½	4½	5½	6½	5½	6	5	4½	120	6	
	Bullocks from outside	2½	1½	1½	3½	3	3½	2½	½	4½	2½	3½	½	..	½	30	1½
MAY.	Farm cultivation ..	53	49	24	15½	34½	30	13½	24	16	25	20½	28½	14	29	25½	27	25½	24½	479	24	
	Other employment ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Labour from outside ..	3	3	8½	2	..	..	1	..	..	12	..	9	½	13	..	12½	12	..	76½	4
	Labour done outside ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..
	Bullocks ..	28½	26	11	6½	13½	14	7	12	8	9	10	16	6½	14½	12	13½	..	10½	218½	11	
	Bullocks from outside	5	2	1	1	½	½	10½	½

STATEMENT III.
AVERAGE WORK MONTHLY IN DAYS.

	June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	TOTAL IN YEAR.
Farm cultivation	9	9½	11½	16½	5½	18½	9½	15	3½	12½	34½	24	169½
Other employment	2	1½	½	..	..	½	½	..	..	..	..	..	4½
Labour from outside	½	½	2	1½	½	4½	2	3	1	2	10½	4	32½
Labour done outside .. ..	..	..	..	..	..	1½	8	6½	2½	½	..	..	18½
Bullocks	1½	5½	9	11½	2½	14	5½	6½	1½	6½	6	11	81
Bullocks working outside .. ..	..	½	1½	½	½	4½	2	1½	½	1½	1½	½	14½

STATEMENT IV.
TOTAL WORK DONE DURING THE YEAR.

Tenant.	A.	B.	C.	D.	E.	F.	G.	H.	I.	J.	K.	L.	M.	N.	O.	P.	Q.	R.	TOTAL DAYS.	AVERAGE DAYS.
Farm cultivation ..	.. 363	321½	155	173½	205½	215½	152½	194½	176½	141½	164½	175	124	147½	168	175½	163½	194½	3,401½	170°
Other employment ..	.. 3	7	..	16	6	4	..	..	5	2	4	½	..	1	1	20	16½	3	89	4½
Labour from outside ..	.. 42½	23½	39½	25½	23½	19½	18	29	37½	32½	28½	57	23½	½	44½	66½	34½	27½	574	29
Labour done outside ..	.. ..	28	35	39½	36	39	39	40	43	..	..	..	..	37	..	6	..	24	366½	18
Bullocks ..	.. 183½	155½	77½	79½	101½	101½	73½	105	89½	68½	75½	73½	58½	71½	76½	80½	66½	88	1,624½	81
Bullocks from outside ..	.. 9½	4½	20½	15½	18½	15½	18	28	30½	5½	21½	17½	21½	11½	7½	15½	9½	19½	290½	14½

STATEMENT V.
LANDLORD'S EXPENDITURE AND INCOME.

Tenant.	Area held.	Cropped area.	Intensity of cropping.	Total Return.	Total Return per acre.	Landlord's Gross Income.	Landlord's Total Expenditure (Land Revenue and Water Rate).	Landlord's Net Income.	Landlord's Net Income per acre.
	A. K. M.	A. K. M.	Per Cent.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
A. ..	24 6 0	27 6 14	112.4	1,674 10 0	67 11 0	837 5 0	125 8 0	711 13 0	28 12 0
B. ..	22 2 0	27 4 2	123.6	1,662 14 0	74 12 0	831 7 0	137 14 0	693 9 0	31 3 0
C. ..	10 4 11	12 1 14	115	882 8 0	83 1 0	441 4 0	59 7 0	381 13 0	35 15 0
D. ..	11 5 9	14 7 16	128.2	734 14 0	63 3 0	367 7 0	74 5 0	293 2 0	25 3 0
E. ..	11 5 9	13 7 18	119.6	894 6 0	76 15 0	447 3 0	65 10 0	381 9 0	32 13 0
F. ..	11 3 5	13 3 16	118.2	778 8 0	68 7 0	389 4 0	66 8 0	322 12 0	28 6 0
G. ..	11 5 9	12 0 18	103.7	886 10 0	76 4 0	443 5 0	64 12 6	378 8 6	32 9 0
H. ..	14 4 16	16 2 18	112	1,034 12 0	70 12 0	517 6 0	80 0 0	437 6 0	30 0 0
I. ..	11 5 9	12 5 0	108	782 8 0	67 5 0	391 4 0	65 4 0	326 0 0	28 0 0
J. ..	12 6 7	12 2 0	95.8	960 0 0	75 5 0	480 0 0	63 3 0	416 13 0	32 8 0
K. ..	12 4 3	11 4 14	92.5	677 12 0	54 4 0	338 14 0	62 2 0	276 12 0	22 2 0
L. ..	11 5 9	12 3 2	106	706 4 0	60 12 0	353 2 0	59 15 0	293 3 0	25 3 0
M. ..	7 6 6	9 0 10	116.4	479 8 0	61 14 0	239 12 0	46 6 0	193 6 0	24 15 0
N. ..	11 1 0	12 6 18	115.6	748 10 0	67 5 0	374 5 0	61 3 0	313 2 0	28 2 0
O. ..	11 7 13	11 3 16	95.9	744 8 0	62 1 0	372 4 0	60 15 0	311 5 0	25 15 0
P. ..	11 5 9	14 4 18	125.1	1,081 4 0	93 0 0	540 10 0	70 10 0	470 0 0	40 7 0
Q. ..	11 1 0	14 2 14	128.8	989 4 0	88 15 0	494 10 0	67 13 0	426 13 0	38 6 0
R. ..	11 5 9	15 3 8	132	940 2 0	80 14 0	470 1 0	79 14 0	390 8 0	33 9 0
Total ..	232 5 4	265 0 16	113.9 (average).	16,658 14 0	71 10 0 (average).	8,329 7 0	1,311 5 6	7,018 1 6	30 3 0 (average).

Average total return	..	Rs. a. p.	71 10 0 per acre.
Landlord's Gross Income	..	..	35 13 0 do.
Landlord's Expenditure	..	..	5 10 0 do.
Landlord's Net Income	..	..	30 3 0 do.

• STATEMENT VI.

Prices taken 1923-24.

		Rs. a. p.
Wheat	.. Average of May, June, July 1924 per md.	4 6 0
Gram	.. Ditto ditto	3 3 0
Barley	.. Ditto ditto	3 2 0
Masar	.. Not quoted in market : Rs. 6 taken.	
Toria	.. Average of January, February 1924	7 4 0
Cotton (American)	.. Average of November, December, January, February 1924	24 8 0
(Desi)	.. Ditto ditto	20 8 0
Gur	.. Average of December, January 1924	4 10 0
Turnips	.. } Rs. 5 per Kanal.	
Senji	.. }	
Chari guara	.. }	
Maize	.. Landlord does not take his half share, but, instead, takes about Rs. 40 from tenant per field.	
Bhusa	.. Landlord accepted money in all cases in lieu of bhusa.	
Wheat and gram	.. (Average of each separately).	
	Mixture sown was 6 parts wheat and 1 part gram.	
	Hence price of mixture per maund	Rs. a. p. 4 3 0
	Deduct separating charges	0 1 0
	Mixture	<u>4 2 0</u>

STATEMENT VII.
TENANT'S EXPENDITURE AND INCOME.

Tenant.	Tenant's Gross Income.		Tenant's Expenditure on Water rates and Land Revenue.		Tenant's Expenditure on seeds.		Tenant's Upkeep of bullocks.		Tenant's Net Income.		Tenant's Net Income per day.		Tenant's Net Income per acre.		Number of men on farm.
	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.	
A. ..	837	5 0	125	8 0	56	14 0	231	13 0	423	2 0	1	2 6	17	2 0	3
B. ..	831	7 0	137	14 0	58	1 0	272	0 0	373	8 0	1	0 5	16	13 0	3
C. ..	441	4 0	59	7 0	22	9 0	95	8 0	263	12 0	0	11 6	24	13 0	1 + 1 boy.
D. ..	367	7 0	74	5 0	21	14 0	103	6 0	167	14 0	0	7 4	14	7 0	1 + 1 old man.
E. ..	447	3 0	65	10 0	25	12 0	91	2 0	264	11 0	0	11 7	22	12 0	1 + 1 boy.
F. ..	389	4 0	66	8 0	24	12 0	93	14 0	204	2 0	0	8 11	17	11 0	1 + 1 boy.
G. ..	443	5 0	64	12 6	23	4 0	69	4 0	286	0 6	0	12 6	24	10 0	2 + 1 boy.
H. ..	517	6 0	80	0 0	31	3 0	168	4 0	237	5 0	0	10 4	16	3 0	1 + 1 boy.
I. ..	391	4 0	65	4 0	25	7 0	134	12 0	165	13 0	0	7 3	14	3 0	2
J. ..	480	0 0	63	3 0	20	8 0	74	6 0	321	15 0	0	14 1	25	4 0	1
K. ..	338	14 0	62	2 0	22	12 0	61	3 0	192	13 0	0	8 6	15	12 0	1 + 1 boy.
L. ..	353	2 0	59	15 0	22	10 0	70	4 0	200	5 0	0	8 9	17	4 0	1 + 1 boy.
M. ..	239	12 0	46	6 0	18	4 0	55	12 0	119	6 0	0	5 3	15	7 0	1 + 1 boy.
N. ..	374	5 0	61	3 0	25	15 0	118	10 0	168	9 0	0	7 4	15	2 0	1
O. ..	372	4 0	60	15 0	23	6 0	80	2 0	207	13 0	0	9 1	17	5 0	1
P. ..	540	10 0	70	10 0	27	2 0	82	0 0	360	14 0	0	15 2	31	0 0	1
Q. ..	494	10 0	67	13 0	26	7 0	119	6 0	281	0 0	0	12 3	25	4 0	2
R. ..	470	1 0	79	14 0	31	10 0	126	15 0	231	10 0	0	10 1	19	15 0	1
Total ..	8,329	7 0	1,311	5 6	508	6 0	2,048	9 0	4,470	8 6	..	..	19	3 0	(average).

						Rs. A. P.
Average Total Return	..	..	..	..	..	71 10 0 per acre.
Tenant's Gross Income	..	..	..	..	..	35 13 0 do.
Tenant's Expenditure	..	..	..	..	..	16 10 0 do.
Tenant's Net Income	..	..	..	..	..	19 3 0 do.

STATEMENT VIII.
SEED RATES USED.

Crop.	Rate per acre.	Price at which calculated per maund.
Wheat	Seers. 24	Rs. a. p. 4 6 0
Gram	16	3 2 0
Barley	30	3 2 0
Senji	24	4 6 0
Torja	2½	7 4 0
Cotton	4	5 0 0
Maize	6	2 8 0
Turnips	2	80 0 0
Chari-guara	24	6 0 0
Masar	16	6 0 0
Metha	16	10 0 0

STATEMENT IX.

SUMMARY.

Gross return per acre Rs. a. p.
.. 71 10 0

	Landlord.	Tenant.
Gross Income	Rs. a. p. 35 13 0	Rs. a. p. 35 13 0
<i>Expenditure.</i>		
Land revenue and water rate	5 10 0	5 10 0
Seeds, upkeep of bullocks, etc. .. ..	..	11 0 0
Net income	30 3 0	19 3 0

PART II.

Accounts of a farm of 4 Squares

(i. e., 100 acres approximately)

near Lyallpur,

farmed by direct cultivation,

for the year

1st June 1923-31st May 1924.

STATEMENT A.

DETAILS OF LABOUR THROUGHOUT THE YEAR.

	June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	Total.	Average per plough (6½ ploughs).
Farm cultivation	183½	134½	149½	186½	125	210	183½	201½	184	220½	183½	233½	2,200½	338½
Other employment	62½	92	94	90½	99	91½	93	103	108	92½	55	33	1,013½	156
Labour from outside	31½	2	2	14	4½	21½	26	35	41	67	34½	55	334	51½
Bullocks	85½	92	95½	137½	56	158½	56	58	73	53	79½	124	1,048½	101
Bullocks' other work .. ..	..	..	..	..	2	2	1	1	2½	..	1	..	9½	1½

All labour is given in terms of days of one man.

All bullock labour is given in terms of days for one pair of bullocks.

STATEMENT B.

AREA CULTIVATED AND INCOME.

A. K. M.

Area of farm 99 5 18

Crop.	Area.		Outturn.		Value.	
	A. K. M.		Mds. Srs.Ch.		Rs. A. P.	
Sugarcane	3	7 6	140	0 0	647	8 0
Sugarcane, Paunda	3	0 18	..	..	765	0 0
Toria	5	6 10	72	12 8	524	5 0
Cotton, Desi	10	0 4	96	12 0	1,974	2 0
Cotton, American	7	1 12	91	21 4	2,242	8 0
Wheat and Gram.. ..	23	2 14	406	15 0	1,676	4 0
Wheat	27	2 2	454	15 0	1,987	14 0
Wheat bhusa .. ..	..	..	..	..	806	4 0
Gram	6	4 6	60	0 0	191	4 0
Masar	1	0 18	10	0 0	60	0 0
Onions	1	4 16	..	..	240	0 0
Garden	2	1 18	..	..	845	0 0
Chari-guara	7	6 0	..	..	310	0 0
Turnips	4	2 2	..	..	170	0 0
Senji	7	6 4	..	..	310	0 0
Metha	0	7 4	..	..	35	0 0
Onion seedlings	0	0 16	..	..	..	..
	112	7 10	..	..	12,785	1 0

Intensity of cropping 113.2 per cent.

Gross income Rs. 12,785 1 0

Gross income per acre Rs. 128 3 0

STATEMENT C.
DETAIL OF EXPENDITURE.

	Rs.	A.	P.
1. <i>Labour</i> —			
8 men throughout the year @ Rs. 22 per mensem	..	2,112	0 0
Labour from outside, 300 @ Re. 0-11-6 per day*	..	215	10 0
2. <i>Land Revenue and Water Rates</i>	..	1,154	15 0
3. <i>Upkeep of bullocks</i> —			
Green fodder grown	..	825	0 0
Green fodder purchased from tenants†	..	120	10 0
Bhusa grown	..	806	4 0
		1,751	14 0
Stock on farm—			
12 bullocks			
1 male buffalo			
4 female buffaloes	Bullocks share = $\frac{13}{31}$		
5 cows			
5 3-years old.			
4 others.			
31			
Working bullocks' fodder	..	744	8 0
Concentrates @ 1 seer per day per bullock throughout	..	379	5 0
Interest and depreciation at 20% on			
Rs. 12 @ 250	Rs. 3,000		
1 @ 120	120		
	3,120	624	0 0
		1,747	13 0
4. <i>Seeds</i> —			1,747 13 0
Torja	..	2	13 0
Cotton, Desi	..	5	0 0
Cotton, American	..	3	12 0
Wheat and Gram	..	56	14 0
Wheat	..	71	8 0
Gram	..	7	13 0
Masar	..	2	6 6
Chari guara	..	27	14 0
Turnips	..	17	0 0
Senji	..	20	5 6
Metha	..	4	0 0
		219	6 0
			219 6 0

(continued).

*Daily paid labour for April (34 days) not counted as it was for harvesting, which was paid in kind.

†NOTE.—Green fodder purchased from tenants amounted to Rs. 210-10-0; of this fodder to the extent of Rs. 120-10-0 was consumed, and the remainder was presented as customary gifts.

STATEMENT C.—(CONTINUED).

5. *Implements—*

<i>(a) Purchased.</i>		<i>Prices.</i>			
		Rs.	A.	P.	
3	Rajah Ploughs	127	8	0	
2	Horse hoes	140	0	0	
3	Rabi Drills	42	0	0	
1	Spring tooth harrow	75	0	0	
1	Raja fodder cutter	110	0	0	
2	Cane crushers	470	0	0	
2	Bullock carts	350	0	0	
		1,314 8 0			
Interest @ 8 %		} 269 7 0			
Depreciation and repairs @ 12½ %					
<i>(b) Home made—</i>					
6	Munhas.	6	Spades.	10	Khurpas.
3	Sohagas.	6	Tranglis.	2	Axes.
2	Karahs.	4	Sangas.	2	Chuha-rhambas.
6	Yokes.	4	Baskets.	8	Sickles.
3	Special yokes.	4	Tokas.	2	Chhajs.
3	Jhandras.	7	Kasolas.	6	Nalis.
		2	Blinds.		
		<i>GRAND TOTAL</i>			5,719 3 0

STATEMENT D.

INCOME AND EXPENDITURE.

		<i>Expenditure.</i>			<i>Income.</i>		
		Rs.	A.	P.			
		Rs.	A.	P.	Rs.	A.	P.
Labour	..	2,327	10	0	Gross Income	12,785	1 0
Land revenue and water-rates	..	1,154	15	0			
Upkeep of bullocks	..	1,747	13	0			
Seeds	..	219	6	0			
Upkeep of implements	..	269	7	0			
	Total	5,719	3	0			
Net Income	..	7,065	14	0			
		<u>12,785</u>	<u>1</u>	<u>0</u>		<u>12,785</u>	<u>1 0</u>

		Rs.	A.	P.
Gross Income per acre	..	128	3	0
Expenditure per acre	..	57	5	0
Net Income per acre	..	70	14	0

**The Board of Economic Inquiry,
Punjab.**

RURAL SECTION PUBLICATION—13.

(GENERAL EDITOR : W. H. MYLES, M.A.).

EIGHTY YEARS

OF

PUNJAB FOOD PRICES,

1841—1920.

BY

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[The Board of Economic Inquiry, Punjab, does not hold itself responsible for any opinions expressed or conclusions reached by the writer.]

1926.

LAHORE:
PRINTED AT THE "CIVIL AND MILITARY GAZETTE" PRESS,
BY E. A. SMEDLEY, MANAGER.

1926.

EIGHTY YEARS OF PUNJAB FOOD PRICES, 1841—1920.

BY

PROFESSOR BRIJ NARAIN,

Sanatana Dharma College, Lahore.

I am compelled to begin this paper on Punjab Food Prices with a discussion of the extent of the general rise of prices in India as compared with that in other countries before the war. In his paper on Punjab Food Prices, 1861—1920, which appeared in the Indian Journal of Economics for July 1925, Prof. Myles has criticised my Essay entitled "A General View of Indian Prices" which, along with other essays, was published in book form in 1922. In that Essay I had tried to show that, before the war, prices were rising more rapidly in India than in other countries.

Prof. Myles's criticism may be summarized as follows :—

1. The year 1894 has been taken as the base for determining the extent of the rise of prices in India. The base is unsuitable.

2. The index numbers showing the rise of prices given by Datta in his *Enquiry into the Rise of Prices in India, Vol. I, p. 48* (average prices in the quinquennium 1890—94 being the base) have been reduced to the base year 1894 by expressing them as a percentage of the price in 1894. "This procedure is not altogether justifiable from the statistical standpoint."¹

3. I have given two sets of index numbers of Indian prices in my book, and have compared both with Sauerbeck's index numbers for the United Kingdom. It is "natural to assume that things which are comparable with the same thing are comparable with one another."² When my second index number is reduced to the base

(1) Footnote (5), P. 9.

(2) P. 9.

1894, and compared with the index numbers of prices in other countries "the rise of prices in India, far from being 'greater than in any other country of the world', is actually found to be less than in any of the other countries selected for purposes of comparison."¹

I will examine these charges *seriatim*.

1. I have given two tables of index numbers on pp. 41 and 42 of my book. In Table I on p. 41, which Prof. Myles ignores, I took the year 1895 as the base year for all countries whose prices were compared. In Table II on p. 42, I took the year 1896 as the base for the United Kingdom, Germany, France and the United States, and the year 1894 as the base for India.

Why did I take a single year as the basis of comparison ?

It is necessary to explain here briefly how the Essay came to be written.

The first edition of my *Essays on Indian Economic Problems* was published in 1919. It contained an Essay entitled "Examination of the Report of the Rise of Prices", in which, accepting the conclusion of the Prices Enquiry Committee that prices before the war were rising more rapidly in India than in any other country of the world, I attempted to explain that the rapid rise of prices in India after 1905 was probably due to the inflation of the rupee currency. It is well known that the Prices Enquiry Committee took average prices in the quinquennium 1890—94 as the basis of comparison. I had quoted the index numbers of the Prices Enquiry Committee in my Essay. My book was reviewed in the *Economic Journal*, London, and the reviewer took exception to the period 1890—94 as the base, as European prices were not lowest in that quinquennium. European prices were lowest in the year 1896. Well, if in order to find the full extent of the rise in European prices before the war you take the year 1896 as the base for European countries, you must take the year 1894 as the base for India, for Indian prices were lowest in that year. That is what I did when I re-wrote my Essay for a foreign journal.² The year 1896 cannot be taken as the base for India, for as I stated in my Essay,

(1) P. 11.

(2) My Essay appeared under the title "Die Preisgestaltung in Indien" in *Weltwirtschaftliches Archiv*, Kiel, Band 17, pp. 226—248*.

on account of the famine of 1896-97, Indian prices were abnormal in that year. But at the same time I gave another table of index numbers in which a common base was taken for all countries, *viz.*, the year 1895.¹

I could have, of course, reproduced in my Essay, published in 1922, the whole set of Datta's index numbers of prices with the quinquennium 1890—94 as base. But I had given them in the first edition of the Essays, and I took it for granted that they were generally known.

In any case it deserves to be emphasized that whether we take a single year as the base or a quinquennium, the rise of prices in India is found to be greater than in other countries. On page 50 of the Prices Report the rise of prices in India and other countries in 1907—11 is compared with 1890—94 and 1894—98 (the lowest level of prices in all the countries compared, with the exception of India, was reached in the quinquennium 1894—98). I reproduce the figures below :—

	Compared with 1890—94	Compared with 1894—98
India	40	40
Belgium	25	26
Germany	24	38
United States of America	20	38
Canada	19	31
Italy	14	24
Australia	13	20
France	12	26
United Kingdom	9	21
New Zealand	1	9

Prof. Myles would, perhaps, insist that a ten-year period, with a famine in it, should be taken as the basis of comparison. But the reasons against a ten year basic period, which appeared to the Prices Enquiry Committee to be conclusive, were also decisive for me. Mr. Datta says:

“The basic period selected for the enquiry is the quinquennium

(1) If the year 1895 is taken as the base for all countries, the rise of prices in 1911 is found to be as follows: India 156, United Kingdom 130, France 137, Germany 152, United States of America, 141.

