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COLONY AND PROTECTORATE OF KENYA



Report of Committee on the Working of the Resident Native Labourers Ordinance, 1925

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Report of Committee on the Working of the Resident Native Labourers Ordinance, 1925

To—

HIS EXCELLENCY BRIGADIER-GENERAL SIR JOSEPH ALOYSIUS.
BYRNE, G.C.M.G., K.B.E., C.B.,
*Governor and Commander-in-Chief,
Colony and Protectorate of Kenya.*

Your Excellency,

We, the members of the Committee appointed by Your Excellency to review the working of the Resident Native Labourers' Ordinance No. 5 of 1925, and to report what amendments are necessary for its improvement have the honour to submit the following report.

The following gentlemen signified their acceptance of Your Excellency's nomination :—

The Hon. Attorney General (*Chairman*),
The Hon. Chief Native Commissioner,
C. Kenneth Archer, Esq.,
The Ven. Archdeacon The Hon. G. Burns, O.B.E., M.L.C.,
The Hon. Mrs. Grant,
The Hon. H. E. Welby, M.L.C.,
The Hon. Conway Harvey, M.L.C.,
with Dr. V. M. Fisher, Principal Labour Inspector, as Secretary.

Captain F. O'B. Wilson, C.M.G., D.S.O., R.N., who was also invited to serve upon the Committee, was unable to do so and the vacancy thus created was offered to and accepted by Captain Caswell Long. Owing, however, to an accident, that gentleman was not able to attend any of the meetings of the Committee and Mr. S. H. Carlin was nominated in his stead, in May 1934, and attended all meetings thereafter.

The first meeting of this Committee was held in the Chief Native Commissioner's Office on the 18th of September, 1933, since when it has met upon nine further occasions, terminating with the meeting held on the 29th of October, 1934, when the Bill which forms an appendix to this report was finally considered.

The history of the progress made by the Committee of its meetings is as follows :—

Like most subsequent meetings, except the second last, the first was of two days' duration and extended to the 18th and 19th of September. During that meeting following business was carried out :—

A.—Considering and deciding the procedure to be followed by the Committee in its deliberations and whether its meetings should be held publicly, or otherwise. It was decided that the meetings should not be held publicly.

B.—Laying down principles as to the desirability of continuing the squatter system, the nature of squatter contracts, the status of squatters, whether tenants or employees, the limitation of squatters' cattle, the retention or removal of penal sanctions from the Reserves Native Labourers' Ordinance; and

C.—The first reading of a Bill drafted by the Attorney-General.

The next meeting called for the 3rd of October, unavoidably to be postponed and it was held on the 11th of October, during which the oral evidence of Major Ash and Messrs. H. Morton, John Boyes, Delap and Montgomerie was heard.

Numerous letters received from the Convention of Associations, various public bodies and the general public were read and considered, and several consequential amendments were incorporated in the draft Bill. The desirability of having the Bill printed and circulated was discussed and it was decided to request Government to sanction its printing and circulation to all Provincial Commissioners, Heads of Departments, the Press and to members of the Committee, with a view to their consulting representative opinion as to the provisions of the Bill.

The Committee then adjourned *sine die*.

In November, 1933, the printed draft Bill was circulated to the members of the Committee, and to various officials, farmers' and planters' associations, for their comments and criticisms.

In forwarding the Bill for the views of the address Dr. Fisher expressed an opinion that the Committee would probably not meet until early in 1934, and requested that

comments upon the Bill should be forwarded to him at an early date, to permit of their analysis and circulation before the end of the year. The response to this request was not, however, as rapid as was expected, the bulk of the replies not being received until the middle of February and in some cases not until May.

By the middle of February, Dr. Fisher, the original Secretary, had become ill, and he was invalided out of the Service, leaving the Colony on the 1st of April, 1934.

Mr. G. R. B. Brown, District Officer, was then appointed Secretary in Dr. Fisher's place, but unfortunately within six weeks of his appointment the exigencies of the service necessitated his transfer from Nairobi.