1890—94. This is a typical or normal period unaffected by such circumstances as famine and unseasonal rainfall. It was impossible to find, during the period under investigation, any consecutive ten years some portion of which was not seriously affected by exceptional circumstances. It was, therefore, not practicable to select, as the Committee of the British Association recommended, a ten year basic period.”¹

Prof. Myles does not seem to accept the view that Indian prices before the war rose to a greater extent than prices in other countries. So far as I know he has not published any figures which upset my conclusion.

2. Prof. Myles objects to my reducing Datta's index numbers to the base 1894 by expressing them as percentages of the price in 1894. What I have done is this. Datta's index number of wholesale prices in India (gold) stood at 85 in 1894 and 147 in 1912. If 85 is taken as 100, the index number for 1912 becomes 173, which figure I set down in my table (base 1894) against 1912. Prof. Myles tells us that “this procedure is not altogether justifiable from the statistical standpoint”.

All that I have to say about the matter is that if my procedure is “not altogether justifiable from the statistical standpoint”, then some of the leading economists of America and Germany, a leading English journal devoted to statistics, and the Statistical Department of the Government of India do not know what is justifiable and what is not altogether justifiable from the statistical standpoint.*

(1) Prices Report, p. 14.

* Irving Fisher, perhaps the greatest authority on index numbers, in his book *The Making of Index Numbers*, says :

“Sometimes it is convenient to make some other year than the base 100 per cent. Thus we might wish to translate the above series (100'00, 96'32, 123'68, 175'79, 186'70, all calculated on 1913 as a base) into proportional numbers with 100 in place of 186'70 for 1918. The series then becomes 53'56, 51'59, 52'51, 66'25, 94'16, 100'00.

“But this replacement of the awkward number 186'70 in 1918 by the more convenient number 100, and the proportionate reduction of the original 100 in 1913 to 53'56, does not really change the base from 1913 to 1918. 1913 is still the base, but the base number is changed from 100 to 53'56; for the base number is the number common to all the commodities. Evidently to change an index number for 1918 from 186'70 to 100 does not make each separate commodity 100. The commodities having before had 36 different numbers, the average of which was 186'70, will now have 36 different numbers, the average of which is 100. On the other hand, 1913, which before had every commodity 100, will now have every commodity 53'56; therefore 1913 is still the base. Thus we must sometimes

I draw Prof. Myles's particular attention to a footnote on p. 17 of *Index Numbers of Indian Prices, 1919*, (published by the Statistical Department of the Government of India). As will appear later Prof. Myles has probably never seen these index numbers. On the page indicated gold prices in India and foreign countries from 1890 to 1918 are compared with the level of prices prevailing in each country in the quinquennium 1890—94. To do this it was first necessary to reduce the index numbers of Indian prices on the basis of 1873 to the basic period 1890—94. How was this done? The index number in 1900 on the basis of 1873 was 116. This was multiplied by 100 and then divided by 101·4, the average of the five years' index numbers, 1890—94. 114 was thus obtained, which was the index number of silver prices for the year 1900, the average for 1890—94 being taken as 100.

The Prices Enquiry Committee of 1910 reduced the prices of other countries to the base 1890-94 in the same way. Mr. Datta says :

“ It has also been necessary to compare the general rise of prices in various countries, by means of index numbers published by the statistical offices of the United Kingdom, Belgium, France, Germany, Italy, Canada, United States, Australia and New Zealand.

distinguish between the true base year and the year for which the index number is taken as 100. *After a series of index numbers has been computed it is very easy to reduce or magnify all the figures in proportion, or to make any year 100 which we choose (pp. 17-18; italics mine).*

That this method is very commonly employed may be shown by a few examples.

Dr. Rudolf Meerwarth, whose name as a writer on statistics is well known in Germany, in his book *Einleitung in die Wirtschaftsstatistik*, (Jena, 1920) on p. 249, first quotes the index numbers of the Economist, base 1845—50, and then reduces them to the base 1871, by taking the index numbers for 1871 as 100.

Dr. Karl M. Obenaus in his interesting book *Die Italienischen Wechselkurse Während der Jahre 1914—1919* (Wurzen, 1922) on p. 33, quotes the index numbers Italy, England, France and the United States, and then reduces them to the base 1914 by taking the index number for 1914 in each case as 100.

The *Statist* is guilty of the same practice. It publishes international wholesale index numbers of prices every month. First the published index numbers of prices of various countries are given, and then they are reduced to the base 1913 by taking the index numbers for that year as 100. The index numbers of Italy, extracted from the *Statist* of December 12, 1925, are reproduced below :—

WHOLESALE PRICES—ITALY.

Published Index Numbers	Expressed as Percentage of 1913
1913 126·0	100
1920 786·7	624·3
1921 727·6	677·5
1922 708·5	562·3
1923 724·1	574·6
1924 737·1	585

They have all been reduced to a base of 1890-94, *the average index numbers for which have been taken as 100.*"¹

I would also like to ask how Prof. Myles would proceed if, in comparing the rise of prices in India with that in other countries from 1890 to 1912, he had to change the base of the index numbers. Does he possess information about the actual prices of the commodities which enter into the index numbers of different countries from 1890 to 1912?

3. Table VIII, given by Prof. Myles on p. 10 of his paper is reproduced below :

(1) Italics mine, Prices Report, p. 15.

INDEX NUMBERS SHOWING THE RISE OF PRICES

Table VIII given by Prof. Myles on p. 10 of his paper. (Indian Journal of Economics, Vol. VI, pt. I.)

Year	United Kingdom (Sauerbeck).	France	Germany	U. S. A.	India	The Writer's second index number of prices in India.	The figures in the previous col. reduced to a percentage of their price in 1894.
1	2	3	4	5	6	7	8
1894	..	..	..	..	1894	102	100
1895	..	..	..	..	=	104	102
1896	100	100	100	100	100	110	108
1897	101	102	103	99	141	113	111
1898	104	107	109	104	128	96	94
1899	111	116	114	112	127	96	94
1900	122	125	122	122	148	116	114
1901	115	118	117	120	141	110	108
1902	113	115	114	125	135	105	103
1903	113	118	121	126	130	99	97
1904	115	116	122	125	129	101	99
1905	118	118	125	128	141	110	108
1906	126	129	136	135	158	129	127
1907	131	136	146	144	162	137	134
1908	119	124	132	135	173	138	135
1909	121	126	137	140	162	124	122
1910	128	132	141	146	161	122	120
1911	131	141	154	142	164	129	127
1912	138	..	..	151	173	137	134

(7)

Mr. Datta's index numbers of wholesale prices (gold) have been reduced to the base 1894 in column 6. It will be seen that according to the figures given in column 6, prices in India in 1911 had risen to a greater extent than in any other country mentioned in the table.

In column 7, Prof. Myles has reproduced the second set of index numbers given by me on p. 52 of my book, and in column 8 he has reduced these index numbers (base 1873) to the base 1894. When figures in column 8 are compared with those in columns 2-5, the rise of prices in India is found to be less than in any of the other countries.

What is my second index number of Indian prices which, as is seen, when reduced to the base 1894, gives such a startling result?

Unfortunately I did not state the source of these index numbers in my book, and for this I must bear the blame. But I must say that it is surprising that Prof. Myles should not have been able to recognise this famous series of index numbers as soon as he saw it. These are the index numbers of the Commercial Intelligence Department, originally constructed by Mr. J. A. Robertson.¹ *There is one and only one official series of index numbers which takes us back to the year 1861 (1873 equal to 100)*, and it is most remarkable that a teacher of economics in India, presuming to write on prices, should know nothing about it. I had quoted the whole series from 1861 to 1918 in my book, setting down 100 against 1873, without any change whatever.

These index numbers are *index numbers of silver prices*. On pp. 35—41 of my book I have compared these index numbers with Sauerbeck's index numbers of gold prices in England. This is certainly permissible. My object there is to compare the *general movement* of silver prices in India with the *general movement* of gold prices in England. It is *not a question there of the extent of the rise of prices* in India as compared with the *extent* of the rise of prices in England. It is obvious that when we wish to determine the *extent* of the rise of prices in India and gold using countries, India's silver prices must be converted into gold. It is for this reason that figures given by Prof. Myles in Column 8 of the table

(1) The complete series, with the source, was quoted on pp. 41-42 of the first edition of the *Essays* published in 1919.

on p. 10 of his paper are meaningless. He did not know what my second index number of Indian prices was, and he took no trouble to find out.* Starting from the assumption that "things which are comparable with the same thing are comparable with one another", he has reduced in column 8 of his table VIII index numbers of *silver prices* in India to the base 1894 and compared them with index numbers of *gold prices* in other countries. There is, of course, no objection to our comparing these index numbers, when converted into index numbers of gold prices, with the index numbers of gold prices in other countries, if we wish to know whether prices in India were rising more or less rapidly than in other countries. This has been done by the Government Department of Statistics. I reproduce below the table, with the footnote, given on page 17 of Index Numbers of Indian Prices, No. 996, published in 1919 :

* It would have been easy for Prof. Myles to ask me, as a friendly colleague might well do, about the source of my index numbers.

Gold Prices in India and Foreign Countries from 1890 to 1918, as compared with the level of prices prevailing in each Country in the Quinquennial Period 1890—1894.

Year.	INDIA.			UNITED KINGDOM.		Canada Department of Labour.	UNITED STATES.		France La Reforme Economique.	Australia Bureau of Census and Statistics.
	Department of Statistics Unweighted.	Weighted.	Prices Enquiry Committee (Calcutta.)	Economist	Sauerbeck, now Statist.		Dun.	Gibson.		
1890-94	100 (39 articles) General index number.	100 (100 arti- cles.)	100 (102 arti- cles.)	100 (44 arti- cles.)	100 (45 arti- cles.)	100 (272 arti- cles.)	100 (200 arti- cles.)	100 (22 arti- cles.)	100 (48 articles.)	100 (92 articles).
1890	116	110	113	104	105	106	98	95	104	117
1891	105	105	105	103	105	104	107	111	104	104
1892	98	103	97	99	99	99	98	99	97	102
1893	98	98	97	98	99	98	103	100	101	94
1894	85	84	88	96	92	93	94	95	94	83
1895	91	85	91	89	90	94	88	92	87	84
1896	101	98	96	92	89	89	85	74	85	102
1897	110	123	110	91	90	88	82	76	86	102
1898	98	104	105	91	93	92	87	84	92	99
1899	99	101	105	95	99	96	88	91	99	89
1900	118	116	118	112	109	104	93	97	106	99
1901	111	116	116	108	102	103	104	97	99	108
1902	108	106	111	100	101	105	111	117	97	116
1903	102	103	110	102	101	106	109	107	99	116
1904	104	100	111	104	102	107	109	105	99	98
1905	112	112	119	106	105	109	109	103	99	101
1906	132	132	134	111	112	115	114	109	109	105

continued on next page.

Gold Prices in India and Foreign Countries from 1890 to 1918, as compared with the level of prices prevailing in each Country in the Quinquennial Period 1890—1894.

Year.	INDIA.			UNITED KINGDOM.		Canada Department of Labour.	UNITED STATES.		France La Reforme Economique.	Australia Bureau of Census and Statistics.
	Department of Statistics Unweighted.	Weighted.	Prices Enquiry Committee (Calcutta.)	Economist.	Sauerbeck, now Statist.		Dun.	Gibson.		
1890—94.	100 (39 articles) General index number.	100 (100 arti- cles.)	100 (102 arti- cles.)	100 (44 arti- cles.)	100 (45 arti- cles.)	100 (272 arti- cles.)	100 (200 arti- cles.)	100 (22 arti- cles.)	100 (48 articles.)	100 (92 articles.)
1907	140	140	139	117	117	121	117	111	116	113
1908	140	149	138	114	106	116	124	118	105	123
1909	126	134	128	106	108	116	122	129	105	110
1910	124	125	130	116	114	119	135	129	112	111
1911	132	130	131	116	117	122	126	124	118	111
1912	140	145	139	120	124	129	135	137	122	130
1913	146	152	147	128	124	130	132	127	120	120
1914	150	156	..	122	124	131	136	133	..	127

Note.—To convert an index number of silver prices to an index number of gold prices, the index number of silver prices for any year is multiplied by the rate of exchange for that year, and divided by the rate of exchange in the basic period. To convert, for example, the index number of silver prices for the year 1900, which was 116... to a gold basis with 1873 as the standard period (1873 equal to 100), 116 is multiplied by 15'973, the rate of exchange of the year, and divided by 22'351, the rate of exchange of the standard period, *i.e.*, the gold prices index number is 83.

In the above table the index number of silver prices in 1900, for example has been converted to a gold basis with 1890—94 as 100 or the standard period. It was necessary firstly to reduce the index numbers of silver prices on the basis of 1873 to the basic period 1890—94, *i.e.*, 116 is multiplied by 100 and divided by 701'4, the average of the five years' index numbers 1890—94. This is 114, and 114 is then multiplied by 15'973, the average rate of exchange in 1900, and divided by 15'4904, the average rate of exchange in 1890—94, *i.e.*, the index number is 118.

It will be seen that whether we take the weighted or unweighted index numbers of the Department of Statistics, or the index numbers of the Prices Enquiry Committee, the rise of prices in India is found to be greater than in any other country mentioned in the table.

PUNJAB FOOD PRICES 1841—1920.

On p. 44 of his paper (Indian Journal of Economics, Vol. VI, pt. I) Prof. Myles sums up his conclusions regarding the movement of food prices in the Punjab from 1861 to 1920. He believes that the general level of prices remained remarkably stable from 1861 to 1887, in spite of years of severe famine and years of plenty. In a footnote he draws attention to my conclusion that the prices of agricultural produce in the Punjab began to rise after 1860. He says :

“My observations, however, bring me to a conclusion diametrically opposed to that generally accepted, and which is arrived at in an entirely different way by Professor Brij Narain in his “Essays on Indian Economic Problems”. In an Essay on “Prices before 1861” after a survey of different Settlement Reports, he comes to this conclusion:—“Prices continued to be low till about 1860, after which they began to rise. For the first two or three years after 1860 the rise was due to famine, as also in 1868-69, but *it is broadly true that after 1865 prices show a marked upward tendency*” (p. 60). Again on p. 67, he says, “To sum up, there are two chief features of the early history of our prices (*i. e.*, Punjab Prices), the heavy fall of prices in the first three years after the annexation of the Punjab, and the *gradual rise of price after 1860*”. Again on the same page he speaks of “*the rise in the price of agricultural produce . . . after 1860*”. (The italics in each case are mine). The conclusion is arrived at after a review of various Settlement Reports. He finds himself called upon to account for this rise in prices. The phenomenon brought out by my statistical survey is the reverse of that stated above, *vis.*, the remarkable stability of the general level of food prices in the Punjab from 1861 to 1887.”

It is obvious that when I say that the price of agricultural produce began to rise after 1860, *I am comparing prices after 1860 with prices before 1860*, and not with the average prices in the decennium 1873—82. It should be remembered that the Essay from which these passages have been quoted is entitled “*Prices before 1861*”.

Prof. Myles's enquiry begins from 1861, and there is no reference to prices before 1861 in this paper. It appears to him that the price of food grains began to rise in the Punjab after 1887, and he, in part, accounts for it by connecting it with "the improvement of communications in the province, and the linking up of its markets with those of the west".¹ If he had examined food prices in the Punjab before 1861, he would have found that this influence began to work much earlier, and in fact the great rise in Punjab food prices began after 1861. Prof. Myles's paper creates a misleading impression in so far as it suggests that the rise in prices began after 1887, and that no rise in prices has to be accounted for before that year.

In the following pages I propose to show, first, that food prices in the Punjab before 1860 were much lower than the prices after 1860 and second, that between 1861 and 1887 food prices in the Punjab did not remain remarkably stable but showed a marked upward tendency.

My method of inquiry will be twofold. In the first place I propose to review the Settlement Reports relating to this period. Prof. Myles completely ignores them. The Settlement Officer may not be a trained economist. But he is a practical man, and when he examines price statistics he has a practical end in view. When a new settlement is made, and a higher assessment is proposed, the Settlement Officer must state his grounds for proposing it. Now the rise of prices is one of these grounds, and if we find a Settlement Officer justifying the higher assessment proposed on the ground that prices had risen, it is reasonable to assume that prices did actually rise, unless we can show that the Settlement Officer misinterpreted the facts. Now there are a dozen Settlement Officers working in different districts of the Punjab who refer to the rise of prices in this period. All of them cannot have been wrong, and we have to remember that their reports were written at the time when they were observing those phenomena, and not 50 years afterwards. If a Settlement Officer had arrived at a conclusion regarding the movement of prices in his district which was "diametrically opposed" to the known facts, he would have been immediately checked and corrected.

(1) P. 45.

To the people of the province also, upon whom higher assessments were imposed in this period, the question of the rise of prices was a practical question. One may show by means of a smoothed curve that food prices remained remarkably stable from 1861 to 1887, but as we shall see, that was not the view taken of the movement of prices in this period by those who imposed higher assessments and those who paid them.

The verdict of the Settlement Officer, therefore, is important, and it cannot be lightly ignored because it conflicts with the tendency of the smoothed curve.

In the second place I propose to examine the statistical material given in the Punjab Administration Reports and the *Prices and Wages Reports*, and on the basis of it to show that Punjab food prices from 1861 to 1887 did not remain remarkably stable but were rising.

Jullundar District.

Mr. W. E. Purser, in his Final Report of the Revised Settlement of the Jullundar District, published in 1892, thus refers to the course of prices in his district:

“The general result was found to be that in the first decade after the Regular Settlement (completed in 1851) prices fell off greatly, but after that recovered, and have tended to rise higher and higher since”¹.

Mr. Purser wrote a note on prices in the Jullundar District from 1846 to 1882, which has been published as Appendix XII to the Assessment Report of Tehsil Nawashehar, 1883. He divides his statistics of prices into four periods of which the first extends from 1846 to 1861, “till the great rise in prices began”², to quote Mr. Purser's own words, and the second from 1862 to 1882. He regarded the returns of prices relating to the chief crops of the district, wheat gram, maize, cane, cotton and *moth* as “fairly correct”. District averages for the principal food grains in quinquennial periods from 1846 to 1882 are given below:—

(1) P. 155.

(2) Appendix XII to the Assessment Report of Tehsil Nawashehar, 1883 Clvi, Para 1.

Seers per rupee.

	Wheat		Gram		Barley		Maize		Jowar	
	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
1846-51	31	40	33	42	37	51	46	49	48	59
1851-56	48	58	64	76	64	100	63	81	62	56
1856-61	52	56	66	76	65	78	53	65	48	53
1861-66	30	38	40	48	40	58	43	47	38	38
1866-71	22	25	19	30	27	32	27	34	21	23
1871-76	26	33	33	39	32	42	34	39	30	34
1876-82	22	26	26	36	31	33	25	30	26	28

(a) Average prices of trade transactions.

(b) Average prices received by agriculturists.

In will be seen that prices in the quinquennia 1861-66 and 1866-71 were higher than in 1856-61 or 1851-56. Prices fell in 1871-76, but the level was still higher than in 1861-66. In 1876-82 prices were higher than in the preceding quinquennium, and much higher still than in the quinquennium 1861-66.

Average district prices from 1846 to 1861 (15 years) are compared below with the average of 21 years from 1862 to 1882:

Average Prices received by agriculturists. District averages

	1846-61	1862-82
Wheat	51	31
Gram	65	38
Barley	78	38
Maize	63	38
Jowar	48	28

Having these figures before him, it may well appear to Mr. Purser that the great rise in prices began after 1861. His remarks on the causes of price fluctuations are not without interest, and I am reproducing them in the footnote.†

† "The future of prices depends upon a number of social, political, and economic events concerning which I have not sufficient knowledge to form any trustworthy opinion, and the resultant forces of which I am quite unable to determine. Among the social circumstances affecting prices may be mentioned the increase of population and a rise in the standard of comfort here, both affecting the surplus produce available for export, which is practically that portion of the produce with which we are concerned. Among political circumstances the first rank belongs to the Eastern question and more especially to that part of it which concerns the safe and continuous navigation of the Suez Canal. A minor point is whether any domestic reforms would enable Russia to regain her old position of a great wheat exporter. But the most important question is an economic one,—Is the supply of the precious metals likely to largely increase or decrease? In the former case prices will fall, in the latter rise: other circumstances remaining the same. We know to our cost that the supply of gold is rapidly falling off. As to

Gujranwala.

The revision of the Settlement of Gujranwala district took place in 1889—94, and the Report was issued in 1894. Mr. (later Sir) M. F. O'Dwyer was the Settlement Officer. He tells us that the enquiry into prices was carried back as far as the year 1853, from which full statistics were available, with the view of determining not only the average Gazette prices, but the average harvest prices realised by agriculturists, which are more important for assessment purposes. The books of the leading traders at the chief centres in each tehsil were carefully examined, and unbroken series of prices of the chief food grains and agricultural produce were obtained. It was also found possible to discriminate between the prices in transactions between agriculturists and traders, *i. e.*, harvest prices, and the ordinary retail prices. The results of the enquiry are shown in the following table :—

Name of crop	1853—67		Prices assumed at Settlement 1867—68	1873—88		Per cent of increase of col. 5 on col. 2.	Per cent of increase of col. 6 on col. 3.	Prices assumed for re-assessment.	Increase per cent. col. 9 on col. 4.	Average prices 1866—92	
	Gazette Prices	Harvest prices		Gazette prices	Harvest prices					Gazette	Harvest
1	2	3	4	5	6	7	8	9	10	11	12
Wheat	32	36	34	20	24	60	50	26	3	18	21
Barley	54	55	51	34	38	60	45	40	27	23	31
Gram	47	49	41	27	33	75	49	35	17	25	27
Maize	39	47	40	26	28	50	68	32	25	20	23
Jowar	37	45	44	27	31	37	45	35	28	20	25
Eajra	..	..	35	..	..	..	..	30	17	..	..