During his tenure of office, Mr. Brown tabulated the various sections of the Kenya Land Commission Report dealing with the problem of squatters and their cattle and very ably compiled a digest of the comments, criticisms and suggestions received in connection with the proposed Bill.

Practically all farmers' and planters' associations in the Colony submitted their views, also all Provincial Commissioners, Heads of Departments having dealings with squatters, most District Commissioners, Magistrates and Labour Officers.

This digest necessitated the study of 123 communications, as follows :—

Administration	36
Other Government Departments ...	23
Associations	28
General Public	36

This compilation was circulated on the 5th of May and communications thereon continued to be received until late June.

On the 16th of May, Mr. A. E. T. Imbert, Chief Registrar of Natives, was appointed Secretary, *vice* Mr. Brown, transferred.

The meetings of the Committee were then resumed and it met on three occasions, each meeting lasting for two days, i.e.—

28th and 29th of May,
5th and 6th of June, and the
25th and 26th of June,

to consider the replies received and, as far as possible, to consolidate the Bill, in accordance with the views expressed.

During these three meetings the Committee invited the attendance of the following gentlemen, who expressed their views on those aspects of the squatter problem which particularly concerned the interests they represent—

The Acting General Manager, Kenya and Uganda Railways and Harbours.

The Deputy Director of Agriculture (Animal Division).

The Conservator of Forests.

The Rev. Dr. Arthur, O.B.E.

The resultant amended Bill was circulated to the members of the Committee on the 16th of September.

The draft Bill, together with a further memorandum received from the Conservator of Forests, and various amendments suggested by the Provincial Commissioner, Rift Valley was finally considered at the last meeting of the Committee held on the 29th of October, 1934.

It is evident from the criticisms received that there is a very definite difference of opinion, both non-official and official, as to the desirability or otherwise of having squatters and as to the method of legislating for their employment.

The planters in the main desire to have the squatter and his cattle, i.e. his labour and the manure produced by his cattle. The stock owners generally are opposed to the squatter; they do not need his labour, and fear the illicit movements of his cattle.

In so far as the legal provisions for the regulation of the native resident labour was concerned, there appeared to be a considerable body of opinion in favour of abolishing the Resident Native Labourers Ordinance, 1925, and incorporating *ad hoc* provisions in the Employment of Natives Ordinance. While agreeing that the moment may be inopportune for this amalgamation, it was generally considered desirable by the Committee that all legislation affecting native employment should be ultimately incorporated within a comprehensive Labour Code.

One fact emerged, however, and that was the general desire for local option in matters relating to the employment of squatters, although the Kenya Land Commission in para-

graph 2039 of their report considered that the question of squatter stock "is not one which should be left entirely to local opinion".

In view of this general desire, we recommend the acceptance of the principle of local option in matters relating to the employment or non-employment of squatters in the different farming areas and we have made provision in the Bill to that effect.

We realize that by so doing we are vesting wide powers in local authorities but these bodies now occupy a position of considerable responsibility and are unlikely to abuse such power; while the proposed procedure will ensure the fullest publicity being given to an order of the local authority, and the order will not come into force until it has been approved by Your Excellency in Council.

We desire particularly to stress the fact that, in our opinion, the success of this measure, if it becomes law, will depend to a very great extent upon effective inspection and we have therefore provided for wide powers of inspection to be vested in inspectors.

It became evident also, during the deliberations of the Committee, that there is a very considerable body of opinion which is anxious to see the provisions of the Ordinance applied very strictly, not only to farmers, but also to all Government Departments owning land or employing squatters. Provision has therefore been made for certain Government Departments to be bound by the Ordinance, in a similar manner to other occupiers.

We have also accepted the Conservator of Forests' definition of Forest Areas and have made special provision for the retention of the rights enjoyed by the Kamasia in Lembus Forest and the Elgonyi in the Mt. Elgon Forest.

The Committee is unanimously of the opinion that squatters should be made to work for a period of not less than 180 days per annum, and that, in the event of the occupier not being able to employ his squatters for that minimum period, he should allow them to work on neighbouring farms for the uncompleted portion of the 180 days. Some of the members considered this minimum period of compulsory labour insufficient, and desired it extended to 270 days. Provision has, however, been made for 180 days and power has been vested in the Provincial Commissioner to reduce the number of days' work for any good and sufficient reason.

We have been informed that, owing to a well established form of land tenure operating at the Coast, much of the land is rightfully occupied by natives who are not the owners or the lessees in chief of the land so held, and, in the circumstances, we recommend that the Bill should not be applied to that area.

The chief points of difference between the draft Bill and the Resident Native Labourers' Ordinance, 1925, are as follows :—

1. The Ordinance will only apply to such areas and from such dates as the Governor may appoint.

2. *Definitions*.—Definition of forest area, local authority, attesting officer, and railway land have been added; and the definition of occupier has been extended in consequence of the inclusion of Crown land, railway land and forest areas.

3. Clause 5 (A).—Under the existing law the head of the family is the principal native contracting party: the draft Bill proposes that the actual squatter should be the principal native contracting party.

(B).—The maximum period of the contract has been extended from three to five years.

(C) The period of notice of the termination of the contract has been reduced from six months to three months, as it is felt that, in the event of a disagreement between the parties the shorter period would be naturally advantageous to both parties.

(D).—The remainder of the section defines more clearly the squatter's duties and privileges.

4. Clauses 7, 8 and 9.—These clauses apply various provisions of the Native Registration Ordinance to occupiers and to squatters, as is done in the case of the Employment of Natives Ordinance.

5. Clause 10.—Provides for the release into the labour market of any squatter who, having performed 180 days' work for the occupier, wishes to work elsewhere and for a certificate to that effect to be given to him.

6. Clause 12.—Provides for the compulsory employment of the squatter for the full period of employment,

with a proviso enabling a Provincial Commissioner to reduce the number of days' work if he considers that course desirable.

7. Clause 15.—Embodies section 10 of the Resident Native Labourers' Ordinance, 1925, but extends its provisions and generally tightens up the regulations for the control of squatters' cattle.

8. Clause 17 amplifies the provisions of section 9 of the Resident Native Labourers' Ordinance, enlarges the powers of inspection, and increases the number of persons by whom such inspection may lawfully be carried out.

9. Clause 18 provides machinery for the removal of squatters from areas which are not considered to be under effective control.

10. Clause 19 reproduces the corresponding section in the existing law and, in addition, provides for the disposal of the manure produced on a farm by a squatter's stock.

11. Clauses 21 and 22 introduce an entirely new principle in this type of legislation, that of local option.

12. In Clause 23 the Governor in Council is given powers in respect of forest areas, unalienated Crown land and Railway land, similar to those given to local authorities in Clause 21, in respect of alienated Crown land. This clause was included in the Bill in order to secure conformity in those areas and at the same time to meet the views expressed by the Conservator of Forests and the General Manager of Railways.

13. Clauses 25, 26, 27 and 28.—These penal clauses have been enlarged owing to the additional duties imposed upon both the occupier and the squatter.

Clause 25 deals with minor offences committed by squatters.

Clause 26 deals with more serious offences committed by squatters.

Clause 27 deals with offences committed by occupiers.

We have provided varying punishments, based, where possible, upon the punishments provided for in the Employment of Natives Ordinance.

14. Clause 29.—This clause constitutes a departure from the existing law, and is based upon a similar provision in the Employment of Natives Ordinance.

15. Clause 32.—The payment of an attestation fee provided for in the Stamp Ordinance is considered to be onerous in the case of squatters' contracts and provision has therefore been made to exempt all such contracts from the payment of stamp duty.

We wish particularly to emphasize that throughout our deliberations we have borne in mind the recommendations of the Kenya Land Commission dealing with squatters and have endeavoured to follow those recommendations as closely as circumstances have permitted.