[Prices in seers per rupee.]

silver, the most productive mines are apparently becoming exhausted. New mines may be discovered. But at present it would seem that the supply of gold and silver is by no means keeping pace with the increase in the world's trade. Another circumstance which it is difficult to classify as social, economic, or political, and in fact belongs in part to all these classes, is the rapid increase of population in the United States. This may imply a diminished power of export on account of the greater demand in the Eastern States for home consumption, or it may more

It should be noted that the prices assumed for re-assessment were substantially lower than the average prices in 1888—92, but substantially higher than the prices assumed at the Settlement of 1867-68.

“From these statistics it appears”, says the Settlement Officer, “that the Gazette prices for the 15 years (1873—88) preceding this Settlement as compared with the Gazette prices for the 15 years (1853—67) preceding last Settlement show an increase of about 65 per cent. for Rabi and 40 per cent. for Kharif crops, while the harvest prices show an increase of 48 per cent. for Rabi and about 45 per cent. for Kharif crops. The value of the Rabi standing to the Kharif as 3 to 2 it follows that harvest prices for the latter period have risen 47 per cent. as compared with the former”.¹

The Settlement Officer points out that prices in 1873—88 were influenced by railway communication and the rise of the export trade. “Even if the latter influence”, he adds, “be now considered a permanent one, and it is probable that every year England will look more and more to India for the supply of food grains—dearth owing to poor harvests will be rare in future owing to the greater area under cultivation and the increased security of outturn due to the canal”.²

Amritsar District.

Mr. J. A. Grant, Settlement Officer, in his Final Report on Revision of Settlement (1888-93) of the Amritsar District, refers to the “sustained rise of prices, rent and letting value of land”³ as one of the reasons for the enhancement of revenue. He compared average prices during 16 years ending with 1889 (excluding 1879) with average prices during 16 years ending with 1865 (excluding

probably imply a greater surplus available for export on account of the greater agricultural population of the Central and Western States; but in either case, it implies a removal to a greater distance of the place of production from the European market, and consequently less favourable terms of competition with India in that market. But against this must be set the serious efforts of the American Government to improve the interior water ways of the country so as to allow produce to be carried by water without breaking bulk from the Valley of the Mississippi to Europe. No such improvement is possible in India, which will have to depend on its very expensive railway carriage.” Appendix XII to the Assessment Report (1883) of Tehsil Nawashehar, para (4).

(1) P. 51.

(2) P. 52.

(3) P. 30.

1861), and estimated the rise of prices in 24 years, 1865—89, to be about 60 per cent. Objection was taken to Mr. Grant's comparing prices in 1850—65 with prices in 1874—89 in order to determine the extent of the rise of prices for purposes of assessment. The view taken by the Lieutenant Governor in his review of the Assessment Report of the Ajnala Tehsil 1892 (Amritsar District) was that the rise of prices which could be counted on for assessment purposes was not much over 30 per cent. Mr. Grant pointed out in his Settlement Report of Amritsar District that the Lieutenant Governor had considered the rise of prices up to the year 1877 only, and not during the whole period in which the rates assumed at the last Settlement worked.

It is not necessary for us to take part in this controversy. It is sufficient for us to note that between 1865 and 1877 the Lieutenant-Governor was prepared to assume a 30 per cent rise of prices as compared with the prices assumed at the preceding Settlement.

Jhelum.

Mr. R. G. Thomson in his Report of the Second Regular Settlement of the Jhelum District (1874—80) compares the average prices ruling in each Tehsil of the district from 1861—75 with the average prices of the period 1853—60, and thus comments on the result: "Comparing therewith (1853—60) the average prices ruling in each tehsil from 1861—75, it will be seen how much the incidence of the Regular Settlement, as it stood when first made, has been lightened by the course of prices during this period. Prices with merely temporary interruptions have moved upwards while the Land Tax has stood still.¹ Prices in Tehsil Jhelum are reproduced below :

In seers per rupee.

	Wheat	Gram	Bajra	Moth
1853—60	49	46	56	67
1861—65	34	31	36	44
1866—70	24	22	25	27
1871—75	28	25	35	41
1876*	36	50	46	45

The figures clearly show the rise of prices after 1861. Even

(1) pp. 109-112.

* 1876 shown separately in the Settlement Report.

in 1876, an year of exceptional plenty, all prices excepting that of bajra, were higher than the average prices in 1853—60.

The average prices in 1861 to 1875 are compared below with the average for 1853—60.

Seers per rupee.

		Wheat	Gram	Bajra	Moth
Pinddadankhan	1853—60	40	44	50	51
	1861—75	28	27	31	32
Jhelum	1853—60	49	46	56	67
	1861—75	29	26	29	33
Chakwal	1853—60	47	56	52	57
	1861—75	27	33	31	31
Talagang	1853—60	50	62	61	60
	1861—75	34	39	36	45

Ludhiana.—A very interesting note on the fluctuations of prices in the Ludhiana District from 1840 to 1879 written in 1880 by Mr. T. Gordon Walker, Settlement Officer, is appended to the Final Report of the Revision of Settlement of the Ludhiana District, 1878—83. The Settlement Officer accepts the following definition of a rise in prices given by Mr. Carpenter in a memorandum on the question of the variations of prices (Deccan Rents Enquiry). "A permanent rise, when it does occur, is not a clearly defined and tangible event taking place within a period of two or three years. It takes place through a series of fluctuations, the general level of the last fluctuation of the series being higher than that of the first." The object of the Settlement Officer was to determine whether any rise of prices in this sense had taken place in his district in the period 1840—79.

His detailed review of prices on the basis of price statistics for the four Tehsils of his district (figures for the Ludhiana Tehsil are given below) shows that during the ten years 1850—59 prices remained at a low level, falling steadily till the end of the period. "The period of five years 1860 to 1864," he says, "is one of transition, *prices being on the rise.*" Bad seasons raised the prices of rabi 1860. Then followed failure of the autumn rains and loss of the harvests kharif 1860 and rabi 1861, resulting in a famine. Prices fell thereafter but, says the Settlement Officer, "*they never quite returned to their old position. From 1861 there is no tendency*

to return to the old level. There are oscillations, but they are over a higher line than before. If we exclude the scarcity year of 1869, we find that in Ludhiana between 1865 and 1877 the price of wheat varied between 37 and 28 and averaged 31. It is interesting to note the sudden recovery of prices after the scarcity of 1861-62 and the more gradual return after 1868-69 when the means of communication were more complete " *1 (Italics mine)*.

The following table extracted from the statement about prices, given by the Settlement Officer, shows the fluctuations in prices in Tehsil Ludhiana from 1850-54 to 1875-79.

Prices in Tehsil Ludhiana.

Seers per rupee.

	Wheat		Gram		Barley		Maize		Jowar	
	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
1850-54	52	45	61	46	69	56	66	68	95	54
1855-59	63	59	84	87	83	97	75	73	94	83
1860-64	35	35	39	42	48	48	37	38	37	42
1865-67	27	27	34	33	38	37	31	32	35	34
1870-74	29	25	32	28	43	35	35	32	41	31
1875-79	28	24	33	32	38	37	30	26	32	27

(a) Prices paid to agriculturists.

(b) Harvest prices of traders.

The Settlement Officer's explanation of the causes of the rise of prices is given in the footnote.*

*" Into the causes of the general rise in the prices of agricultural produce throughout India we cannot here inquire. Had the district continued in a state of isolation, and the means of communication through it remained as imperfect as they were at the time of the Regular Settlement, there would still have been a rise of prices. But the improvement in communications is the principal cause which has operated to produce, or, at all events, has accentuated the rise in this district to the level of the last fifteen years. The opening of the Sindh, Punjab and Delhi Railway, which took place about twelve years ago, has, by extending the market for the produce of the district, once and for ever, we might say, brought up prices. The area of the district is only 1,378 sq. miles, and it is traversed by about 35 miles of railway and 125 miles of metalled roads. The principle that supply follows demand has been establishing itself in practice; and nothing short of a decided fall in the value of agricultural produce all over India, and, we may add, Europe, will make prices recede towards their old level. The means of communication in the district are now so good that a demand in any part of India is at once felt throughout it and answered. Were prices to fall much now, it is pretty certain that a good deal of the wheat of the district would find its way eventually into European markets; and the importance of wheat is much greater than its mere acreage denotes; for it is the grain of export, and is cultivated on the best irrigated lands, which yield three times as much as unirrigated." (Para 13 of the Note or Prices appended to the Settlement Report, Ludhiana District, 1878-83).

(1) p. cii.

Shahpur District.—Mr. J. Wilson, Settlement Officer, made an enquiry into prices in this district in 1888. The results are summed up in the table given below. He found that in a series of years the averages for the different towns did not differ very much and he considered it sufficiently accurate to take their average as representing prices for the whole district. The harvest prices thus ascertained were as follows :—

Period		Wheat	Bajra	Jowar	Gram	Barley
Fifteen years	1850—64	41	47	52	51	57
Thirteen years	1865—77	26	30	34	32	38
Ten years	1878—87	21	25	28	27	31

He thus comments on these figures :—“ Taking the average of the fifteen years, 1850—64, which cover the period of Settlement operations, as representing the prices of last Settlement, and the average of the last ten years as representing the prices now prevalent, it may be said that that quantity of each article which would then have fetched Rs. 100 in silver, now fetches as follows :—Wheat Rs. 195, bajra Rs. 188, jowar Rs. 186, gram Rs. 189 barley Rs. 184. . . That is to say—the *principal food grains*—wheat, bajra, jowar, gram and barley, which together occupy three-fourths of the area under crops, *have each increased in money value more than 80 per cent. since last Settlement* and the price of wheat, which is by far the most important, has *practically doubled*” (italics Mr. Wilson’s).¹

We have reviewed in some detail the movement of food prices in Jullundar, Gujranwala, Amritsar, Jhelum, Ludhiana and Shahpur. My references to other districts will be briefer. No new facts are revealed by a study of other Settlement Reports relating to this period. The course of prices in the different parts of the province has been similar—low prices before 1851, and the gradual rise of prices after that year. It should be borne in mind that when a Settlement Officer speaks of the rise of prices in a given period as compared with another period, he is comparing average prices in the two periods, and not prices at the end of the period as compared with the prices at the beginning.

(1) Final Report on the Revision of Settlement of the Shahpur Dist. 1887—94, p. 9.

Feroz pore.—The Final Report on the Revision of Settlement (1884—89) of the Northern part of the Feroz pore District refers to about 45 per cent. rise in the price of grain since 1853-54 in the tract under Settlement (p. 9).

The Final Report on the Revision of Settlement (1889—91) of the Muktsar Pargana and Mamdot Jagir of the Feroz pore District refers to about 40 per cent. rise in the average prices of grain between 1872 and 1889 (p. 3).

In his Report on the first Regular Settlement of the Muzaffargarh District, 1873—80, the Settlement Officer, Mr. O' Brien, thus comments on the movement of prices in the Muzaffargarh District between 1854-55 and 1876-77:—"During the 23 years prices were lowest in the first five years, and rose generally during the next ten, falling again during the last eight years, but not so much as to reach the low prices of the first five years. Since 1877 prices have risen very much. Wheat is selling in 1881 at 13 seers per rupee" (p. 110).

Montgomery District.—In the Report on the Revised Settlement of the Montgomery District, published in 1878, Messrs. C. H. Roe and W. E. Purser, Settlement Officers, give statistics of prices in this district from 1838 to 1871. Their conclusions as regards the rise of prices are summed up thus:—

"The period of 15 years from 1842 to 1856 may be looked on as that the prices of which would have been regarded at last Settlement and the second period from 1856—71, as subsequent to last Settlement. The percentage of rise, in the second period, of average prices over those of the first period, is as regards—

Cotton	37 per cent.	China	37 per cent.
Jowar.	28 per cent.	Wheat	37 per cent.
Rice	22 per cent.	Gram	15 per cent.
Kagni	39 per cent.		

"The tendency of prices since has been towards a fall. It is not likely that any serious fall will take place, while there are facts which make a further rise seem possible" (p. 155).

Mr. (later Sir) D. C. J. Ibbetson, in his Report on the Revision of Settlement of the Panipat Tehsil and Karnal Pargana of the Karnal District (1870—80) thus comments on the movement of prices in the tract under Settlement between 1850 and 1874:—

"The fifth period from 1850 to 1855, is marked by a sudden and extensive fall in all prices, which continued to 1858, and this must, I fancy, have been owing to the opening out of the Punjab, and to its surplus stuffs pouring into a market from which no railway existed to carry them away. The famine of 1859-60 only introduced the cotton famine, which began in 1861 and continued for five years, during which time it is estimated that £63,000,000 sterling of silver was poured into Bombay. This enormous addition to the circulation of the country drove up prices with a rush, and before equilibrium had been restored, the introduction of steam carriage from Delhi threw open the markets of the world to India, and perpetuated the high level which had been reached. The famine of 1869 created a temporary disturbance, but for the last five years the seasons have been fair, the opening of the Punjab Railway in 1870 has completed the connection between Lahore and Bombay, and prices have stood with an extraordinary steadiness at what may be considered their normal rates. Since then the drought of 1877-80 has again raised prices considerably; but the rise is probably only temporary" (p. 283).

Rawalpindi District.—The Final Report on the Revised Settlement of the Rawalpindi District 1880-87, by F. A. Robertson, Settlement Officer, thus refers to prices after 1860:—

"It seems undeniable that prices are both higher and better established than they were before the year 1860, and agriculturists have now far greater facilities for converting their produce into money than existed 30 years ago" (p. 143).

Gurdaspore District.—There was a Revised Settlement of the Gurdaspore District in 1887-92 by Mr. (later Sir) L. W. Dane. The difference between the prices assumed in 1865 and those assumed by the Settlement Officer in 1888, to quote his own words, was "enormous" (p. 39 of the Settlement Report).

The evidence of Settlement Officers regarding the movement of food prices in the Punjab after 1861 is important. It, at any rate, shows that I was not drawing upon my imagination when in my Essay on *Prices before 1861* I said that the prices of food grains in the Punjab showed a marked upward tendency after 1861. Any one who had this evidence before him would come to the same conclusion, unless he was misled by his smoothed curve.

Prof. Myles's conclusions regarding the movements of Punjab food grain prices during the whole period 1861—1920 are entirely based on the shape of his smoothed curve. It is seen that between 1865 and 1887 the smoothed curve is nearly a straight line, hence the conclusion that, in this period, the general level of the prices of food grains in the Punjab remained remarkably stable. Between 1887 and 1896 the curve is seen to rise, and between 1896 and 1905 the curve again becomes a straight line, from which Professor Myles concludes that the rise in the *general* level of food prices set in about 1887 and continued till 1896, after which stability set in which continued until about 1905.

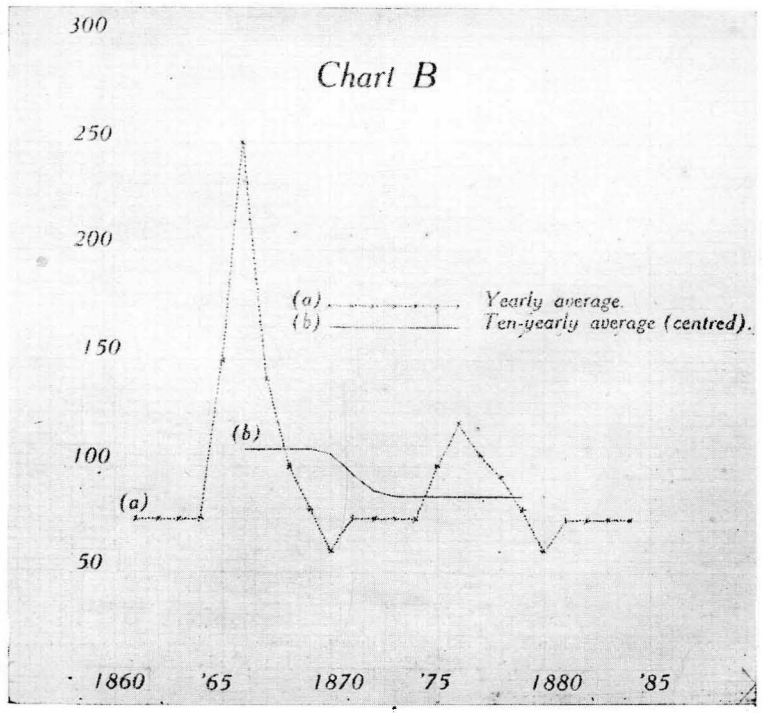
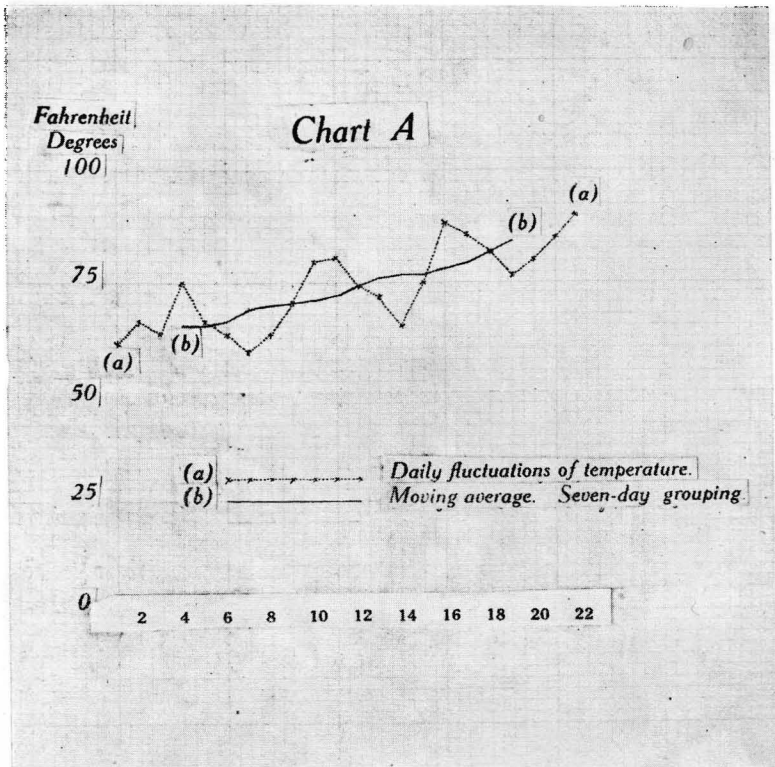
A smoothed curve, it should be remembered, is obtained in an artificial manner. It is useful for showing the general trend of a movement, but for no other purpose. It is never more important than the original data, and in interpreting it care should be taken that the meaning of the original data is not lost. Kelly says:—

“Since the average of two unequal numbers is never as large as the larger or as small as the smaller of the two, the smoothing process tends to flatten a curve out and lower modes. If the data are particularly irregular, it is frequently desirable to do this to reveal a general trend, but it should be borne in mind that something of significance is always lost in the process of smoothing. Numerical calculations should never be made from smoothed data, as a spurious consistency in the findings may be introduced and significance of the original data may be hidden”¹.

It deserves to be emphasized that smoothing may cause stability to appear where, according to the original data, there is none.

For example, suppose the yearly fluctuations of prices between 1861 and 1887 show that while during the whole period prices rose and fell, they never returned to the level of the average prices in 1862—66. In the process of smoothing this important fact may be overlooked, and yet this one fact would be a conclusive proof that after 1861 prices had a marked upward tendency. The stability of the smoothed curve in such a case would be ‘spurious’ stability, which conceals the significance of the original data. The unwary statistician may thus eliminate not only yearly fluctuations but all sense from the data.

(1) Statistical Method by T. L. Kelly, p. 29.



Further, smoothing removes short time fluctuations. "To study short time changes therefore", as King says, "the original histogram and not the trend must be studied".¹

Suppose the daily mean temperature of a certain place has varied in a month as shown in column 2 of the following table :—

February	Daily mean temperature. Fahrenheit in Degrees.	Moving average, 7 day grouping.
1	61	
2	66	
3	63	
4	75	65
5	66	65
6	63	66
7	59	68
8	63	69
9	70	70
10	80	71
11	81	72
12	74	74
13	72	76
14	65	77
15	75	77
16	88	78
17	86	79
18	82	82
19	77	84
20	80	
21	85	
22	90	

A moving average of 7 days shows the general trend (see Chart A). The curve rises steadily. But while the smoothed curve shows the general trend, it is no guide to the study of daily fluctuations of the mean temperature. They have been eliminated by means of the moving average, and no one is entitled to say that because the moving average rose from 72 to 77 between 11th February and 14th February, the general level of mean temperature

(1) Elements of Statistical Method by W. J. King, p. 171. This sentence is printed in thick type in the original.

was rising from 11th February to 14th February. The actual daily mean temperature, as is seen, fell from 81 degrees on 11th February to 65 degrees on 14th February.

We must take care not to confound the general trend with short time fluctuations. But this is exactly what we do when inferences are drawn about steadiness or unsteadiness of prices in particular years from the curve showing the general trend of prices. Suppose our prices between 1861 and 1884 rose and fell periodically in a cycle of ten years as shown in column 2 of the table given below:—

Year.	Index Numbers of prices.	Ten yearly moving average (centred). ¹
1861	75	
1862	75	
1863	75	
1864	75	
1865	150	
1866	250	108
1867	140	108
1868	100	108
1869	80	108
1870	60	106
1871	75	97
1872	75	88
1873	75	86
1874	75	86
1875	100	86
1876	120	86
1877	105	86
1878	95	86
1879	80	86
1880	60	
1881	75	
1882	75	
1883	75	
1884	75	

The ten yearly curve on chart B shows stability between 1866 and 1869, a fall commencing in 1870 and stability again between

(1) Centred by means of a two-yearly moving average.