In conclusion we would like to place on record our appreciation of the industry and efficiency which has characterised the work of our Secretary, Mr. Imbert.

We have the honour to be,

Your Excellency's Obedient Servants,

ELEANOR L. GRANT

S. H. LA FONTAINE

H. E. WELBY

CONWAY HARVEY.

SIDNEY CARLIN

GEORGE BURNS

C. KENNETH ARCHER

} *Members.*

W HARRAGIN, *Chairman.*

A Bill to Regulate the Residence of Native Labourers on Farms

BE IT ENACTED by the Governor of the Colony of Kenya, with the advice and consent of the Legislative Council thereof, as follows :—

1. This Ordinance may be cited as the Resident Short title.
Labourers Ordinance, 1935.

2. This Ordinance or any part thereof shall apply to such districts or areas, and from such date or dates, as the Governor in Council may, from time to time, by proclamation in the Gazette, appoint. Application of Ordinance.

3. In this Ordinance— Interpretation.

"attesting officer" means a person appointed as such by the Governor in Council under the provisions of section 31 of this Ordinance;

"cattle" means any bull, cow, steer, heifer or calf or any other animal which the Governor may, by order, declare to be cattle for the purposes of this Ordinance.

"family" means the wife or wives and the unmarried children, if any, of a native or Somali;

"farm" means any area of land (other than an area of land situated in a municipality, township or trading centre) which has been leased or sold by His Majesty or by the Governor and shall include any area of land set apart by the Government of the Colony for the purpose of experimental farming;

"forest area" means any forest area not situated in and forming part of a native reserve;

"local authority" means a district council established under the Local Government (District Councils) Ordinance, 1928, in respect of the area of jurisdiction so conferred upon it, and, where there is no district council, means the district commissioner acting in consultation with the body known as the district committee where such exists; No. 21 of 1928.

"mission" means any mission recognized as such by the Governor;

"occupier" means the owner or lessee or any other person having a legal right to occupy a farm, a forest area, unalienated Crown land or Railway land, and includes any manager or agent of such occupier, and in respect of forest areas, unalienated Crown land and Railway land, includes the Conservator of Forests, the Commissioner of Lands and the General Manager of the Kenya and Uganda Railways and Harbours respectively;

"Railway land" means any land the ownership of which or the control over which vests in the High Commissioner for Transport;

No. 5 of 1925. "squatter" means a native or a Somali who has entered into a contract under section 5 of this Ordinance or under the Resident Native Labourers Ordinance, 1925;

No. 19 of 1928. "standing committee" means the Standing Departmental Committee established under the Local Government (Municipalities) Ordinance, 1928;

"stock" includes cattle, sheep, goats, and such other animals or birds as the Governor may, by order, declare to be stock for the purposes of this Ordinance.

When natives
or Somalis
may reside on
a farm.

4. (1) No native or Somali shall reside on or remain for a longer continuous period than forty-eight hours on any farm or in any forest area, or on any unalienated Crown land, or on any Railway land, unless he—

(a) is the occupier thereof or a member of the family of the occupier thereof; or

(b) has duly entered into a contract, still unexpired, under section 5 of this Ordinance or under the Resident Native Labourers Ordinance, 1925; or

No. 5 of 1925.

(c) is in actual employment on such farm, forest area, unalienated Crown land or Railway land, in pursuance of a contract made under the provisions of any law for the time being in force in the Colony relating to master and servant, or is a member of the family of a native or Somali so employed; or

(d) is a native or a Somali who, from age or infirmity, is incapable of continuous employment and is closely related to a family lawfully residing on such farm, and who has obtained written permission from a magistrate or attesting officer by endorsement on a squatter's contract or otherwise; or

- (e) is the holder of a permit in writing in that behalf given to him by the occupier and, in the case of a permit authorizing residence for a period of more than fourteen days, is also the holder of a permit from the district commissioner :

Provided that the provisions of this sub-section shall not apply to a native residing by right in the Lembus and Mt. Elgon forest areas.