1873 and 1880. The curve shows this, but any one who, looking at the shape of the curve, said that the general level of prices fell in 1870, or was stable from 1873 to 1880, would be wrong. Our original data show that nothing is farther from the truth. Between 1871 and 1874 prices were absolutely stable, and between 1874 and 1880 prices moved irregularly.

That it is wrong to infer from a smoothed curve that prices commenced to rise or fall in particular years may also be shown in another way.

When cyclical fluctuations take place about a uniform level, or about a line ascending with a uniform slope, the length of the cycle and the magnitude of the fluctuations being constant, a moving average having a period equal to the period of the cycle will give a straight line. The same result will be obtained when the moving average has a period which is a multiple of the period of the cycle. A twenty yearly moving average will show the same trend as the ten-yearly moving average, when the period of the cycle is ten years. This is shown by the table given below :—

Cyclical data	Ten yearly moving average (centred)*	Twenty yearly moving average (centred)*
20		
22		
26		
30		
36		
40	27.6	
32	27.6	
28	27.6	
24	27.6	
18	27.6	
20	27.6	27.6
22	27.6	27.6
26	27.6	27.6
30	27.6	27.6
36	27.6	27.6
40	27.6	27.6

* Centred by means of a two-yearly moving average.

Cyclical data	Ten yearly moving average (centred)*	Twenty yearly moving average (centred)*
32	27.6	27.6
28	27.6	27.6
24	27.6	27.6
18	27.6	27.6
20	27.6	
22	27.6	
26	27.6	
30	27.6	
36	27.6	
40		
32		
28		
24		
18		

If the magnitude of the fluctuations is not constant, the length of the cycle remaining the same (10 years), a twenty yearly moving average, while showing the same general trend as the ten yearly moving average, will give us a smoother curve. *But the point of the greatest importance to which I wish to draw attention is that the two curves will not rise or fall precisely in the same years.*

In Table V I have given in Column 2 Prof. Myles's index numbers of prices showing annual fluctuations, and in Column 3 his ten yearly average. Column 5 shows the 20 yearly moving average (centred). On Chart C the same data have been graphically presented.

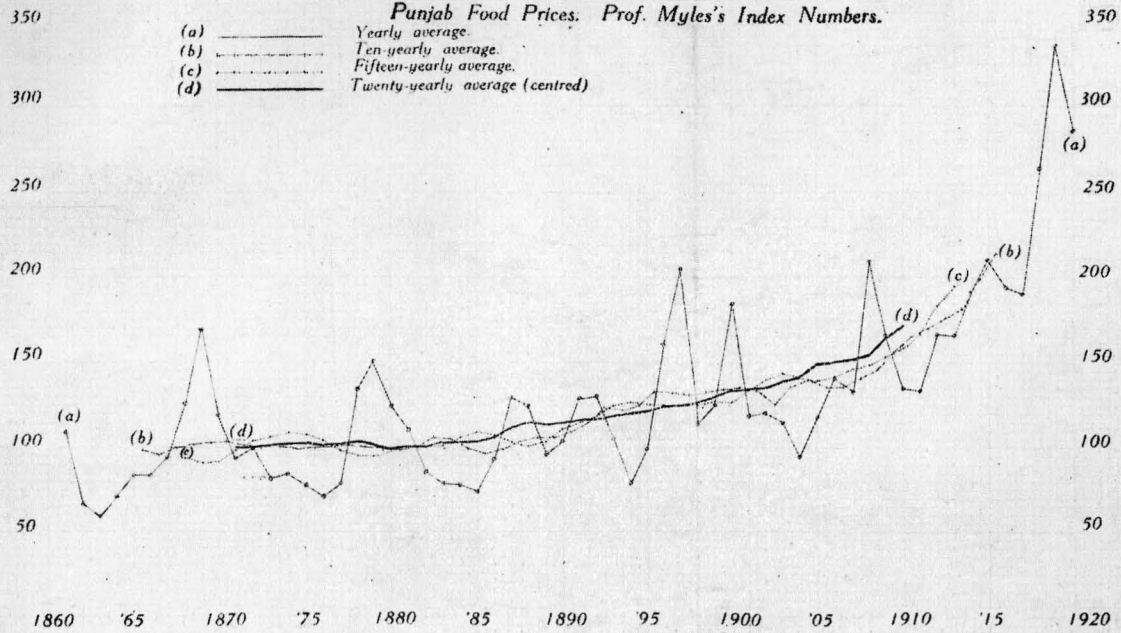
It will be seen that the twenty yearly curve is smoother than the ten yearly curve. Further, it will be seen that the twenty yearly average rose steadily from 1880 to 1888, fell one point in 1889, and then rose continuously till the end. The ten yearly average, on the other hand, after rising in 1882 returned to the level of 1879 in 1886; rose from 1887 to 1896, and remained stable from 1896 to 1905.

Which of these two averages shall we trust as a guide to fluctuations in the general price level between particular years ?

*Centred by means of a two-yearly moving average.

Chart C

Punjab Food Prices. Prof. Myles's Index Numbers.



The answer is 'Neither.' By smoothing the curve we have eliminated yearly fluctuations. The general trend alone remains; individual years have disappeared from our view.

The moving average may rise or fall in a particular year not because of a rise or fall of prices in that year, but because of the influence of prices in the five or ten preceding or following years.

It thus appears that when we wish to determine the precise point of time when prices began to rise or fall, we must consult the original data, and not the general trend of prices as shown by the smoothed curve.

Price Statistics.

The prices of food grains (retail) from 1861 to 1920 have been taken from the well known official publication *Prices and Wages in India*. The 23rd issue published in 1906 gives the average annual prices of the five food grains, wheat, barley, jowar, bajra and gram, for the whole province from 1861 to 1905 in seers per rupee. The figures for 1906 to 1920 have been taken from the 36th issue, but it was necessary to convert prices given in rupees per maund into seers per rupee. I have preferred to give all prices in seers per rupee, as retail prices of food grains are commonly expressed thus in the Punjab and other parts of India.

The prices of wheat, barley, jowar and maize, from 1841 to 1860, have been taken from two diagrams showing the fluctuations in the prices of the chief articles of agricultural produce from 1841 to 1856, and from 1857 to 1874, given in the Punjab Administration Report for 1874-75. The diagram showing the fluctuations in prices from 1841 to 1856 has been repeated from the Punjab Administration Report for 1872-73. It is stated: "The prices shown in this diagram are calculated on the averages of 16 districts only, information regarding the remainder not being available for the years in question." The prices shown in the second diagram represent average prices for the whole province. The diagrams are clearly drawn, and no difficulty was experienced in interpreting them.

I should have preferred to get actual figures of prices, instead of having to read them from curves. But these figures were not available. I have, however, no reasons whatever to doubt the

accuracy of the diagrams, and the information which they give, is of value in *showing the general fluctuations in prices before 1861.*

It is not stated on either chart whether the prices shown are wholesale or retail. But they are not retail prices. When we compare the price of wheat from 1861 to 1874, as shown by the second diagram, with the retail price of wheat as given in the *Prices and Wages Report*, 23rd issue, we find that in all cases, except two, the prices as given in the *Prices and Wages* were higher :

Price of wheat in seers per rupee.

	As shown in chart II given in the Punjab Administration Report for 1874-75.	As given in the " <i>Prices and Wages</i> " 23rd Issue (retail.)	Excess of the figures in Column 2 over the figures in Column 3.
1861	17'75	17'46	2 per cent.
1862	27'50	26'98	2 " "
1863	31'50	29'95	5 " "
1864	27'50	27'49	" "
1865	23'00	21'73	6 per cent.
1866	23'50	22'83	3 " "
1867	22'50	21'07	7 " "
1868	18'50	16'24	14 " "
1869	14'25	11'99	18 " "
1870	16'00	15'84	1 " "
1871	21'50	21'08	2 " "
1872	20'00	20'40	" "
1873	21'50	22'18	" "
1874	24'00	22'95	4 per cent.

It will be seen that except in two cases, 1868 and 1869, (both famine years) the quantity of wheat obtainable per rupee, according to the diagram given in the Punjab Administration Report for 1874-75 was never more than 7 per cent. greater than the price (in seers per rupee) as given in the *Prices and Wages Report*. In order to make the price of wheat before 1861 comparable with the price since that year, I have reduced the figures for 1841-60 by 10 per cent. in each case. The prices thus obtained I have called "adjusted prices".

The actual retail price of wheat before 1861 may have been higher or lower than my adjusted prices ; we have no means of determining this, and I am not basing any argument regarding the *extent* of the rise of prices after 1861 on my "adjusted prices". But

there is no objection to the use of these prices for showing the general trend of prices before 1861.

To determine the extent of the rise of prices between 1861 and 1920 I have used the average of prices in 1861—65 as the base. This is a fairly normal or typical period, excepting for the fact that the year 1861 was affected by famine. I did not wish to search for a basic period after 1870, when prices had already begun to rise. The decennium 1861—70 was rejected because it includes 4 years in which prices were abnormally high on account of famine (1861, 1868, 1869 and 1870).

It may be stated that the general trend of a prices curve would remain the same, whatever period of years was chosen as the base. But the extent of the rise of prices, when different years are taken as basic periods, is different. The average prices in 1861—65 are a better base than the average prices in the decennium 1873—82 for an enquiry whose object is to determine the extent of the rise of prices since 1861, for average prices in 1873—82 were already 26 per cent. higher than in the quinquennium 1861—65.¹

It cannot be denied that the prices of food grains in the Punjab before 1861 were very low. The chief feature of the Punjab prices between the annexation of the province and 1861 is the great fall which occurred in the first three years after annexation, and which was the cause of no small amount of embarrassment to the Government. Between 1841 and 1850 prices were generally on a higher level than in the next decade. A sudden fall occurred in 1851, which made it difficult for cultivators to pay the land revenue. Fixed money assessments had been substituted for grain payments in 1847, but the prices assumed for the assessment of land were too high. "Collections became difficult"; says Mr. Prinsep, "I had to give large remissions; and from that date, 1851 till 1858, the effects of former high settlements were felt on all sides. In the Churkuree Mehal,

Note (1) The average prices were as follows :—

	Seers per Rupee				
	Wheat	Barley	Jowar	Bajra	Gram
1861—65 .	24'72	39'23	32'93	29'81	31'87
1873—82	20'15	30'17	25'91	23'34	25'77
The rise of prices in 1873—82 as compar- ed with 1861—65	122'7	130'0	127'1	127'7	123'7

or an average rise of 26'2 per cent for the five food grains.

particularly, people absconded, wells were lying neglected and nothing short of immediate relief would have saved the irrigated tracts; and to give this the new assessments were more expeditiously brought about".*

The land tax was reduced everywhere "In the whole of the Punjab the reduction of the land tax may be estimated to be equal to 25 per cent., exclusive of any extras which may have been levied," says the General Report upon the Administration of the Punjab for the year 1849-50 and 1850-1851¹. In spite of the reductions complaints on the part of the agriculturists were "loud and general". The chief cause of their distress was the fall in prices. Production had exceeded consumption, and there were no markets to which the surplus could be exported. The causes of agricultural distress are well analysed in the Administration Report for 1849-50 and 1850-51.²

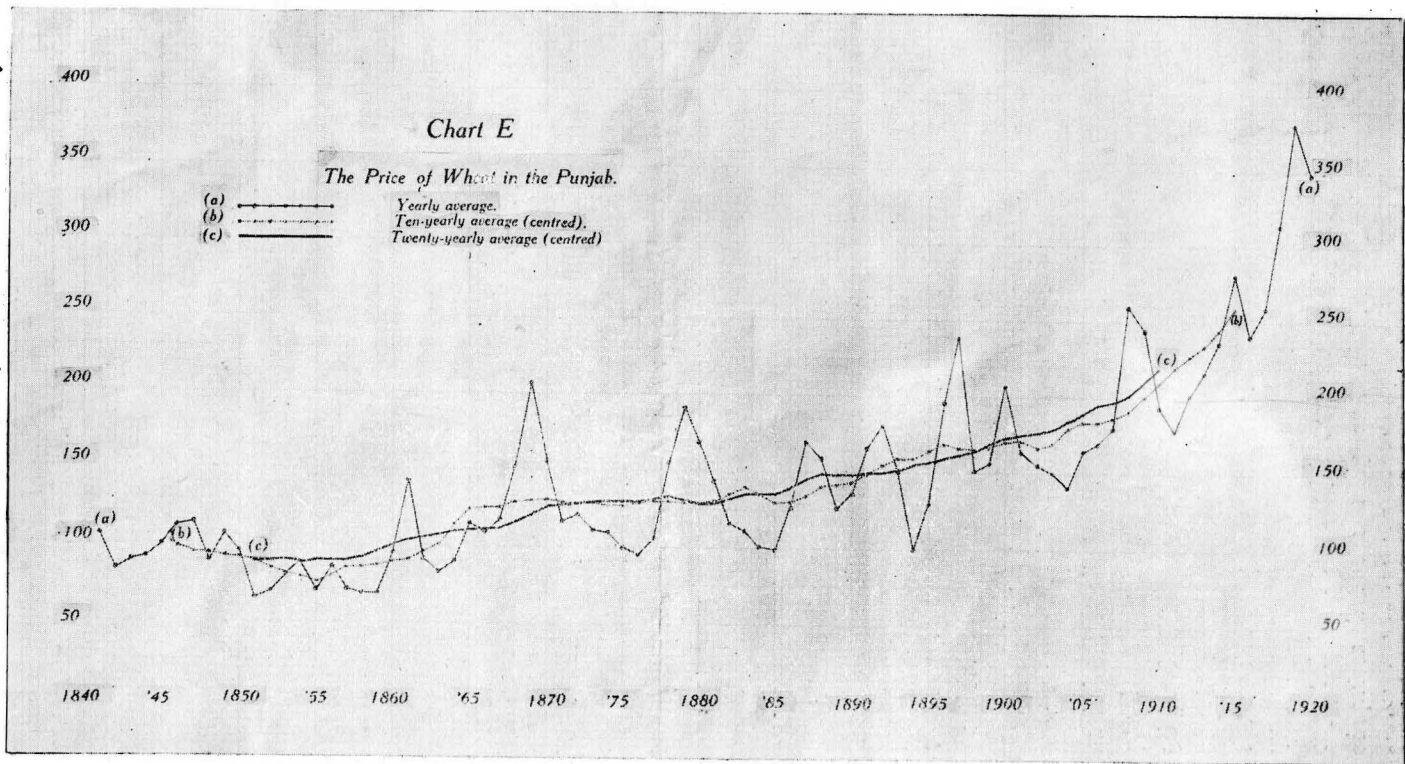
A slight rise in prices took place in 1852 and 1853, but they fell again after 1856. Famine conditions prevailed in 1860-61 and prices rose.

Whether we compare the adjusted price of wheat in 1851-60 (Table I) with the price of wheat after 1861, or consider the prices given in the Settlement Reports reviewed above, it is unquestionable that prices in 1851-60 were much lower than the prices after 1861. We may disagree about the extent of the rise of prices after 1861 as compared with the decade ending in 1860, but the fact that prices before 1861 were lower cannot be denied.

* Report on the Revised Settlement of the Sialkot District, 1862, p. 56.

(1) p. 94.

(2) "For the three first years after annexation the harvests, with a few isolated exceptions, were remarkably favourable. For twenty years, the agriculturists declare, they had never witnessed such crops of wheat and barley. Not only did the unirrigated lands usually under cultivation yield a particularly large return, but cultivation was greatly extended. Lands which in ordinary seasons were seldom sown gave large returns. These circumstances, joined to the general peace and security of the country and the fact that large bodies of disbanded soldiers and discharged employees had to turn attention to agriculture for a subsistence, all contributed to cause so great an increase of produce as to reduce prices to an unprecedented extent. The result of these different causes has doubtless been that production has exceeded consumption and hence that while an abundance of food exists, there is not a sufficient market to secure its sale at remunerative prices. No countries surround the Punjab to which any great quantity of grain could be exported. To the west the disturbed estate of Afghanistan and the difficulties and cost of transit must prevent the export of food. To the south are Sind and Bhawalpur, the former producing more than it consumes, the latter a poor and thinly peopled tract. To the east is the Jullundar Doab, densely peopled, but so fruitful in its own soil as fully to support the inhabitants. To the north are the hills whose inhabitants have not the means of purchasing our surplus produce".



Prof. Myles would probably admit this. But his main contention is that between 1861 and 1887 prices remained remarkably stable. How far is this true?

The table given below shows the lowest level touched by the average of the five grains in particular years or periods of years in each decade between 1861 and 1920:—

1861-65=100

Decade	Year of lowest prices	Index Number	Triennium of lowest prices	Index Number	Quinquennium of lowest prices.	Index Number
1861-70	1863	79	1862-64	88	1862-66	97
1871-80	1876	96	1875-77	102	1873-77	106
1881-90	1885	99	1883-85	102	1882-86	109
1891-1900	1894	105	1893-95	127	1891-95	147
1901-10	1904	130	1903-05	148	1901-05	154
1911-20	1911	182	1911-13	213	1911-15	238

- It will be seen that prices were lowest in the decade 1861—70. They rose and fell in subsequent years, but they never returned to the lowest level touched in the decade 1861—70.

The annual average and the quinquennial average are seen to rise continuously, that is, in years of plenty in each successive decade they were higher than in the preceding decade. The triennial average in 1883—85 was the same (102) as in 1875—77, but the level was 14 points higher than the lowest level touched in 1862—64 (88).

We may next consider the fluctuations in the price of wheat, the grain of export. Wheat shows even better than the general average of the five grains the influence of the causes which began to raise prices after 1861. The following table shows the year or periods of years in which the price of wheat was lowest in each decade between 1861 and 1920:—

Decade	Year of lowest price	Price in seers per rupee	Index Nos. 1861-65=100
1861-70	1863	29'95	83
1871-80	1876	25'97	95
1881-90	1885	24'91	99
1891-1900	1894	24'21	102
1901-10	1904	17'75	139
1911-20	1911	13'87	178

Triennium of lowest price

Decade	Triennium of lowest price	Price in seers per rupee	Index Nos. 1861-65=100
1861-70	1862-64	28.14	88
1871-80	1875-77	24.70	100
1881-90	1883-85	23.83	104
1891-1900	1893-95	19.91	124
1901-10	1902-04	16.71	148
1911-20	1911-13	12.48	198
	Quinquennium of lowest price		
1861-70	1862-66	25.80	96
1871-80	1873-77	23.84	104
1881-90	1882-86	22.47	110
1891-1900	1891-95	17.64	140
1901-10	1901-05	16.08	154
1911-20	1911-15	11.34	218

It will be seen that the lowest price, whether annual, triennial or quinquennial, in each successive decade was higher than in the preceding decade.

These figures do not show that the price of food grains in the Punjab remained remarkably stable between 1861 and 1887 and comparatively stable between 1896 and 1905. The rise in prices is seen to be continuous, but the rate of increase is not the same in different periods.

It cannot be denied that a considerable rise of prices took place in the decade 1871-80 as compared with the decade 1861-70. The annual average index number of wheat stood at 95 in 1876 as compared with 83 in 1863 (the general average rose from 79 in 1863 to 96 in 1876). Between 1876 and the next year of plenty, 1885, the rise of prices was less rapid, 4 points in the case of wheat and 3 points in the case of the general average. The explanation of this is simple. The improvement of communications which enabled food grains to be exported from the Punjab even before 1870 led to a considerable rise of prices between 1863 and 1876. But prices tended to become steadier when this influence became of a more permanent nature—hence the less rapid rise of prices between 1876 and 1885. But it should

not be forgotten that between 1861 and 1887 prices were never remarkably stable. They were rising throughout this period, more rapidly at first and less rapidly later on.

This is what our original data show, and I maintain that when we wish to determine when prices began to rise or to fall, the original data alone must be consulted. The general trend is of no value for this purpose.

The twenty yearly average (of the five food grains) rose steadily from 134 in 1871 to 139 in 1878 and then fell to 137 in 1879 (Table III). But it would be absurd to say that the general level of prices fell in 1879 because the twenty yearly average was 2 points lower in 1879 than in the preceding year. We must not forget that the twenty yearly average set down against the year 1879 is the average price in the twenty years of which the year 1879 is only the middle point. While it is a link in the chain that shows the general trend of prices, it does not tell us anything about prices in 1879. As a matter of fact we know that prices in 1879 were abnormally high on account of famine, the index number of the average of the five grains having risen in that year to 205.

Similarly the ten yearly average fell from 136 in 1876 to 134 in 1879, while the annual average rose from 96 to 205. It will be again absurd to say that the general level of prices was falling from 1876 to 1879 when actual prices, as is seen, were rising under the influence of a very severe famine.

Even at the risk of being tedious I must repeat that we have no business to confound the general trend with short time fluctuations. The general trend is not meant to show when prices began to rise or to fall. And yet Prof. Myles's conclusions that the rise in the general level of food prices set in about 1887 and continued till 1896, and that comparative stability set in in 1896 and continued until about 1905, are entirely based on his smoothed curve.

The failure of prices in each successive decade to return to the lowest level touched in the preceding decade shows "a marked upward tendency" in the price of food grains after 1861. This interesting fact has been overlooked by Prof. Myles, as it has been smoothed out by his ten yearly average and free hand curve. But it is obvious that if in spite of years of plenty, the general level of food prices had

as is claimed by Prof. Myles, remained remarkably stable between 1861 and 1887, prices in good years in 1871—80 and 1881—90 would have returned to the level of good years in 1861—70. But they did not do so, showing that prices were tending to rise. Prof. Myles's conclusion is "diametrically opposed" not only to my own conclusion, but it is also "diametrically opposed" to truth and good sense.

The most important cause of the failure of prices to return to the old level after 1871 was the development of communications. Prices tended to become more and more independent of local conditions as the Punjab became more and more closely connected by means of the railway with other Provinces and the ports.