(2) It shall be a sufficient defence for a native or Somali charged with an offence against the provisions of this section to produce a permit issued to him under the provisions of paragraph (e) of sub-section (1) of this section.

5. (1) When a native or Somali has entered into a contract, as in this section provided, the members of his family may also reside on the farm, forest area, unalienated Crown land or Railway land, as the case may be. Contract of service to work on a farm.

(2) A contract under this section shall be in writing, shall be executed by the occupier and by the native or Somali and by all the male members of native's or Somali's family over the apparent age of sixteen years, shall be attested by a magistrate or by an attesting officer, shall be in the form of the agreement set out in the first Schedule to this Ordinance, and shall provide—

- (a) for a term of not less than one year and not exceeding five years, notwithstanding anything to the contrary contained in any law for the time being in force in the Colony relating to master and servant ;
- (b) for the renewal or variation of the contract, by endorsement by the parties thereto, with the approval of a magistrate or attesting officer ;
- (c) for the native or Somali and any male member of his family resident on the farm who is of the apparent age of sixteen years or over, and who is not working under any law for the time being in force in the Colony relating to master and servant, to work for the occupier for not less than 180 days at the election of the occupier in any one year during the term of such contract, and for the occupier to provide employment and to pay wages to each such person for the number of days specified in the contract ;

- (d) for the occupier to give notice in writing to every male member of such family who, during the continuance of the contract, may attain the age of sixteen years, to the effect that, on the expiration of three months from the date of receiving such notice such male member will be required either (i) to enter into a contract under this Ordinance with the occupier; or (ii) to enter, under any law for the time being in force in the Colony relating to master and servant, into a contract with the occupier or some other employer in the vicinity; or (iii) to cease to reside on the occupier's farm;
- (e) for the female members of the family who are willing and able to work to serve the occupier if he offers suitable work at a reasonable rate of wages;
- (f) for the supply by the occupier of building material for the family's huts;
- (g) for the use by the family of land for cultivation and, when agreed upon, for grazing;
- (h) for the kinds of crops which the native or Somali or his family may not grow on the farm;
- (i) for the number of stock which the native or Somali may graze on the farm;
- (j) for the rates of pay and other consideration to be paid or given to the native or Somali and any member of his family for the period of actual employment;
- (k) for the termination of the contract by not less than three months' notice on either side: Provided that the term of residence on a farm shall in no case be less than one year except with the approval of a magistrate;
- (l) in the event of termination of the contract in accordance with the last preceding paragraph, for the removal by the family of crops cultivated by such family or for payment by the occupier of compensation in lieu thereof: Provided that no crop shall be planted after notice of termination has been given by either party;
- (m) in the case of missions, for the regular attendance of the children of the family at school for the purpose of education within the meaning of section 20 of this Ordinance.

(3) Any contract under this section may, with the consent of the parties thereto, relate to a group of farms in the same district or in contiguous districts, provided all the farms in the group are in the same ownership or occupation, and provided a magistrate certifies that he is satisfied that proper control can be exercised over the squatters resident on such farms as are not in the personal occupation of a European.

(4) The original of every contract made under this section shall be filed in the office of the district commissioner in which the parties reside and one copy of the contract shall be handed to the occupier and one copy to the head of the contracting native family.

(5) A magistrate or attesting officer may refuse to attest any contract which does not provide for a fair remuneration in money, having regard to the local rates of wages, or any contract which, in his opinion, is likely to lead to a breach of the provisions of this Ordinance.

(6) A magistrate or attesting officer may, in his discretion, refuse to attest any contract entered into by a native or Somali whom he considers to be an undesirable.

(7) It shall be lawful for any magistrate for any good and sufficient reason to order the removal of a native or Somali, or of a squatter, and/or his stock from any farm, forest area, Railway land or unalienated Crown land; it shall further be lawful for such magistrate to assess the costs of such removal and determine by whom such costs shall be paid.

(8) (a) A magistrate or attesting officer may, when he deems it necessary before attesting any contract under this section, require the occupier to give security for the payment of the wages of the squatter with whom the contract is to be made.

(b) Such security may be given by a bond in the form set out in the Second Schedule hereto, or to the like effect, with one or more sureties approved by the magistrate or attesting officer.

(9) When notice of termination of a contract has been given by either party thereto the occupier shall forthwith notify the district commissioner accordingly.

(10) On a change of occupancy of a farm the contract shall be deemed to have been assigned to the new occupier and to be a contract between the new occupier and the squatter.

When natives
may not
reside on
farms.

6. No occupier shall allow any native or Somali to reside on a farm in contravention of the provisions of this Ordinance.

Resident
labourers'
contracts to
be endorsed on
registration
certificate.

7. (1) When a native has entered into a contract of service under the provisions of section 5 of this Ordinance, it shall be the duty of the occupier forthwith to endorse in black ink upon such native's registration certificate, in the columns respectively provided therefor, the following particulars—

- (a) the name of the employer and district in which the native is employed;
- (b) the nature of the native's employment, preceded by a capital letter S, to denote that he is a squatter;
- (c) the date of the commencement of the contract; and
- (d) the rate of wages in cash.

(2) On the termination of such contract the occupier shall endorse in black ink the date of such termination in the column provided in the squatter's registration certificate for the date of discharge.

(3) It shall be the duty of the squatter, on the termination of the contract, to request the occupier to make such endorsement, but failure on the part of the squatter to make the request shall not relieve the occupier of the responsibility for making such endorsement.

(4) In the event of the occupier refusing or omitting to make such endorsement, the squatter shall forthwith report to the district commissioner in whose office the contract is filed; and such district commissioner may, if he is satisfied from the information at his disposal that the endorsement has been omitted through ignorance or mistake or wilfully by the occupier and through no fault of the squatter, after inquiry complete in black ink such endorsement on the registration certificate affixing such date for the date of discharge as may appear to him to be consistent with the circumstances.

(5) Any occupier who refuses or omits to endorse a registration certificate in accordance with the provisions of this section shall be deemed to have committed a breach of the provisions of this Ordinance.

8. (1) Every male native, other than a Somali, who is a party to a contract made under the provisions of the Resident Native Labourers Ordinance, 1925, shall, within one month after the date of the application of this Ordinance to the area in which he is residing under such contract, produce his registration certificate to the occupier.

Endorsement
of existing
contracts.
No. 5 of 1925.

(2) Such occupier shall thereupon make an endorsement upon the registration certificate as is required by sub-section (1) of the last preceding section and shall forthwith render a return to the Chief Registrar of Natives, as required under section 9 of the Native Registration Ordinance, showing the registration numbers and the names of every registered native resident upon his farm.

Cap. 127.

9. Any occupier entering into a contract with a native under section 5 of this Ordinance shall be deemed to have engaged such native within the meaning of the Native Registration Ordinance, and sections 9, 10, 17, 18 and 20 of the Native Registration Ordinance, and such Rules made under the said Ordinance as the Governor in Council may by notice prescribe, shall apply to such occupier and native as if the contract were an agreement within the meaning of the said Ordinance.

Application
of certain
provisions of
Native
Registration
Ordinance.
Cap. 127.

10. When a squatter has, within any twelve-monthly period, completed the number of days' work specified in such contract, the occupier shall, if so required by such squatter deliver to him a certificate to that effect in the form set out in the Third Schedule hereto, specifying the date on which the squatter's obligation to work under such contract recommences.

Squatters'
certificates.

11. Notwithstanding anything containing in sub-section (3) of section 13 of the Native Registration Ordinance it shall not be an offence to employ a person holding a squatter's certificate during the period shown on such certificate as the period in which the squatter is under no obligation to work for the occupier.

Saving of
offence under
section 13
of the Native
Registration
Ordinance.
Cap. 127.