I may say a few words here about railway construction in the Punjab. Prof. Myles refers us for a short summary of the progress of railway construction in the Punjab to Mr. Calvert's "Wealth and Welfare in the Punjab", and it would seem that Mr. Calvert has misled Prof. Myles. Mr. Calvert's account is a summary of a note on railways in the Punjab Administration Report for 1911-12, with one addition. Mr. Calvert says:—"Through communication with Calcutta and Bombay was established in 1883" (p. 53). Of course the Punjab Administration Report for 1911-12 says no such thing.

As early as 1865 passengers and goods could be booked through between Amritsar and Karachi*. Through communication between the Punjab and Calcutta and the Punjab and Bombay was established in 1870**.

* "By arrangements concluded between the Traffic Managers of the Sind and Punjab Railways, and the Superintendent of the Indus Flotilla, passengers and goods can now be booked through between Amritsar and Karachi" (Punjab Administration Report for 1864-65, p. 85).

** "A section of Railway between Jalandhar and Phillor, 24 miles in length, was opened on the first day of the year. On the same date arrangements were introduced by which goods might be booked between all the principal stations from Calcutta to Karachi over the only remaining break in the line which then existed, viz., between Phillor and Ludhiana. These through booking arrangements were, on the whole, successful, and greatly facilitated the traffic between the Punjab and the seaboard so long as this interruption in the through communication remained.

"The last section of the line between Phillor and Ludhiana, including the Satej Bridge, was thrown open to public traffic on the 15th of October, the opening ceremony being presided over by His Highness the Maharajah of Patiala. The opening of this section practically completed the construction of the Railway, and threw Lahore and Calcutta into direct railway communication" (Punjab Administration Report for 1870-71, p. 80).

"The through booking arrangements introduced on the first day of the year 1870 were still further extended, and passengers and goods can now be booked from stations on the Punjab and Delhi Railway to Madras, Bombay, Baroda and Ahmedabad" (Punjab Administration Report for 1871-72, p. 134).

Any one who knew that would be surprised if he did not find an upward tendency in the prices of food grains in the Punjab after 1865. But any one who thought that through communication with Calcutta and Bombay was not established before 1883 might well look for a rise of prices, owing to the improvement of communications, only after 1883.

The influence of the export trade in keeping up prices is referred to in several Administration Reports of this period. The earliest reference is in the Administration Report for 1865-66, where the "steady increase" in the price of wheat is ascribed to increased demand and "the opening out of new markets".¹

The Punjab Administration Report for 1871-72 thus comments on the connection between prices in the Punjab and other Provinces :—

"There can be no doubt that the prosperous grain harvest of 1871-72 in the North-Western Provinces made prices easier in the Punjab ; when there is a demand for grain in other Provinces, the Punjab prices always rise, even though the supply be abundant" (p. 152).

The spring crop of 1873-74 was "a most abundant one", but according to the Punjab Administration Report for 1873-74, "the effect of this on prices was to a considerable extent counterbalanced by the extraordinary export of food grains to the Bengal famine districts". Between 15th November 1873 and the end of March 1874, 3,296,783 maunds of food grains were sent from the Punjab to Bengal :—

(1) "Under the Sikh rule if, in the large cities of the Punjab, wheat was selling at a maund for the rupee it was considered rather dear than otherwise. Under British rule prices have rarely fallen so low, and during the past year at Lahore, Multan and Amritsar, wheat has sold at higher prices than when famine was last raging in the North-Western Provinces. This steady increase of prices, which was also noticed in the last year's report, is due not so much to the deficiency of the supply but to the increased demand, and to the opening out of new markets. Under the Sikh rule the badness, and the insecurity of the roads, and the levy of vexatious transit and customs dues prevented the exportation of grain to any considerable distance. Now the products of the Punjab find their way in large quantities beyond the Province. The quantities of ghee which are now exported from the Punjab to Sukkur, and even to Bombay, have had a marked effect in increasing the price of this commodity. The impulse given by the Punjab Railway to the despatch of goods is clearly shown by the traffic returns and also from the fact that during the last four months of the official year, 25,121 maunds of refined and 1,13,028 maunds of unrefined sugar were carried from the three stations of Amritsar, Lahore and Rae wind". Punjab Administration Report, 1865-66, pp. 91-92.

	Maunds.
Gram	646,725
Barley	647,375
Wheat	594,788
Rice	175,649
Indian corn	213,457
Millets	707,211
Pulses and other food grains	311,578

This " great drain on the resources of the Province " prevented prices on the 1st of June, 1874, from falling below the level of prices at the same period of the preceding year (pp. 57-58).

The Punjab Administration Report for 1875-76 finds it " more difficult to give reasons for (price) fluctuations, owing to the wider scope of enquiry necessary to determine them.", prices having become more and more independent of local circumstances on account of the development of communications (p. 70).

The Punjab Administration Report for 1876-77 refers to the " great demand for export to the famine districts of Bombay and to Europe " in the case of wheat in 1876-77. That the price still fell was due to a plentiful supply in the Province. " Wheat", the Report adds, " is grown chiefly for sale and export, the agriculturist ordinarily subsisting on the cheaper grains " (p. 82).

Finally the Punjab Administration Report for 1886-87 thus comments on the export of wheat and its effect on the price of wheat : " It is believed also that much of the surplus stocks of wheat have been taken out of the country for export during the last few years. The absence of such stores would, in a period of scarcity, contribute to the general rise in the prices of food grains " (p. 81).

What has been the course of prices after 1887 ?

In 1887 and 1888, as well as in 1891 and 1892, prices were high on account of scarcity. In 1894 the index number showing the average annual price of the five food grains (1861-65 equal to 100) fell to 105 (the lowest level touched in the decade 1881-90 was 99 in 1885). But it commenced to rise immediately. Prof. Myles thinks the general level of food grain prices remained stable between 1896

and 1905. By the general level of prices he only means the free hand smoothed curve. But the curve again gives us an entirely misleading idea of the movement of prices in this period. The original data show no stability. It is obviously absurd to speak of stability of the general level of prices in a period which witnessed two severe famines. The average price of the five grains rose to 280 in 1897 and after falling to 172 in 1899 it rose to 251 in 1900. Even if we ignore the rise in prices due to famine, we cannot get over the fact that in 1904, the index number stood at 130, which was 25 points higher than the level touched in 1894. It is thus seen that prices between 1896 and 1904 did not cease to rise.

The general index number rose from 130 in 1905 to 227 in 1913. While the prices of food grains in the Punjab show an upward tendency throughout the period 1861—1905, the pace was never so rapid as after 1905. Under the influence of scarcity the index number rose to 287 in 1908, but even when normal conditions returned, it never fell below 182. The period of famine prices without famine began in 1905 and continued till the end of the period under enquiry.

Causes of the rise of Prices

Reference has been made above to the influence of the development of communications on the prices of food grains in the Punjab between 1861 and 1887. Another cause of the rise of prices was the increase in the circulation of money. In the Report on the Revised Settlement of the Shahpur District, dated 1866, "the large influx of silver from Europe now going on" is mentioned as one of the causes of the rise of prices (p. 89). Similarly the Settlement Officer of Karnal District (1872-80) draws attention to the effect upon prices of the heavy imports of silver into India during the Lancashire cotton famine.¹ This was a cause operating throughout India. But after the Mutiny money was more plentiful in the Punjab for special reasons. Before the Mutiny the Indian portion of the army employed in the Punjab was largely Hindustanee. A considerable share of the Punjab revenues was paid to them as their wages, of which they spent a part in the Punjab, and remitted the remainder to their homes.

(1) Settlement Report, Karnal Parganah and Panipat Tahsil, (1872-80), p. 283.

Many lakhs of rupees were thus annually drained from the Punjab. After the Mutiny the soldiers from Oudh were replaced by Punjabees; many thousands of Punjabee soldiers were also serving abroad. "These men", says the Punjab Administration Report for 1856-57 and 1857-58, "not only remit their savings, but also have sent quantities of prize property and plunder, the spoils of Hindustan, to their native villages" (p. 23).

The increase in the cost of cultivation must have also played some part in raising the prices of agricultural produce. Some Settlement Reports give the prices of plough cattle and agricultural implements, which show that costs of cultivation were much lower before 1860 than in the period subsequent to that date. The price of a plough bullock in Kot Khai (Simla District) was Rs. 5 in 1849 and Rs. 10 in 1883. The price of a bullock in Jehlum, Pind Dadan Khan, Chakwal and Tallagung at different dates is shown in the following table:—

	At the end of Sikh rule.	1858	1877
	Rs.	Rs.	Rs.
Jehlum	25	40	55
P. D. Khan	15 to 30	30 to 40	20 to 90
Chakwal	11	16	45
Tallagung	15	22	26

The Settlement Officer, Karnal District, attached considerable importance to the rise in the cost of cultivation as an explanation of the rise in prices in his district.¹

In the Report of the Second Regular Settlement of the Gujrat District (published in 1874) prices of agricultural implements during the Settlement are compared with prices in Sikh times, and it is found that the total had increased from Rs. 72-10-9 to Rs. 97-8-6.²

(1) "The price of cattle has probably doubled since 1840; at any rate that of the more valuable cattle which are needed for working the deep well and still soil of the Bangar and Nardak, and which are for the most part not bred at home. And if the people are to be believed the cost of all implements of agriculture has increased in almost like proportion. The demand for fuel and the extension of cultivation have rendered the materials dearer, the enhanced cost of living has raised the price of labour and the tendency which has so strongly marked our rule of late years to substitute contract for status and competition for custom has, in some not inconsiderable measure, relaxed the customary obligations which bind the village labourers and artificers to the communities among whom they dwell". He also pointed out that the extension of cultivation had led to the substitution of stall feeding for grazing and that the price of water had increased since 1842 by (150) per cent. (Settlement Report, 1872-80, p. 284).

(2) p. 85.

Captain Dunlop-Smith, Settlement Officer Sialkot District, (1888-95), thus refers to the rise in the cost of cultivation in the Sialkot District:

"Again while prices have admittedly risen, there has been steadily going on an advance in the cost of cultivation and the cost of living. This has been nowhere more marked than in the case of farm cattle".¹

It has been argued by some economists that the increase in the cost of cultivation is the result, and not the cause of the rise in the price of agricultural produce in India. The right view, however, seems to be that the rise in the cost of cultivation is a cause as well as an effect, and that the rise in price and the increase in the cost of production mutually influence each other. The extension of cultivation after 1860 led to an increase in the demand for labour, plough cattle and agricultural implements, and their prices rose. The price of agricultural produce also rose, the rise being partly due to the increased cost of cultivation.

We have seen that with the development of communications the influence of local circumstances in determining a rise or fall of prices began to decrease. As soon as wheat began to be exported from the Punjab to other parts of India and to foreign countries, the price of wheat and other food grains in the Punjab began to fluctuate in sympathy with price fluctuations in India and other countries. Our enquiry thus becomes wider. To explain why the price of food grains in the Punjab rose gradually up to 1905 and more rapidly between 1905 and 1920 we must examine the influences that were acting on the price of food grains throughout India. It would be absolutely futile to seek to establish a connection between the price of food grains in the Punjab and the quantity of money in circulation in the Punjab. This is an influence of a general nature, and if it was at work in India, Punjab prices could not have remained unaffected.

Table VII, Col. 2, shows the fluctuations in the retail price of wheat in India (base 1873). These are the Index Numbers of the Commercial Intelligence Department. For purposes of comparison it was also necessary to reduce the Punjab price to the base year 1873.

(1) P. 36. Settlement Report, (1888-95).

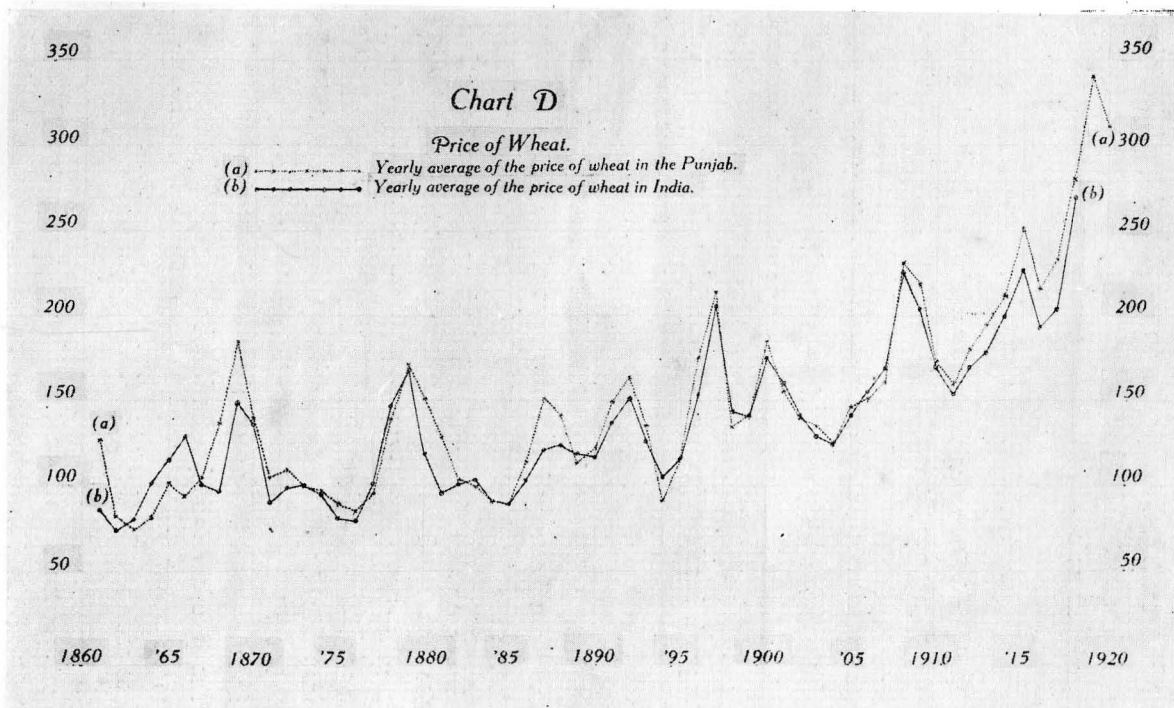
Chart D shows the fluctuations in the price of wheat in the Punjab and in India between 1861 and 1920. It is sufficient if we study the price of wheat alone, for the rise and fall in the price of wheat closely corresponds to the rise and fall in the prices of the other food grains.

The general movement of the two curves on Chart D is similar, though the extent of the rise and fall in both cases is not the same. It will, therefore, be legitimate to assume in the present case that the causes which explain the fluctuations in the price of wheat in India also explain the fluctuations in the price of wheat in the Punjab.

The influence of increased exports in raising the price of wheat in India may be shown by a few examples.

Indian wheat does not much compete with wheat grown in Russia, United States, Argentina and other wheat growing countries; it is required in foreign countries only to supplement deficiencies. "Apart, therefore, from general conditions, affecting the supply," says the Report on the Inquiry into the Rise of Prices, "exports are subject to violent fluctuations arising out of variations in the supply of other countries. In one year the demand will be very large and even if the Indian harvest is abundant, prices will rise; in the following year, the foreign demand may be largely reduced owing to abundant supplies from Russia, the United States and other exporting countries, and even if the harvest in India be deficient, prices might fall. The European demand, therefore, exercises a very important influence on the price of Indian wheat."¹ This may be shown by a few examples. In 1891 the wheat harvest in India was exceptionally good, but to meet a strong demand from Europe more than 18 per cent. of its total produce was exported, and prices in India rose. In 1892, inspite of a poor harvest, prices did not rise, owing to a decline in the European demand. In 1895 the Indian crops were below the normal, but out of the restricted supply a large quantity was exported to foreign countries, and prices rose. In 1901 prices were high on account of famine, but in the following year prices fell owing to a decline in the European demand. From 1904 to 1907 the production of Indian wheat was above the normal but still prices rose

(1) P. 114.



steadily in sympathy with the rise in foreign prices. Of the rise in prices in 1910 and the following two or three years the same explanation is to be given. "The price of wheat in India has, with some occasional falls, been rising in recent years, notwithstanding the increase in the supply available for internal consumption. This is explained by the rise in world markets."¹

We do not, however, find a complete explanation of the great rise in the price of wheat in India since 1905 in the growth of the export trade. A new factor came into play in 1905 which overshadows other factors such as the growth of population or increased exports. This is currency inflation. As the result of inflation the general price level in India before the war rose more rapidly than prices in other countries.

The question of inflation is connected with the nature of the Indian currency system. I cannot enter here into a full discussion of the relation of the gold exchange system to Indian prices. I have discussed it elsewhere. But I am summarizing my main conclusions below :—

1. The hoarding and the melting of rupees before 1893 prevented prices from rising too rapidly by reducing the volume of the currency ; the change in the character of the rupee, from a full value coin to a token coin, by discouraging hoarding and making it unprofitable to melt rupees, contributed in some measure to the inflation of the rupee currency. It really proves nothing to say as Mr. Datta does, that "the average annual coinage during the eighteen years that have elapsed since the closing of the mints has been much less than in the corresponding period preceding that date."² The averages are 751 lakhs for the period 1874-75 to 1893-94, and 566 lakhs for the period 1893-94 to 1911-12. In the decade following the closing of the mints the average net coinage was small, due to a deliberate restriction of the coinage to force up exchange. If we compare the average coinage in the decade preceding the closing of the mints with that in the ten years ending 1912-13 (the great rise in our prices took place in this period), we find that the average was 808 lakhs in the earlier period and 917 lakhs in the latter. Further, in comparing such

(1) Prices Report, p. 116.

(2) Prices Report, p. 89.

averages, we should not forget that before the closing of the mints 45 to 50 per cent. of the coinage was melted and hoarded.

2. Rupees cannot be forced into circulation, but a token currency which is convertible into gold only for a limited purpose (payment of international indebtedness), even when it is not forced into circulation, tends to become inflated.

3. The stability of exchange during the period 1899 to 1914 cannot be used as an argument to show that the currency during this period was not inflated. Many instances can be given from the recent monetary history of Europe showing that while exchange remained stable, the internal purchasing power of money decreased heavily on account of inflation.

It is not denied that inflation played an important part in raising the general level of prices during the war. Indian prices rose to their highest point in 1920, the index number of wholesale prices standing at 204 as compared with United Kingdom 295, Canada 244, France 506, Italy 624, Sweden 347, Norway 377, Denmark 341, Holland 292 and United States of America 197. The discussion of the more rapid rise of prices in European countries between 1914 and 1920, and of the subsequent movements of world prices lies beyond the scope of this paper.

To facilitate discussion I have summarized below the main conclusions reached in this paper:—

The general rise of prices in India as compared with that in other countries between 1890 and 1912.

1. Prices rose to a greater extent in India than in other countries before the war. We may take as the basis of comparison average prices in the quinquennium 1890—94 or 1894—98 (the lowest level of prices in all the countries compared with the exception of India was reached in the quinquennium 1894—98), or, if a single year is taken as the base for all countries, the year 1895. If the year 1896 is taken as the base for European countries, because European prices were lowest in that year, the year 1894 must be taken as the base for India.

2. After a series of index numbers has been constructed, any year of the series may be made 100 and the index numbers for other years reduced or magnified in proportion. This procedure is justified by Fisher and is very commonly employed.

3 In order to compare the extent of the rise of prices in India with that in other countries, India's index numbers of silver prices must be converted into index numbers of gold prices. This was done by the Prices Enquiry Committee and this has also been done by the Government Department of Statistics.

Punjab Food Prices, 1841—1920.

1. Prices in 1851—60 were much lower than prices after 1860.
2. Prices did not remain remarkably stable between 1861 and 1887. They were rising. This is shown by the fact that in years of plenty in the decade 1871—80 prices never fell to the level of prices in good years in the decade 1861—70. The lowest level of prices in 1881—90 was higher than that in the preceding decade, and still much higher than the lowest level reached in the decade 1861—70.
3. The failure of prices in 1871—80, and in 1881—90 to return, in years of plenty, to the lowest level of prices in 1861—70 justifies us in speaking of "a marked upward tendency" of food grain prices in the Punjab after 1861.
4. Prices continued to rise between 1887 and 1905. They were not stable between 1896 and 1905. In the first place, the famines of 1896-97 and 1899-1900 raised prices, and secondly, even if we ignore the effects of famine, the general index number stood at 130 in 1904, which is 25 points higher than the level touched in 1894 (a year of plenty), 105.
5. After 1905 prices began to rise more rapidly than they had ever done before. The period of famine prices without famine began in 1905.
6. A smoothed curve of prices is useful for showing *the general trend of prices*, but no inferences can be drawn from it regarding the rise or fall of prices in particular years. When we do so, we are confounding the general trend with short time fluctuations, and this is essentially wrong from the statistical standpoint.
7. A smoothed curve sometimes hides the significance of the original data. The original data are always more important than the smoothed curve and they must be consulted when we wish to determine the precise point of time when prices began to rise or to fall.

Causes of the rise of prices.

1. It would have been most remarkable if the general level of food prices had remained stable between 1861 and 1887, considering that the influence of the development of communications began to be felt even before 1870. The failure of prices after 1870 to return to the level of 1862—1866 was chiefly due to the development of communications as the result of which Punjab's surplus food could be exported to other parts of India and to Europe.

2. It is incomprehensible why this influence should suddenly begin to make itself felt in 1887, and not before that year. Through communication with Bombay and Calcutta was established in 1870.

3. The increase in the circulation of money and the rise in the cost of cultivation also played some part in raising prices.

4. The rise of prices since 1905 is principally due to inflation.

The price of food grains in relation to the price of cotton cloth.

A very great change has occurred in the relation between the price of food grains and the price of cotton cloth since the war, and it is worthy of note.