12. Any occupier shall be liable to a fine not exceeding fifty pounds or to imprisonment for a period not exceeding two months or to both such fine and such imprisonment, if he fails in any one year to provide employment for less than the number of days specified in the contract for each person for whom, under the terms of any contract made under this Ordin-

Occupier to
provide
employment
contracted for.

No. 5 of 1925. ance or under the Resident Native Labourers Ordinance, 1925, he is under an obligation to provide such employment: Provided that notwithstanding the terms of any such contract, a Provincial Commissioner shall have power, for any good and sufficient reason, to reduce the minimum number of days work required from squatters in any area within his province.

Contract to be produced.

13. Any magistrate, or any person duly authorized in writing in that behalf by a magistrate, or any police officer of or above the rank of assistant sub-inspector, or a justice of the peace may demand from any occupier the production of any contract entered into by such occupier under the provisions of section 5 of this Ordinance or under the Resident Native Labourers Ordinance, 1925, and such occupier shall forthwith produce such contract.

No. 5 of 1925.

Record of resident labourers

14. Every occupier shall keep records sufficient to show the date of, the contract of each squatter, the number of days on which such squatter has worked and the wages paid.

Register of resident labourers' stock.

15. (1) Every occupier shall keep an up-to-date register of all cattle eligible for branding, and of such other stock in respect of which a register may be required to be kept by an order made under the provisions of section 21 of this Ordinance, kept on his farm and owned by natives or Somalis lawfully residing thereon.

(2) Such register shall be in the form set out in the Fifth Schedule to this Ordinance.

Resident labourers' stock on farms.

16. (1) No native or Somali other than an occupier or a member of the family of such occupier, shall graze any stock on any farm unless—

(a) he is lawfully residing on such farm under the provisions of paragraphs (b), (c), (d) or (e) of sub-section (1) of section 4 of this Ordinance; and

(b) such stock is his own personal property; and

(c) if residing under the provisions of paragraph (d) or paragraph (e) of sub-section (1) of section 4 of this Ordinance, he has received the written consent of the occupier and the written approval of the district commissioner or the attestation officer for keeping such stock on the farm; and

- (d) every head of cattle over the age of six months kept by such native or Somali on the farm is legibly branded by the occupier at his own expense with his brand together with the letter "S" and the farm number allocated to the native or Somali and shown in the register required to be kept under the provisions of section 15 of this Ordinance.

(2) (a) The written consent of the occupier and the written approval of a magistrate or attesting officer required by paragraph (c) of sub-section (1) of this section shall specify the number of stock which such native or Somali may keep on the farm.

- (b) In arriving at such number the occupier and the magistrate or attesting officer shall have regard—

(i) to any order, made under the provisions of section 21 of this Ordinance, in force in the area in which the farm is situated; and

(ii) to the reasonable needs of the native or Somali and of the members of his family residing with him.

- (3) Any native or Somali—

(a) who keeps upon a farm any stock which is not his own personal property; or

(b) who, if residing under the provisions of paragraph (d) or paragraph (e) of sub-section (1) of section 4 of this Ordinance, keeps upon a farm any stock in respect of which he has not received the written consent of the occupier and the written approval of a magistrate or attesting officer; or

(c) who keeps on a farm any stock in excess of the number which he is authorized to keep in pursuance of such written consent of the occupier and such approval of the district commissioner or an attesting officer; or

(d) who keeps on a farm any head of cattle which is not branded in accordance with the provisions of this section,

shall be guilty of an offence against this Ordinance.

(4) The provisions of sub-sections (2) and (3) of this section relating to the number of stock which a native or a Somali may lawfully keep upon a farm shall not apply to

No. 5 of 1925. the stock of a native or Somali who before the commencement of this Ordinance has entered into a contract, which is still unexpired, under section 5 of the Resident Native Labourers Ordinance, 1925, and who, under the provisions of sub-section (1) of this section, lawfully has such stock on the farm : Provided that every such native or Somali shall, within three months after the date of the application of this Ordinance to the area in which he is residing, furnish a record to the occupier who shall forward a return to a magistrate or attesting officer specifying the number of each kind of stock which such native or Somali is keeping on such farm.