We may study the fluctuations in the price of cotton cloth by means of the index numbers of the Commercial Intelligence Department, articles Nos. 31, 32 and 33, (grey shirting, grey yarn, coloured yarn, orange, all imported), given on page 14 of *Index Numbers of Indian Prices, No. 996 for 1919*. The base year is 1873. It is found that between 1873 and 1910, while the index numbers rose and fell, they never rose above 100. In 1911, for the first time, grey shirtings rose to 105. The average of the index numbers of the three articles was still 100 in 1911. The index numbers for the years 1910 to 1918 are given below :—

	Grey shirtings	Grey yarn	Coloured yarn orange	Average
	Article No. 31	Article No. 32	Article No. 33	
1910	96	92	88	90
1911	105	96	99	100
1912	107	83	94	95
1913	104	90	93	96
1914	103	91	98	97
1915	99	77	97	91
1916	106	108	129	114
1917	123	148	185	152
1918	199	244	283	242

It is seen that the price of cotton (manufactured) in 1914 was below the price in 1873. The rise of prices commenced in 1916, and in 1918 the price had risen 142 per cent. above that in 1873.

In 1914, however, the price of wheat was much above the level of 1873. The index number of wheat stood at 123, (average of Club No. 2, Khandwa and Delhi No. 1). Between 1914 and 1918 while the price of wheat continued to rise, it rose less than the price of cotton (manufactured). The index numbers of wheat are given below :

	Wheat. Average of Club No. 2, Khandwa and Delhi No. 1
1910	115
1911	99
1912	106
1913	109
1914	123
1915	147
1916	131
1917	134
1918	176

Unfortunately the index numbers of this series for later years were not available at the time of writing. The Commercial Intelligence Department, however, has constructed another series of index numbers called "Index Numbers of whole-sale Prices in Calcutta by Groups of Articles", with prices in July 1914 equal to 100. The annual averages for food grains and cotton manufactures for the years 1915 to 1924 are given below :*

	FOOD GRAINS.		Cotton manufactures
	Cereals	Pulses	
1914, end of July	100	100	100
1915	115	122	97
1916	106	107	150
1917	92	96	221
1918	118	119	320
1919	63	180	319
1920	154	166	354
1921	145	160	306
1922	137	152	278
1923	114	112	268
1924	123	114	275

The greater rise in the price of cotton manufactures as compared with food grains since 1916 is clearly seen. If we constructed curves showing the fluctuations in the prices of food grains and

* Indian Trade Journal for June 12, 1925.

cotton manufactures between 1910 and 1924, the two curves will cut each other in 1916 and they will have the form of scissors; the curve of cotton manufactures will be below that of food grains till 1916 and then above it.

The index numbers given above are of wholesale prices in Calcutta, but the relation between the prices of food grains and of cotton manufactures would be the same in the Punjab.

Effects of the rise of prices.

In conclusion a few words may be said about the social significance of the great rise in the price of food grains that has occurred since 1861.

Prof. Myles's index numbers of the average price of wheat, barley, jowar, bajra and gram show that prices in 1920 had risen 186 per cent. This does not give us an adequate idea of the extent of the rise of prices since 1861. Prof. Myles's basic period is the decennium 1873—1882, and the average prices in this decennium, as I have already shown, were already 26 per cent. higher than the average prices in the quinquennium 1861—65. As compared with average prices in 1861—65 (equal to 100), prices rose to 391 in 1920, or 291 per cent. Roughly, prices as compared with 1861—65, rose four times in 1920, or the purchasing power of the rupee in terms of food grains in the Punjab was reduced to four annas in 1920.

What is the social significance of the great rise of prices that has taken place in the Punjab ?

The rise in the price of food grains is generally regarded as a cause of agricultural prosperity. Some writers even go further and maintain that the income of our large agricultural population cannot be increased "otherwise than by an increase in the price of produce."* It is also obvious that the rise in the price of food grains does not benefit the urban population, and hence the view, which is sedulously encouraged by certain writers in the Punjab, that there is a conflict between urban and rural interests.

The rise in the price of agricultural produce benefits all agriculturists in the sense that they have to sell a smaller proportion of their

* Letter entitled "The Agriculturists and the Prices of Agricultural Produce" by Sardar Jogendra Singh (now Minister of Agriculture in the Punjab) in the *Tribune* of 20th August, 1922.

produce in order to pay the land revenue when prices are high than when they are low. But apart from this, the rise in the price of food grains means very little to small cultivators who produce very little more than what is required for their own consumption. The great rise in prices has enriched large cultivators who have a surplus to sell, not the small cultivators of the Punjab, Captain Dunlop-Smith, Settlement Officer, Sialkot District (1888—95), thus comments on the effects of the rise of prices on cultivators in the Sialkot District:—

“Whatever the exact percentage of the rise in prices may be, it cannot be employed in assessment calculations without considerable qualification. The majority of the landowners in Sialkot are not affected by fluctuations in the prices of food grains, except when they have to buy their seed for harvest. They require every grain they can produce for the support of themselves, their families and their cattle. Even those who have large enough holdings to afford them surplus produce, are benefited to a disproportionately small extent by a rise, those who profit being the middle men and petty traders.”*

On p. 51 of my Essays on Indian Economic Problems, Part I, I have said:—

“..it may be well to remind all those who build nice theories of the prosperity of India's small farmers on very slender evidence of the views of Hassu, a small farmer (Rania village, Moga Tahsil, Ferozpur Dist. of the Punjab) who, when questioned on the subject, said:—

Main bechan tan mehngiyai da savad ae ; dane khune joge nahin honde; sanu mehngiyai da ki savad de.”†

It is important to remember that the Punjab is a land of small peasant proprietors. Large cultivators form a minority of the agricultural population in the Punjab, as in other parts of India.

Those who have seen our villages and how agricultural labourers and *kamins* live, also know very well that these classes of the agricultural community have not benefited by the rise of prices. They live from hand to mouth, and in their case the rise of prices, so far from being a source of gain, is frequently a cause of indebtedness.

* Settlement Report, Sialkot Dist. (1888—95) p. 36.

† “The rise of prices would mean something to me if I had anything to sell. What I produce is not sufficient for my own consumption. The rise of prices means nothing to me”.

We should not forget that the rise of prices, in the long run, must be accompanied by a rise in the cost of cultivation, and that in many cases, when profit can be made by selling agricultural produce at a high price, the mahajan, the middleman and the exporter get the lion's share of it.

The small cultivators of the Punjab, and other parts of India, are poor not because prices are low, or because they do not know which crops to grow and how to grow them. The chief causes of their poverty are two: (a) the constant sub-division of holdings which is continually reducing the size of the average holding, and (b) scattered holdings. A new era in the development of agriculture will begin when scattered holdings are consolidated and when, as our manufacturing industries develop, the proportion of the population dependent upon agriculture begins to diminish. This will be a work of time and labour, but there is no other solution of our agricultural problem. When the question is considered thus, the so-called conflict between rural and urban interests disappears, and the progress and well-being of these two sections of the population are seen to be inter-dependent.

(51)

TABLE I

Prices of Food Grains in the Punjab in seers per rupee.

Year	Wheat	Barley	Jowar	Bajra	Gram
1841	23'40				
1842	29'70				
1843	28'35				
1844	27'00				
1845	24'75				
1846	22'05				
1847	21'60				
1848	27'90				
1849	23'18				
1850	26'10				
1851	38'25				
1852	36'00				
1853	31'05				
1854	28'13				
1855	35'10				
1856	29'25				
1857	34'65				
1858	36'45				
1859	36'45				
1860	26'10				
1861	17'46	24'80	22'12	22'87	19'65
1862	26'98	45'23	36'43	32'39	33'70
1863	29'95	48'87	43'71	38'26	41'12
1864	27'49	42'51	33'30	29'20	34'77
1865	21'73	34'72	29'09	26'33	30'09
1866	22'83	35'67	29'34	24'91	30'05
1867	21'07	29'22	26'68	23'56	23'88
1868	16'24	23'59	17'81	16'52	18'80
1869	11'99	18'00	15'56	13'32	10'99
1870	15'84	23'47	23'78	19'48	16'58
1871	21'08	31'91	29'26	22'79	22'37
1872	20'40	29'78	23'57	22'60	21'20
1873	22'18	33'45	30'36	28'16	27'64
1874	22'95	33'58	27'60	24'89	32'14
1875	24'79	35'45	30'66	29'10	32'02
1876	25'97	38'42	33'24	31'04	36'67
1877	23'33	36'63	31'22	28'50	31'79
1878	16'07	24'01	16'66	15'32	16'22
1879	12'92	18'06	15'72	15'27	14'99
1880	14'59	21'70	21'23	17'93	18'13
1881	17'33	26'30	22'21	18'94	21'12
1882	21'37	34'06	30'15	24'28	26'99
1883	22'22	35'98	34'84	29'92	30'76
1884	24'37	36'22	33'08	28'69	32'22
1885	24'91	38'49	34'01	30'38	32'39
1886	19'48	32'40	25'32	21'98	28'85
1887	14'69	21'32	17'48	15'89	21'02
1888	15'62	21'53	19'45	16'57	20'52
1889	19'62	30'36	25'64	20'26	25'56
1890	18'18	27'56	24'21	21'43	22'48

Continued on next page.

TABLE I—(continued).

Prices of Food Grains in the Punjab in seers per rupee¹

Year	Wheat	Barley	Jowar	Bajra	Gram
1891	14'91	22'49	17'75	16'32	19'80
1892	13'57	20'69	19'51	15'92	20'24
1893	16'42	26'36	24'41	19'81	25'71
1894	24'21	39'02	31'40	23'63	34'51
1895	19'10	28'68	24'40	20'56	25'17
1896	12'63	16'53	14'78	12'68	15'61
1897	10'42	13'52	11'76	10'39	10'48
1898	16'39	25'46	22'01	19'62	19'14
1899	15'76	22'16	19'75	17'09	17'35
1900	11'98	15'06	12'42	11'94	11'56
1901	15'20	23'76	21'83	20'07	18'25
1902	15'96	22'30	21'62	17'81	19'03
1903	16'42	22'86	21'88	19'82	21'06
1904	17'75	27'12	28'93	23'26	26'18
1905	15'07	23'74	21'62	18'54	20'63
1906	14'62	20'33	15'96	14'04	16'96
1907	13'78	20'36	18'67	17'11	16'35
1908	9'55	13'39	11'38	10'55	10'29
1909	10'15	16'66	15'46	14'28	13'56
1910	12'83	21'30	17'48	16'09	18'17
1911	13'87	20'60	17'86	15'74	18'74
1912	12'18	15'96	13'41	12'39	15'34
1913	11'38	15'92	15'43	12'61	14'38
1914	10'47	14'65	12'26	11'18	11'71
1915	8'80	13'77	10'66	10'22	11'70
1916	10'27	13'50	12'76	10'88	12'12
1917	9'54	13'80	12'60	13'04	11'66
1918	7'89	11'28	7'19	8'36	9'86
1919	6'50	8'96	6'56	5'60	7'02
1920	7'12	10'43	8'64	7'29	7'19

1. The price of wheat from 1841 to 1860 is "adjusted price" (see text).

2. The prices of the five food grains from 1861 to 1905 have been taken from the *Prices and Wages, 3rd Issue*. These are all averages for 21 districts.

3. The prices of the five food grains from 1906 to 1920 have been taken from the *Prices and Wages, 3rd Issue*. They are given in the Report in Rupees per maund, and had to be converted into seers per rupee. For wheat and barley the prices given are averages of 23 districts and for jowar, bajra and gram, the averages of 21 districts.

TABLE II
*Index Numbers of Prices. The average of prices
 in 1861-65=100.*

Year	Wheat	Barley	Jowar	Bajra	Gram	Average of five grains.
1841	106					
1842	83					
1843	87					
1844	92					
1845	100					
1846	112					
1847	114					
1848	89					
1849	107					
1850	95					
1851	65					
1852	69					
1853	80					
1854	88					
1855	70					
1856	85					
1857	71					
1858	68					
1859	68					
1860	95					
1861	142	158	149	130	162	148
1862	92	87	90	81	95	89
1863	83	80	75	78	78	79
1864	90	92	99	102	92	95
1865	114	113	113	113	106	112
1866	108	110	112	120	106	111
1867	117	134	123	126	133	127
1868	152	166	185	180	170	171
1869	206	218	212	224	290	230
1870	156	167	139	153	192	161
1871	117	123	113	131	143	125
1872	121	132	139	132	150	135
1873	111	117	108	106	115	111
1874	108	117	119	120	99	113
1875	100	111	107	102	100	104
1876	95	102	99	96	87	96
1877	106	107	105	105	100	105
1878	154	163	198	194	197	181
1879	191	217	210	195	213	205
1880	169	181	155	156	176	169
1881	143	149	148	157	151	150
1882	116	115	106	123	118	116
1883	111	109	95	100	104	104
1884	101	108	100	104	99	102
1885	99	102	97	98	98	99
1886	127	121	130	136	111	125
1887	169	184	188	188	152	176
1888	158	182	169	180	155	169
1889	126	129	129	147	125	131
1890	136	142	136	139	142	139

Continued on next page.

TABLE II—(continued.)

*Index Numbers of prices. The average of prices
in 1861—65 = 100.*

Year	Wheat	Barley	Jowar	Bajra	Gram	Average of five grains
1891	166	174	186	183	161	174
1892	182	190	169	187	157	177
1893	151	149	135	150	124	142
1894	102	101	105	126	92	105
1895	129	137	135	145	127	135
1896	196	237	223	235	204	219
1897	237	290	280	287	304	280
1898	151	154	150	152	167	155
1899	157	177	167	174	184	172
1900	206	260	265	249	276	251
1901	163	165	151	149	175	161
1902	155	176	152	167	168	164
1903	150	172	151	150	151	155
1904	140	145	114	128	122	130
1905	164	165	152	161	154	159
1906	169	193	206	212	188	194
1907	179	193	176	174	195	183
1908	259	293	289	283	310	287
1909	244	236	213	209	235	227
1910	193	184	188	185	175	185
1911	178	190	184	189	170	182
1912	202	246	246	241	208	229
1913	217	246	213	236	222	227
1914	236	268	269	267	272	262
1915	281	285	309	292	272	288
1916	241	291	258	274	263	265
1917	259	284	261	229	273	261
1918	313	348	458	357	323	360
1919	380	438	502	532	454	461
1920	347	376	381	409	443	391

TABLE III.
Punjab Food Prices. Moving averages.

Year	Average price of the five food grains as a percentage of their average price from 1861 to 1865.	AVERAGES.				
		Three yearly.	Five yearly.	Seven yearly.	Ten yearly *(centred.)	Twenty yearly *(centred.)
1861	148					
1862	89	105				
1863	79	88	105			
1864	95	95	97	109		
1865	112	106	105	112		
1866	111	117	125	132	131	
1867	127	136	150	144	133	
1868	171	176	160	148	136	
1869	230	187	163	152	139	
1870	161	172	164	152	139	
1871	125	140	152	149	138	134
1872	135	124	129	140	136	134
1873	111	120	118	121	136	136
1874	113	109	112	113	135	136
1875	104	104	106	121	134	136
1876	96	102	120	131	136	136
1877	105	127	138	139	136	138
1878	181	164	151	144	135	139
1879	205	185	162	146	134	137
1880	169	175	164	147	133	133
1881	150	145	149	147	134	134
1882	116	123	128	135	139	136
1883	104	107	114	124	142	138
1884	102	102	109	125	138	139
1885	99	109	121	127	133	139
1886	125	133	131	129	133	143
1887	176	157	140	134	137	151
1888	169	159	148	145	142	155
1889	131	146	158	156	144	153
1890	139	148	158	158	146	154
1891	174	163	153	148	152	157
1892	177	164	147	143	163	158
1893	142	141	147	156	168	161
1894	105	127	156	176	169	163
1895	135	153	176	173	177	165
1896	219	211	179	173	182	168
1897	280	218	192	188	180	170
1898	155	202	215	182	180	173
1899	172	193	204	200	182	178
1900	251	195	181	191	185	182
1901	161	192	181	170	185	183
1902	164	160	172	170	179	185
1903	155	150	154	173	180	188
1904	130	148	160	164	190	194
1905	159	161	164	182	189	202

Continued on next page.

TABLE III—(continued.)
Punjab Food Prices. Moving averages.

Year	Average price of the five food grains as a percentage of their average price from 1861 to 1865.	AVERAGES.				
		Three yearly.	Five yearly.	Seven yearly.	Ten yearly *(centred.)	Twenty yearly *(centred)
1906	194	179	191	191	187	207
1907	183	221	210	195	191	208
1908	287	232	215	202	198	212
1909	227	233	213	212	208	225
1910	185	198	222	217	221	235
1911	182	199	210	227	231	
1912	229	213	217	229	239	
1913	227	239	238	234	246	
1914	262	259	254	245	262	
1915	288	272	261	270	284	
1916	265	271	287	307		
1917	261	293	327	327		
1918	360	361	348			
1919	461	404				
1920	391					

* Centred by means of a two-yearly moving average

TABLE IV

Price of Wheat. Moving averages.

Year.	Price of wheat as a percentage of the average price in 1861—65.	Averages.	
		Ten yearly *(centred).	Twenty yearly *(centred).
1841	106		
1842	83		
1843	87		
1844	92		
1845	100		
1846	112	97	
1847	114	94	
1848	89	93	
1849	107	92	
1850	95	91	
1851	65	88	88
1852	69	84	89
1853	80	81	90
1854	88	78	89
1855	70	76	90
1856	85	80	90
1857	71	85	90
1858	68	86	92
1859	68	87	96
1860	95	89	100
1861	142	92	103
1862	92	96	105
1863	83	102	107
1864	90	113	109
1865	114	123	110
1866	108	125	111
1867	117	125	112
1868	152	128	115
1869	206	130	120
1870	156	131	125
1871	117	129	127
1872	121	128	128
1873	111	128	129
1874	108	127	130
1875	100	127	130
1876	95	129	130
1877	106	130	132
1878	154	130	133
1879	191	129	131
1880	169	129	129

Continued on next page

TABLE IV—(continued.)
Price of wheat. Moving averages.

Year.	Price of wheat as a percentage of the average price in 1861—65.	Averages.	
		Ten yearly *(centred).	Twenty yearly *(centred).
1881	143	130	129
1882	116	135	132
1883	111	138	135
1884	101	135	135
1885	99	130	136
1886	127	130	139
1887	169	134	145
1888	158	140	148
1889	126	142	147
1890	136	143	147
1891	166	148	149
1892	182	155	150
1893	151	158	152
1894	102	159	154
1895	129	164	157
1896	196	168	159
1897	237	166	161
1898	151	165	164
1899	157	167	169
1900	206	170	173
1901	163	171	175
1902	155	167	176
1903	150	169	178
1904	140	179	183
1905	164	183	190
1906	169	183	195
1907	179	186	197
1908	259	191	202
1909	244	200	211
1910	193	210	220
1911	178	220	
1912	202	227	
1913	217	234	
1914	236	244	
1915	281	258	
1916	241		
1917	259		
1918	313		
1919	380		
1920	347		

* Centred by means of a two-yearly moving average.

TABLE V

Prof. Myles's Index Numbers of Punjab Food Grain Prices

Year	Average price of wheat, barley, bajra, jowar and gram as a percentage of their average price from 1873 to 1882.	AVERAGES.		
		Ten yearly.	Fifteen yearly.	Twenty yearly * (centred).
1	2	3	4	5
1861	109			
1862	67			
1863	59			
1864	71			
1865	83			
1866	83	98		
1867	94	96		
1868	126	100		
1869	169	102	94	
1870	119	103	92	
1871	93	103	93	
1872	100	103	98	100
1873	82	102	103	100
1874	84	100	106	101
1875	77	101	108	102
1876	72	99	107	102
1877	78	100	104	101
1878	134	101	98	102
1879	151	102	95	103
1880	125	100	95	101
1881	111	99	97	99
1882	86	99	100	100
1883	78	101	100	101
1884	77	106	102	103
		105	106	103

Continued on next page.

TABLE V—(continued.)

Prof. Mylcs's Index Numbers of Punjab Food Grain Prices.

Year	Average price of wheat, barley, bajra, jowar and gram as a percentage of their average price from 1873 to 1882.	AVERAGES.		
		Ten yearly	Fifteen yearly.	Twenty yearly * (centred).
1	1	3	4	5
1885	74	99	109	103
1886	93	97	107	106
1887	130	99	103	112
1888	124	103	101	114
1889	97	106	104	113
1890	103	106	112	114
1891	128	109	115	116
1892	130	115	118	117
1893	105	123	125	118
1894	78	122	127	120
1895	99	125	126	121
1896	161	133	126	124
1897	205	132	125	125
1898	114	131	126	127
1899	126	132	127	130
1900	184	134	127	133
1901	118	135	134	134
1902	120	133	140	135
1903	115	126	143	138
1904	95	136	141	142
1905	117	140	138	148
1906	141	135	142	151
		136		

Continued on next page.

TABLE V—(continued.)

Prof. Myles's Index Numbers of Punjab Food Grain Prices.

Year.	Average price of wheat, barley, bajra, jowar and gram as a percentage of their average price from 1873 to 1882.	AVERAGES.		
		Ten yearly.	Fifteen yearly.	Twenty yearly * (centred).
1	2	3	4	5
1907	133	141	146	152
1908	209	146	148	155
1909	166	156	153	164
1910	135	165	158	172
1911	133	170	167	
1912	167	176	183	
1913	166	182	195	
1914	191	199		
1915	210	214		
1916	194			
1917	191			
1918	263			
1919	336			
1920	286			

* Centred by means of a two-yearly moving average.

TABLE VI

Punjab Food Prices (in seers per rupee).*

Year	W h e a t	Adjusted † price.	Gram	Barley	Jowar
1841	26	23'40	29	36	41
1842	33	29'70	38½	44½	37½
1843	31½	28'35	37½	45½	43½
1844	30	27'00	37	43½	37½
1845	27	24'75	34	38½	37½
1846	24½	22'05	28	34	31½
1847	24	21'60	29½	34	35
1848	31	27'90	32½	39	28½
1849	25½	23'18	24½	33	31½
1850	29	26'10	35	45	41
1851	42½	38'25	50	61½	51
1852	40	36'00	44½	56	51
1853	34½	31'05	49	52	39½
1854	31½	28'13	40½	45½	44½
1855	39	35'10	56½	59	57½
1856	32½	29'25	47	50½	51½
1857	38½	34'65	51½	55	51
1858	40½	36'45	53	58	52
1859	40½	36'45	49½	60	48½
1860	29	26'10	33	40	30½

* Taken from the diagrams given in the Punjab Administration Report for 1874-75.

† Adjusted by reducing the figures given in the previous column by 10 per cent. in each case (see text).

TABLE VII .

*Index Numbers of the retail price of wheat.
Price in 1873 equal to 100.*

Year	Index Nos. for India of the Commercial Intelligence Department	Author's Index Numbers for the Punjab.
1861	86	127
1862	73	82
1863	80	74
1864	102	81
1865	115	102
1866	129	93
1867	101	105
1868	96	137
1869	148	185
1870	136	140
1871	90	105
1872	98	109
1873	100	100
1874	94	97
1875	81	89
1876	78	85
1877	102	95
1878	147	138
1879	158	172
1880	118	152
1881	96	128
1882	101	104
1883	103	100
1884	91	91
1885	89	89
1886	103	114
1887	121	151
1888	123	142
1889	118	113
1890	117	122

Continued on next page.

TABLE VII—(continued.)
Index Numbers of the retail price of wheat.
Price in 1873 equal to 100.

Year	Index Nos. for India of the Commercial Intelligence Department	Author's Index Numbers for the Punjab.
1891	137	149
1892	151	163
1893	127	135
1894	105	92
1895	116	116
1896	153	176
1897	206	213
1898	143	135
1899	140	141
1900	176	185
1901	160	156
1902	142	139
1903	129	135
1904	123	125
1905	142	147
1906	155	151
1907	168	161
1908	226	232
1909	203	219
1910	170	173
1911	153	160
1912	170	182
1913	177	195
1914	200	212
1915	227	252
1916	193	216
1917	205	233
1918	270	281
1919	..	340
1920	..	312

**The Board of Economic Inquiry,
Punjab.**

RURAL SECTION PUBLICATION—14

[GENERAL EDITOR : W. H. MYLES, M.A.]

AN INQUIRY

INTO

MORTGAGES OF AGRICULTURAL LAND

IN THE

POTHWAR ASSESSMENT CIRCLE

OF THE

RAWALPINDI DISTRICT

IN THE

PUNJAB.

BY

RAJA HASAN AKHTAR, B.A.

EDITED BY

H. CALVERT, B. Sc., C.I.E., I.C.S.

[The Board of Economic Inquiry, Punjab, does not hold itself responsible for any opinions expressed or conclusions reached by the writer.]

1926.

PREFACE.

This inquiry is the second of its kind carried out through the agency of the Board of Economic Inquiry, Punjab. The first dealt with villages inhabited by Sikhs in one of the Central Districts of the Province ; the present one with a small circle in the North-West inhabited by Muslims. The Sikhs deal in money-lending, while Muslims are not supposed to, and in the circle under investigation they abstain almost completely.

The investigator is a member of the leading Ghakar family in the Province, and thus well equipped to gather information from his neighbours. As in the first inquiry, he submitted regular notes to me, which I checked, and I have tried to guide the investigation so as to elicit as much information as could be obtained. I have added an introduction giving the salient facts about the tract, which have been extracted from the revenue records and official reports.

30th August, 1926.

H. CALVERT.

CONTENTS.

	Page.
Preface	i
Introduction	v—vii
Results of the Investigation—	
SECTION.	
I.—Classification of Mortgages	1—2
II.—Kinds of Mortgages	3—4
III.—Area under Mortgage	5
IV.—Consideration Money	6
V.—Distribution of Mortgages by Classes	7—8
VI.—The <i>Bai-bil-wafa</i> Clause	9
VII.—Conditions relating to Interest	10
VIII.—Redemption	11
IX.—History of Mortgages	12
X.—Changes in the Area Mortgaged, in the Land Revenue Assessed and in the Value	13
XI.—Cultivation and Rent	14
XII.—Sources of Mortgage Money	15
XIII.— <i>Benami</i> Transactions and Evasions of the Alienation of Land Act	16
XIV.—Economic Effects of Mortgaging	17—18
XV.—Rise of Mortgagees from amongst Agricultural Tribes	19—20
XVI.—Conclusion	21
Appendix A.—Questionnaire I	22—23
Appendix B.—Questionnaire II	24—25

[NOTE.—The Sections correspond to the Questions in Part II of the Questionnaire reproduced in Appendix B.]

INTRODUCTION.

The tract selected for this inquiry, the second of its kind undertaken by the Board, into mortgages of agricultural land is what is now known as the Pothwar Circle* of Kahuta Tehsil† of Rawalpindi District. As in the former case,‡ it may be useful if the economic history of the area under investigation be sketched briefly from the material available in the various Settlement Reports. The circle lies at the foot of the hills, and is full of ravines; the soil is a good rich deep loam; the rainfall is ample, being about 39 inches in the year; the tract is purely agricultural, there being no towns. The Kanshi stream runs through it, giving irrigation along its banks and allowing wells to be sunk on fertile alluvial patches. The peasants are predominantly Muslim, and hardworking. The circle is regarded as the most fertile in the tehsil.

Owing to the good rainfall, the tract seems for long past to have been brought under cultivation; the population is dense, and the pressure on the soil heavy. The revenue demanded under Sikh rule was high and was reduced by the British Settlement officers. Its incidence was Rs. 1/6/9 on the cultivated acre. This was successively reduced to Rs. 1/4/8 at the First Settlement (1865), to Rs. 1/2/11 at the Second Settlement (1880-85), and to Rs. 1/1/5 at the Third Settlement (1905). In the three settlements the percentage of the total area cultivated was 39, 47 and 52 respectively. Forty-one per cent. is unculturable, 3 per cent. being forest and the rest ravine, rock, etc.

There is neither metalled road nor railway within the tract, but the railway passes within a few miles along the western border.

As regards sales and mortgages of land the area under mortgage in 1865 was negligible. The Settlement Officer of 1880-85 recorded of the tehsil that "the mortgages of land amount to 4·8 per cent. of the cultivation, the mortgage money to Rs. 1,73,665/- or 2·3 times the land revenue (old, not the new one). 56 per cent. of these mortgages were to *zemindars* (landowners). The average rate is Rs. 41/- per acre, or Rs. 41/- per rupee of revenue."

Sales amounted to 4·8 per cent. of the cultivated area; the average price being Rs. 44/- per acre. Of the sales, 84 per cent. were to other owners.

* A Circle is a group of estates so similar in their economic features that they can be treated as a single unit for purposes of land revenue assessment.

† A Tehsil is a portion of a District with a separate administrative staff. In the Punjab usually from 3 to 5 Tehsils are found in a District.

‡ "An Inquiry into Mortgages of Agricultural Land in the Kot Kapura Utar Assessment Circle of the Ferozepore District in the Punjab": Board of Economic Inquiry, Punjab, Rural Section Publication—5.

In 1905, when the next settlement was carried out, it was found that 7 per cent. of the cultivated area of the tehsil was under mortgage, the average sum per acre being Rs. 65/-. In the circle we are dealing with, the percentage was 8 per cent., but the average price per acre was only Rs. 58/-. In the twenty years between the two Settlements, 14 per cent. of the cultivated area in this circle has been sold at an average rate of Rs. 105/- per acre. It was noted that the money-lender has got the greater part of the mortgages everywhere. *Zemindars* do not care to take land on mortgage. In the circle under report, the money-lender had acquired considerable land by sale, but the total was only half as much as *zemindars* had got. The cause of transfers was nearly always indebtedness. "It may be said generally that where there are no extraneous sources of income, conditions of life are hard all over the tehsil. The average holding may support the average family at ordinary times, but sooner or later, some misfortune must come; cattle have to be bought, or a child to be married, or litigation to be faced, and resulting expense though small enough is more than the land will ever pay off. The struggle is hard and unceasing, but the average *zemindar* is hardworking and thrifty and keeps his head above water. Where military service is common there is often great prosperity." (Assessment Report).

Of the cultivated area, about half is put under crops for the summer or *khari* harvest and half for the spring or *rabi*. In the former millets and pulses occupy most of the ground, while in the latter wheat with a little oilseeds predominates. On the small area of irrigated land, rice and tobacco are grown, but this is a mere fraction of the whole. On the land dependent upon rainfall, about 86 to 88 per cent. bears a harvest on an average of years.

From the above it will be seen that there has been no great change in economic conditions in the last sixty years within the tract. It has been affected by the great changes taking place in the Province, and has responded in the rise in the price of land and in the sum which can be raised in mortgage. But reading the accounts in the reports of 1865, 1885 and 1905, one can detect no outstanding point of difference. The people, the soil and the crops do not change; the struggle goes on, and there seems to be little sign of progress in agriculture or industries.

The population increased from 32,571 in 1911 to 33,163 in 1921, while the cultivated area declined from 40,171 acres to 38,558. In the four quadrennial periods between 1906-07 and 1923-25, the average sale price of land within the circle has been respectively Rs. 125/-, 160/-, 210/- and 350/-. For the same periods the average mortgage consideration per acre has been Rs. 85/-, 93/-, 139/- and 211/-.

From the Report it will be seen that the Alienation of Land Act has exercised a powerful influence on transactions. For the sake of those not well acquainted with Punjab conditions it may be explained that this Act, which came into force on the 8th June 1901, divided the population into two classes, agricultural tribes and others; and while permitting mortgages between members of agricultural tribes in the same district, it prohibited such alienations between agricultural tribes and others except in three forms. Of these only form (a) appears in this circle: it is described in the Act as "a usufructuary mortgage, by which the mortgagor delivers possession of the land to the mortgagee and authorises him to retain such possession and to receive the rents and profits of the land in lieu of interest and towards payment of the principal, on condition that after the expiry of the term agreed on or (if no term is agreed on, or if the term agreed on exceeds twenty years), after the expiry of twenty years, the land shall be redelivered to the mortgagor."

The Act also expressly declared null and void any condition in a mortgage which was intended to operate by way of a conditional sale. This was directed at the old Bengal form of mortgage whereby if the land were not redeemed by a certain date it should be presumed to have been sold for no further consideration. This condition was nowhere found in this inquiry. (Section VI).

One effect of the Act has been to transfer the mortgage business from the money-lending to the agricultural classes. Apart from old transactions and cases of evasion (Section XIII) there are now no cases in which non-agriculturists have taken land on mortgage from agriculturists except in the terminable form permitted by the Act: The business has been advanced mainly from savings from service under Government, mostly in the Army. It will be seen that the average area per transaction is round about an acre and a half, while the consideration is about Rs. 173/-. It does not appear that there has arisen any agriculturist who can be described as making a profession out of mortgaging; there are merely a number of small people who have saved comparatively small sums which they have invested in land mortgage, partly as an investment and partly to get land to cultivate.

As in the previous case, the parties rely to a great extent upon entries in the Revenue Records, maintained by official agency, written agreements being comparatively few. To effect the necessary alteration in the record of rights in the land costs little, while the procedure is of the simplest. Whether such cheapness and simplicity are economically advantageous is a question for argument. Further inquiries on the same lines as the present one should suggest the answer,

RESULTS
OF THE
INVESTIGATION.

SECTION I.

CLASSIFICATION OF MORTGAGES.

*[Question I. (Appendix B):—

Classify existing mortgages into—

(a) executed prior to 8th June 1901 ;

(b) executed subsequent to this date ;

Sub-divide these into (a. i) and (b. i) between members of what are now agricultural tribes ;

(a. ii) and (b. ii) between members of what are now agricultural tribes and others ; note if any statutory “ agriculturists ” are among the “ others ” ;

(a. iii) and (b. iii) between parties, neither of whom are members of what are now agricultural tribes.]

The following statement classifies mortgages within the Circle :—

	No. of Cases.	Area (in acres) In- volved.
Total mortgage cases in the Circle	1,658	2,410
Old mortgages executed prior to 8th June 1901 ..	354	531
New mortgages executed subsequent to 8th June 1901	1,304	1,879
Classification of Old Mortgages—		
I. Mortgages by agriculturists	316	466
i. to non-agriculturists	240	334
ii. to agriculturists	76	102
II. Mortgages by non-agriculturists ..	38	65
i. to non-agriculturists	29	50
ii. to agriculturists	9	15
III. Mortgages to agriculturists	85	117
IV. Mortgages to non-agriculturists ..	269	414

* The questions in the beginning of the Sections refer to Part II of the Questionnaire reproduced in Appendix B.

Classification of New Mortgages—			
I. Mortgages by agriculturists	..	..	1,038 1,509
i. to non-agriculturists	..	..	173 251
ii. to agriculturists	..	..	865 1,258
II. Mortgages by non-agriculturists	..	..	266 370
i. to non-agriculturists	..	..	180 252
ii. to agriculturists	..	..	86 118
III. Mortgages to agriculturists	..	..	951 1,376
IV. Mortgages to non-agriculturists	..	..	353 503

In some villages there are as many old mortgages as new ones and sometimes the former exceed the latter, *e. g.*,

<i>Name of Village.</i>		<i>Old Cases.</i>	<i>New Cases.</i>
Kallar	..	42	43
Darkali Mahmori	..	35	37
Bhalakhar	..	33	20

SECTION II.

KINDS OF MORTGAGES.

[Question 2. (Appendix B) :—

Note in the above classification, the number of mortgages (a) secured by a registered deed, (b) secured by an unregistered deed, (c) not embodied in a deed.]

The number of mortgages registered, unregistered, verbal and by Order of Court, between different parties prior to 8th June 1901 (old), and subsequent to this date (new), are as follows :—

		TOTAL NUMBER OF MORTGAGES .. 1,658	
REGISTERED 167	Old 130.	{	10 cases—both parties agriculturists ; 107 „ —mortgagors agriculturists and mortgagees non-agriculturists ; 13 „ —both parties non-agriculturists.
	New 37.	{	4 cases—both parties agriculturists ; 24 „ —mortgagors agriculturists and mortgagees non-agriculturists ; 8 „ —both parties non-agriculturists ; 1 „ —mortgagor non-agriculturist and mortgagee agriculturist.
UNREGISTERED 224	Old 90.	{	8 cases—both parties agriculturists ; 65 „ —mortgagors agriculturists and mortgagees non-agriculturists ; 14 „ —both parties non-agriculturists ; 3 „ —mortgagors non-agriculturists and mortgagees agriculturists.
	New 134.	{	36 cases—both parties agriculturists ; 74 „ —mortgagors agriculturists and mortgagees non-agriculturists ; 18 „ —both parties non-agriculturists ; 6 „ —mortgagors non-agriculturists and mortgagees agriculturists.
VERBAL 1,246 ..	Old 134.	{	58 cases—both parties agriculturists ; 68 „ —mortgagors agriculturists and mortgagees non-agriculturists ; 2 „ —both parties non-agriculturists ; 6 „ —mortgagors non-agriculturists and mortgagees agriculturists.
	New 1,112.	{	825 cases—both parties agriculturists ; 54 „ —mortgagors agriculturists and mortgagees non-agriculturists ; 154 „ —both parties non-agriculturists ; 79 „ —mortgagors non-agriculturists and mortgagees agriculturists.
BY ORDER OF COURT 21.	..	{	21 cases—mortgagors agriculturists and mortgagees non-agriculturists.

In old mortgages there are more registered cases than in new ones. Most of the old mortgages are in favour of members of the money-lending class who are more wary and more cautious. On the contrary the agriculturist leads a more hand to mouth sort of life and is not as careful and as prudent as the money-lender.

There are thirteen schools in the circle. One is middle and two are high schools. But still illiteracy is the rule amongst the agriculturists. Moreover the education is of literary type and does not yet appeal to the cultivator.

In new mortgages there are few registered cases. Owing to the Alienation of Land Act most of the transactions are amongst agriculturists themselves.

SECTION III.

AREA UNDER MORTGAGE.

[Question 3. (Appendix B):—

Note in the above classification the total area mortgaged, uncultivated, cultivated *barani*, *chahi* and *nahri*; note the number which include a share in the *shámilát*.]*

The classification of the total area mortgaged by different parties prior to 8th June 1901, and subsequent to this date in all the 72 villages of Pothwar Circle is as follows:—

TOTAL AREA MORTGAGED { Cultivated .. 2,068 acres.
2,410 ACRES. { Uncultivated .. 342 „

In no case has the share of *shámilát* been mortgaged.

The details in acres are given in the following table:—

	BOTH PARTIES AGRICULTURISTS.		ONE PARTY AGRICULTURIST AND THE OTHER NON-AGRICULTURIST.				NEITHER PARTY AGRICULTURISTS.		TOTAL.
	a. I	b. I	a.-II Old.		b.-II New.		a. III	b. III	
	Old.	New.	Agriculturist mortgagor to non-agriculturist mortgagee.	Non-agriculturist mortgagor to agriculturist mortgagee.	Agriculturist mortgagor to non-agriculturist mortgagee.	Non-agriculturist mortgagor to agriculturist mortgagee.	Old.	New.	
Uncultivated ..	12	8	174	2	112	3	20	11	342
Cultivated ..	90	1,250	190	13	139	115	30	241	2,068
Total ..	102	1,258	364	15	251	118	50	252	2,410

The large proportion of uncultivated land in cases where the mortgagors are agriculturists and the mortgagees are others is striking. This is found in both old and new agreements.

* *Barani*=dependent on rainfall; *chahi*=irrigated from wells; *nahri*=irrigated from canals; *shámilát*=common land of the village.

SECTION IV.

THE CONSIDERATION MONEY.

[Question 4. (Appendix B) :—

Note in the above classification the total consideration money entered in the deed or mutation register, and the total which you have now found to be due.]

	Rs.	
TOTAL CONSIDERATION		2,75,330

The following figures give the amount advanced by agriculturists and non-agriculturists to different classes before 8th June 1901, and subsequent to this date :—

	ADVANCED BY AGRICULTURISTS.			ADVANCED BY NON-AGRICULTURISTS.			GRAND TOTAL.
	To Agriculturists.	To Non-agriculturists.	Total.	To agriculturists.	To Non-agriculturists.	Total.	
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Before 8th June 1901..	9,683	1,405	11,088	30,249	4,295	34,544	45,632
After 8th June 1901..	1,53,223	15,160	1,68,383	30,640	30,675	61,315	2,29,698
Total ..	1,62,906	16,565	1,79,471	60,889	34,970	95,859	2,75,330

From the table it will be seen that in the case of mortgages executed before 8th June 1901, the total amount advanced by agriculturists is Rs. 11,088/- and by non-agriculturists Rs. 34,544/-, giving a total of Rs. 45,632/-. In this case the total amount due from agriculturists is Rs. 39,932/- and from non-agriculturists Rs. 5,700/-, giving a balance against agriculturists or in favour of non-agriculturists of Rs. 28,844/-.

In the case of mortgages executed after 8th June 1901, the total amount advanced by agriculturists is Rs. 1,68,383/- and by non-agriculturists Rs. 61,315/- giving a total of Rs. 2,29,698/-. The total amount due from agriculturists is Rs. 1,83,863/- and from non-agriculturists Rs. 45,835/- which gives a balance against agriculturists or in favour of non-agriculturists of Rs. 15,480/-.

SECTION V.

DISTRIBUTION OF MORTGAGES BY CLASSES.

[Question 5. (Appendix B):—

Note in the above classification, the distribution of mortgages by classes
(Part I, Q. 4).]

The distribution of mortgages with reference to possession in the different classes adopted in the general classification is now given.

Of the 1,658 mortgages, 1,459 are with possession, without any condition for automatic redemption and without *bai-bil-wafa* clause; these can be redeemed at the end of any harvest by paying the full amount of the consideration.

In 26 cases (where both the parties are agriculturists) the mortgagees have agreed to the rent being reckoned as part of the consideration money. They calculate the value of the rent at the end of each harvest and deduct it from the consideration money. The rent thus pays off the consideration money and the mortgage is redeemed in time. Such mortgage is known as *shari* (as allowed by Islamic Law). The mortgagee in such cases receives no interest; he gets the use of the land only.

Out of 173 cases from agriculturist mortgagors to non-agriculturists mortgagees, 110 mortgages are in the form of Clause (a), Section 6, Land Alienation Act, and so are automatically terminated at the end of a fixed period. The remaining 63 mortgages are based on old mortgages, prior to 8th June, 1901. In all these cases, the old non-agriculturists mortgagees have sold their mortgage rights to the members of their own class. Thus these are really old mortgages and not new ones, as the mortgagors have not entered into any fresh agreements.

Of 110 mortgages in the form of Clause (a), Section 6, Land Alienation Act—

54 mortgages will be redeemed	automatically	after	20 years.
5	"	"	" 18 "
2	"	"	" 17 "
1	"	"	" 16 "
20	"	"	" 15 "
1	"	"	" 14 "
3	"	"	" 12 "
1	"	"	" 11 "
6	"	"	" 10 "
10	"	"	" 7 "
1	"	"	" 4 "
2	"	"	" 2 "
4	"	"	" 1 "

The following table indicates the extent to which the mortgages are confined to a few forms :—

	BOTH PARTIES AGRICULTURISTS.		ONE PARTY AGRICULTURIST AND THE OTHER NON-AGRICULTURIST.				NEITHER PARTY AGRICULTURISTS.	
	Old.	New.	Old.		New.		Old.	New.
			Agriculturist mortgagor to non-agriculturist mortgagee.	Non-agriculturist mortgagor to agriculturist mortgagee.	Agriculturist mortgagor to non-agriculturist mortgagee.	Non-agriculturist mortgagor to agriculturist mortgagee.		
Without possession, Form, Clause (b), Section 6, Land Alienation Act .. .. .	..	..	..	..	..	..	..	..
Without possession, some other Form .. .. .	..	..	..	..	..	..	..	..
With possession, Form, Clause (a), Section 6, Land Alienation Act ..	..	..	..	..	110	..	..	..
With possession, Form, Clause (c), Section 6, Land Alienation Act ..	..	..	..	..	..	..	..	..
With possession, without any condition for automatic redemption with <i>bai-bil-wafa</i> clause	..	..	..	..	..	..	..	..
With possession, as above without <i>bai-bil-wafa</i> clause ..	76	839	240 *63	9	..	86	29	180
Any other form .. .. .	..	26	..	..	..	..	..	..
Total ..	76	865	303	9	110	86	29	180

*These 63 mortgages have been transferred from the original mortgagors to others as mentioned above.

SECTION VI.

THE *BAI-BIL-WAFA* CLAUSE.

[Question 6. (Appendix B) :—

Summarise the information collected as to the *bai-bil-wafa* clause (*Part I, Q. 4*), with reference to the classification in paragraph (1) above.]

In no case was there found the *bai-bil-wafa* clause. It has been killed by the Land Alienation Act.

SECTION VII.

CONDITIONS RELATING TO INTEREST.

[Question 7. (Appendix B):—

Summarise the information collected as to the conditions relating to interest (*Part I, Q. 5*) with reference to the classification in paragraph (1) above.]

Out of 1,658 cases, in 1,522 the mortgagees cultivate the land themselves or get it cultivated by others on rent. The rent so received is taken in lieu of interest on the whole of the consideration money.

In 110 cases (with possession in the form of Clause (a), Section 6, Land Alienation Act) the rent is taken in lieu of interest on the whole of the consideration money and also as part of principal as given in said form.

In 26 *shari* cases (as allowed by Islamic Law) the rent is taken as a part of principal. At the end of both the harvests (the *rabi* and the *kharif*) the mortgagee who in such cases is always a Mussalman weighs the grain, fixes the price per maund, and deducts the total amount of money thus arrived at from the principal, and gives its receipt to the mortgagor. The price per maund is less than the market price, for the commodity when it is removed to the market is sold there at a better price. The mortgagor willingly mortgages more of his land than usual with the assurance that it will be redeemed very soon. These mortgages do not stand for a long time and as both the parties are prompted by religious feelings there is hardly any chance of friction or disillusionment.

In all other cases the rent or profits are taken as equivalent to interest on the whole amount of the consideration money.

SECTION VIII.

REDEMPTION.

[Question 8. (Appendix B):—

Summarise the information collected as to redemption (*Part I, Q. 6.*)]

The lands mortgaged are redeemed at the end of harvests (*rabi* or *kharif*). It is a matter of custom and nothing is mentioned about it in the mutation sheet so far as verbal cases are concerned. On the other hand, all the registered cases contain the condition that the land may be redeemed at the end of any harvest on the payment of the whole amount of consideration money.

No definite period is fixed except in such cases as come under Clause (*a*) of Section 6, Land Alienation Act.

In *shari* cases, it is quite different as is described in Section VII.

SECTION IX.

HISTORY OF MORTGAGES.

[Question 9. (Appendix B) :—

Summarise the information obtained as to the history of mortgages
(Part I, Q. 7).]

Out of the existing mortgages in the circle 1,543 appear to be new transactions and 115 are based on old mortgages.

The result of successive mortgages is as follows :—

In 71 cases, area remains the same but the consideration money is increased.

In 27 cases, area and consideration money are both increased.

In 13 cases, the area is decreased while the consideration money is increased.

In 4 cases, the area is decreased while the consideration money remains the same.

The result of successive mortgages is an increase of the mortgaged area from 170 acres to 171 acres, and the increase of consideration money is from Rs. 14,398/- to Rs. 18,728/-.

Thus the increase in area is only one acre, and the increase in consideration money is Rs. 4,330/-.

Initial average	..	Rs. 84/- per acre.
Present average	..	Rs. 115/- „ „

Successive mortgages are not popular in the circle. In small cases that involve small areas, the gain is not much, and the number of mortgagors who command larger mortgaged areas is not great.

SECTION X.

CHANGES IN THE AREA MORTGAGED, IN THE LAND REVENUE ASSESSED AND IN THE VALUE.

[Question 10. (Appendix B) :—

Summarise the information obtained as to changes in the area mortgaged (Part I, Q. 8), in the land revenue assessed (Q. 9), and in the value (Q. 10).]

In cases where the mortgagees are agriculturists, the total mortgaged area is under cultivation. But in cases where the mortgagees are non-agriculturists the land has deteriorated in quality, so much so that 204 acres have gone out of cultivation.

There has been no increase in the land revenue assessed. It was Rs. 1/3/6 per acre in 1885-86. In 1905-06, it was decreased to Rs. 1/3/3 per acre. The rate of assessment is not the same in every village. There are slight differences of fees per acre here and there. The value of land has been steadily increasing. The following table gives the mortgage value of the total land per acre at different periods :—

Year.	1885-86	1890-91	1895-96	1900-01	1905-06	1910-11	1915-16	1920-21	1925-26
<i>Barani</i> Land	21	25	32	40	51	85	111	139	211

The consideration money has remained the same but the value of security has increased.

SECTION XI.

CULTIVATION AND RENT.

[Question 11. (Appendix B):—

Summarise the information as to cultivation and rent, giving such reference to the classification as may prove of value.]

In the year 1925, there are 1,658 mortgages. In 1,036 of these, the mortgagees are agriculturists, and in the remaining 622 cases, the mortgagees are non-agriculturists.

Out of the 1,036 cases in which the mortgagees are agriculturists, in 830 these agriculturist mortgagees cultivate the land themselves; in 186 the land is cultivated by agriculturist mortgagors, and in the remaining 20 cases by agriculturist tenants.

Out of the 622 cases in which the mortgagees are non-agriculturists, in only 18 do these non-agriculturist mortgagees cultivate the land themselves. In 62 cases the land is cultivated by non-agriculturist mortgagors, and in 129 cases by agriculturist tenants.

In 404 cases, in which the mortgagors are agriculturists, these mortgagors cultivate the land themselves and in 9 such cases the mortgagees have employed servants (agriculturists) on monthly pay :—

Agriculturists as mortgagees	.. 1,036	
Agriculturists as cultivators	.. 1,578	(of whom 830 are the mortgagees).
Non-agriculturists as mortgagees	622	
Non-agriculturists as cultivators	80	(of whom 18 are non-agriculturist mortgagees).

A similar result is observed in other years.

It is evident from the foregoing figures—whether the mortgagees are agriculturists or non-agriculturists—that the land passes to agriculturists for cultivation, and while the non-agriculturist mortgagees do not cultivate the land themselves, the agriculturist mortgagees mostly do cultivate the land themselves.

The usual form of rent is *batai* (in kind).

The rate is one half of the produce.

SECTION XII.

SOURCES OF MORTGAGE MONEY.

[Question 12. (Appendix B):—

Is the mortgage money derived from non-agriculturist money-lenders, from agriculturist money-lenders or from savings from salaries or other earnings? (Part I, Q. 12).]

In 569 cases, the consideration was obtained from sources other than agriculture or money-lending. Besides this, there are 25 *Benami* transactions (*i. e.*, the real name of the mortgagee is not disclosed) in which the real parties advancing the money are non-agriculturists but agriculturists have been named as mortgagees.

In 411 cases, Rs. 80,870/- have been saved by military men (the mortgagees are either military men themselves or they have their sons or brothers in the army so that the sum has been obtained out of the savings of military service).

In 35 cases, Rs. 4,430/- were saved by survey coolies.

In 7 cases, Rs. 1,880/- represent the saving in police service.

In 3 cases, Rs. 410/- were saved by *bearers* and *khansamans* (servants of European Officers).

In 63 cases, Rs. 8,510/- were saved by men plying pack camels and donkeys on hire. The landowners of this tract take to this calling very easily, although shopkeeping is with them regarded as an evil to be avoided.

In 6 cases, Rs. 910/- were saved by Vernacular teachers.

In 8 cases, Rs. 1,450/- were saved by non-money-lending shopkeepers (who possess ordinary shops in villages, providing articles of daily consumption).

In 4 cases, Rs. 1,675/- were saved by contractors.

In 5 cases, Rs. 832/- were advanced by *patwaris**.

In 3 cases, Rs. 420/- were saved in forest service.

In 21 cases, Rs. 2,900/- were borrowed from money-lenders.

In 1 case, Rs. 150/- were saved by a *chaprasi* (orderly).

In 1 case, Rs. 325/- were advanced by a clerk in the Public Works Department.

In 1 case, Rs. 240/- were saved by a postal clerk.

* Keepers of the village land records.

SECTION XIII.

BENAMI TRANSACTIONS AND EVASIONS OF THE ALIENATION OF LAND ACT.

[Question 13. (Appendix B) :—

Discuss the information gathered as to the *benami* transactions and evasions of the Alienation of Land Act. (*Part I, Q. 13, 14.*)]

Twenty-five *Benami** transactions came to light during the inquiry. The area involved is 39 acres and the amount of consideration is Rs. 7,116/-. In all these cases the real parties advancing the money are money-lenders.

In practically all these cases, the sum concerned had already been advanced on loan. The lender pressed the borrower for repayment and consequently the transaction took place. In such cases the *patwari* was the chief source of information.

* *Benami* is the term applied to cases where the name of one party, usually the mortgagee, is suppressed and replaced by a puppet.

SECTION XIV.

ECONOMIC EFFECTS OF MORTGAGING.

[Question 14. (Appendix B.) :—

Discuss the economic effects on the landowners of the power to mortgage their land [*Part I, Q. 15*], encouragement of extravagance, encouragement of land improvement, etc.].

The economic effects on the landowners of the power to mortgage their land differ with different persons. In some cases men squander lots of money simply to keep up appearances or to gratify their sense of vanity; while, in others, they are pressed by untoward circumstances and do not find any other alternative than to mortgage land. In some cases, the land falls a prey to the litigious habits of the cultivators: still in others, money is spent on useful and productive purposes. So the power to mortgage has good economic effects in the latter case, and bad in the former.

The attached list gives the detail of the expenditure of Rs. 2,75,330/- which is the total consideration. It shows that 40 per cent. of the total consideration was spent on foodstuffs, seed, fodder and land revenue during the scarcity periods; 33 per cent. on different customs, *i. e.*, births, marriages and deaths; 10 per cent. on litigation, bribery and fines of court; 16 per cent. on useful purposes, *i. e.*, shop, house, trade, embankment of land, the purchase of tonga, of camels and donkeys, sheep and she-buffaloes, purchase and redemption of land.

Particulars.		Expenditure of the total consideration	Percentage of total.
		Rs.	
During the scarcity periods.	Foodstuffs ..	1,02,625	40
	Seed ..	3,421	
	Fodder ..	2,417	
	Revenue ..	1,669	
	Total ..	1,10,132	
Customs	.. Marriages ..	61,184	33
	Deaths ..	30,034	
	Births ..	558	
	Total ..	91,776	
Litigation	.. Fine of court ..	3,000	10
	Bribery ..	555	
	Litigation ..	23,978	
	Total ..	27,533	
On useful purposes	.. Shop ..	500	16
	House ..	500	
	Trade ..	1,200	
	Tonga ..	600	
	Embankment of land ..	2,420	
	Ox and camel ..	14,621	
	Sheep and she-buffaloes ..	7,412	
	Purchase of land ..	7,931	
	Redemption of land ..	10,246	
	Total ..	45,430	
Wine and gambling ..	459		
Grand Total ..	2,75,330		

SECTION XV.

RISE OF MORTGAGEES FROM AMONGST AGRICULTURAL TRIBES.

[Question 15. (Appendix B):—

Discuss the information you have secured bearing on the rise of mortgagees from amongst agricultural tribes, from the points of view of (i) number of such mortgagees at different dates; (ii) number of mortgages at different dates; (iii) consideration money advanced. Is there any evidence of a decline in mortgages, (iv) in favour of non-agricultural mortgagees; (v) by the agricultural mortgagors?]

The enactment of the Land Alienation Act has brought about a considerable rise of mortgagees from amongst agricultural tribes. In the present state of affairs the *mahajan** avails himself partially of Clause (a), Section 6 of the Land Alienation Act, otherwise he would have been totally ejected. The details are as follows:—

Year.	No. of agriculturist mortgagees.	No. of mortgages.	Consideration.
1885-86	6	10	Rs. 2,212
1890-91	13	15	1,932
1895-96	16	23	3,124
1900-01	30	37	3,820
1905-06	88	108	11,900
1910-11	102	117	20,200
1915-16	122	150	31,155
1920-21	191	225	44,825
1925-26	280	351	60,303
Total ..	848	1,036	1,79,471

No account is taken whether the mortgagor is agriculturist or non-agriculturist.

* Non-agriculturist money-lender.

Year.	No. of agriculturist mortgagors to non-agriculturist mortgagees.	No. of mortgages.	Consideration.
1885-86	24	32	Rs. 3,215
1890-91	50	76	9,420
1895-96	51	80	10,785
1900-01	80	115	18,829
1905-06	1	3	490
1910-11	9	16	2,724
1915-16	22	31	5,091
1920-21	25	39	6,482
1925-26	14	21	3,853
Total ..	276	413	60,889

In both the cases the figures relate to individuals; the same person is counted only once even though he may hold several mortgages. In both the cases the figures refer to current mortgages.

There may have been more agriculturist mortgagees in the earlier years, but they have slipped out of calculation owing to redemption.

SECTION XVI.

CONCLUSION.

[Question 16. (Appendix B) :—

Note any general conclusions which the evidence leads you to make on the subject of mortgages in the area under investigation.]

In the circle, the agriculturists own 49,717 acres (both cultivated and uncultivated); of this area 1,975 acres are mortgaged, or about 4 per cent. Non-agriculturists own 7,692 acres, of which 435 are mortgaged, or about 5½ per cent.

The circle is dependent on rainfall, and crops may be spoiled by too little as well as by too much rain. In times of bad harvests, the cultivators apply too readily to the local *sahukar* or money-lender for food-grains, seed and fodder; the loan once incurred soon increases through interest, and sooner or later the borrower is forced to mortgage his land to raise money to pay it. Those who are more careful and prudent find little difficulty in getting loans from their neighbours employed in military service on milder terms and by mortgaging smaller areas, but the habit of ages leads to the village money-lender.

Custom, as well as climate, favours the easy road to debt. A cultivator will prefer to incur debt for expenditure on marriage or the ceremonies attendant upon birth and death, rather than face the humiliating comments of his neighbours.

Even the humblest marry; custom and village religion lead them to find brides from amongst their nearest relations, which has the advantage of dispensing with the payment to the bride's parents, but ornaments and feasts cost money. A death, too, involves heavy expenditure on feasts, charity, etc. Apart from these litigation is a fruitful cause of borrowing, criminal litigation being the more popular. Drinking and gambling are practically unknown amongst these cultivators.

Those who cultivate themselves seek to gain in mortgage fields close to their own, but those in military service take whatever they can. Whatever money they can save, they seek to invest in purchase or mortgage and position of the land is a minor matter.

There are few mortgages for big sums. Only sixteen were traced for Rs. 1,600/- and over. On the other hand, petty transactions are common: there are twenty cases from seven to twenty-one rupees, involving areas of less than three *kanals* (three-eighths of an acre).

APPENDIX A.

Questionnaire for Mortgages.

PART I.—FOR EACH MORTGAGE.

- (1) Give caste or tribe of—
- (a) mortgagor, noting whether he is—
- (i) a member of a notified agricultural tribe in the district, or
- (ii) not a member of such a tribe;
- (b) mortgagee, noting whether he is—
- (i) a member of a notified agricultural tribe, or
- (ii) not a member of such a tribe, but the holder of a certificate as an agriculturist under the original Alienation of Land Act (XIII of 1900), or
- (iii) not a member of such a tribe and not the holder of such a certificate.
- (2) Is the mortgage embodied in a—
- (a) registered deed, or
- (b) unregistered deed, or
- (c) *only* in the mutation register and *Jamabandi*?
- (3) Give the particulars of the mortgage—
- (a) date;
- (b) area mortgaged—
- (i) uncultivated;
- (ii) cultivated *Barani*;
- (iii) cultivated *Nahri*;
- (iv) cultivated *Chahi*;
- (v) is a share in the *Shamilat* expressly included;
- (c) any additional security such as houses, trees, etc.;
- (d) sum inserted in the mortgage as consideration, with any additional details given therein;
- (e) sum due now as calculated from the mortgage deed and any endorsements thereon.
- (4) Classify the mortgage as to whether it is—
- (i) without possession—
- (a) in the form of clause (b), section 6, Land Alienation Act,
- (b) in some other form; give points where it differs from above;
- (ii) with possession—
- (a) in form of clause (a) of section 6, Alienation of Land Act,
- (b) in form of clause (c) of section 6, Alienation of Land Act,
- (c) without any condition for automatic redemption, with *bai-bil-wafa* clause,
- (d) as above without *bai-bil-wafa* clause,
- (e) any other form.

[NOTE.—Where the *bai-bil-wafa* clause has been struck out by the Deputy Commissioner classify as (c).]

(b) In (c), (d) and (e) above, note what is the condition as to interest. Is the rent to be taken as interest on the whole amount of the consideration or only a part?

(6) In (c), (d) and (e) above, note the condition on which the mortgage may be redeemed.

(7) Trace the history of the mortgage as far back as you can.

Give particulars of—

- (i) previous deeds,
- (ii) consideration,
- (iii) area,
- (iv) amounts of principal and interest,
- (v) any payments towards redemption or reduction of the debt,
- (vi) purpose given for further borrowing.

(8) What changes have taken place in the area mortgaged during the period of the mortgage, such as increase of cultivated area, increase of *chahi* or *nahri*?

(9) During the currency of the mortgage, note any change in the land revenue assessed on the area mortgaged.

(10) From the revenue records of the village estimate the value of the land mortgaged at the time of each quadrennial *Jamabandi*.

(11) (a) In mortgages with possession, note who has cultivated the land during the currency of the mortgage (as entered in successive *Jamabandis*).

(b) Note the rent as entered in successive *Jamabandis*.

(c) Attempt an estimate of the value of the rent paid in kind, based upon the Director of Land Records' outturns and *tehsil* prices.

(12) If original mortgagee is alive and trustworthy information is available, ascertain from what source the mortgagee obtained the consideration money, *e. g.*, whether he borrowed it from a money-lender, or saved it from his pay in civil or military employ, or from some other source.

(13) Is the mortgagee the real party advancing the money, or is he the agent of another party (*benam*); give such particulars as you may be able to obtain in case you believe the transaction is *benami*. Note specially if there is any attempt at evasion of the Alienation of Land Act.

(14) Is there any evidence of a prior mortgage having been redeemed under the conditions of section 6, Alienation of Land Act, and of the same land having been re-mortgaged to the same mortgagee?

If so, give such information as may be available that throws light on the effects of the Alienation of Land Act and attempts to evade it.

(15) From the information you have gathered, note whether the mortgage was for the benefit of the mortgagor, *e. g.*, to enable him to improve his land or increase his income or was merely an abuse of credit, enabling him to meet unproductive expenditure or to secure debts incurred on unproductive expenditure. (Classify as an abuse of credit, every contract that was not directed at the economic improvement of the mortgagor).

APPENDIX B.

Questionnaire for Mortgages.

PART II.—GENERAL QUESTIONS FOR THE ASSESSMENT CIRCLE UNDER INVESTIGATION.

1. Classify existing mortgages into—
 - (a) executed prior to 8th June 1901 ;
 - (b) executed subsequent to this date ;
 Sub-divide these into (a. i) and (b. i) between members of what are now agricultural tribes ;
 - (a. ii) and (b. ii) between members of what are now agricultural tribes and others ; note if any statutory “ agriculturists ” are among the “ others ” ;
 - (a. iii) and (b. iii) between parties, neither of whom are members of what are now agricultural tribes.
2. Note in the above classification, the number of mortgages (a) secured by a registered deed, (b) secured by an unregistered deed, (c) not embodied in a deed.
3. Note in the above classification the total area mortgaged, uncultivated, cultivated *barani*, *chahi* and *nahri* ; note the number which include a share in the *shamilat*.
4. Note in the above classification, the total consideration money entered in the deed or mutation register, and the total which you have now found to be due.
5. Note in the above classification, the distribution of mortgages by classes (Part I, Q. 4).
6. Summarise the information collected as to the *bai-bil-wafa* clause (Part I, Q. 4), with reference to the classification in paragraph 1 above.
7. Summarise the information collected as to the conditions relating to interest (Part I, Q. 5), with reference to the classification in paragraph 1 above.
8. Summarise the information collected as to redemption (Part I, Q. 6).
9. Summarise the information obtained as to the history of mortgages (Part I, Q. 7).
10. Summarise the information obtained as to changes in the area mortgaged (Part I, Q. 8), in the land revenue assessed (Q. 9), and in the value (Q. 10).

11. Summarise the information as to cultivation and rent, giving such reference to the classification as may prove of value.
 12. Is the mortgage money derived from non-agriculturist money-lenders, from agriculturist money-lenders or from savings from salaries or other earnings ? (Part I, Q. 12).
 13. Discuss the information gathered as to the *benami* transactions and evasions of the Alienation of Land Act. (Part I, Q. 13, 14).
 14. Discuss the economic effects on the land-owners of the power to mortgage their land (Part I, Q. 15), encouragement of extravagance, encouragement of land improvement, etc.
 15. Discuss the information you have secured bearing on the rise of mortgagees from amongst agricultural tribes, from the points of view of (i) number of such mortgagees at different dates ; (ii) number of mortgages at different dates ; (iii) consideration money advanced. Is there any evidence of a decline in mortgages—(iv) in favour of non-agricultural mortgagees ; (v) by agricultural mortgagors ?
 16. Note any general conclusions which the evidence leads you to make on the subject of mortgages in the area under investigation.
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