(5) In assessing the number of cattle, sheep and goats kept on a farm no account shall be taken of stock under the age of six months.

(6) No occupier shall, after the expiration of a period of six months from the date of the application of this Ordinance to the area in which such occupier's farm is situate, brand any head of cattle kept on his farm by a native or Somali lawfully residing thereon if such head of cattle is already branded with any recent registered brand denoting ownership unless and until such cattle have been re-branded as provided for in sub-section (10) of this section.

(7) It shall be the duty of an occupier to maintain his brand on every head of cattle in a legible condition.

(8) Any occupier who commits a breach of sub-sections (6) or (7) of this section or who suffers any stock to be kept on his farm in contravention of the provisions of this Ordinance shall be guilty of an offence.

(9) (a) Nothing in this section contained shall be construed as entitling any person to move or to compel the movement of stock in contravention of any restrictions in force under any law for the time being in force in the Colony relating to diseases of animals.

No. 5 of 1925. (b) If, at the time of the termination of any contract made under section 5 of this Ordinance or under the Resident Native Labourers Ordinance, 1925, or of any agreement or engagement between an occupier and a native or a Somali under the law for the time being in force in the Colony relating to master and servant, any such restrictions are in force prohibiting the movement of stock from such farm, such stock shall remain on the farm without charge, and the owner of

such stock may also remain on such farm until such restrictions are removed or unless other arrangements are made for the care or disposal of such stock to the satisfaction of the parties and of a magistrate; and in any such case any such contract shall be deemed to remain in force until such restrictions are removed or until such other arrangements are made, as the case may be.

(10) (a) No cattle over the age of six months owned by a native or a Somali and kept on a farm in accordance with the provisions of this Ordinance shall be removed from a farm unless the owner has first produced them to the occupier who shall, at his own expense, cause such cattle to be re-branded with his own brand reversed.

(b) Any owner of cattle who moves from a farm any such cattle which have not been so re-branded, and any occupier who on request refuses or fails so to re-brand any cattle, shall be guilty of an offence.

(11) Where the owner of any stock has committed a breach of the provisions of this section, or where a person in possession of any stock has, with the connivance and consent of the owner of the stock, committed a breach of the provisions of this section, a magistrate may, in addition to imposing any other penalty provided in this Ordinance, order that the stock in respect of which the offence has been committed be confiscated.

(12) All stock kept on a farm by a native or a Somali shall be deemed for all purposes to be the personal property of such native or Somali.

17. (1) A magistrate, or a veterinary officer authorized in writing by the Chief Veterinary Officer, or a police officer of or above the rank of assistant sub-inspector, or any person duly authorized by a magistrate in that behalf may— Registers to be produced.

- (a) enter upon a farm and demand from the occupier the production of any register or records which are required to be kept under the provisions of this Ordinance;
- (b) take all reasonable and proper steps to satisfy himself as to the correctness of any particulars entered therein; and
- (c) demand from such occupier an explanation of any apparent discrepancies therein.

(2) Any occupier who knowingly makes a false entry in any register or records or who refuses to produce any register or records or to furnish any explanation when lawfully called upon to do so, or who shall knowingly furnish a false explanation, shall be guilty of an offence.

Removal of
resident
labourers from
undeveloped
farms.

18. A magistrate may by notice served upon the occupier or, if the occupier has no address in the Colony or if such address is unknown, by notice published in the Gazette, require the occupier of a farm, which is not being developed, and which is not, in his opinion, under such occupation as to ensure the observance of the provisions of this Ordinance, to remove any native or Somali, found residing on such farm, within twenty-eight days from the date of the service of such notice or from the date of the publication of the notice in the Gazette, as the case may be; and if such native or Somali is not so removed then a magistrate, or such other person as he may authorize in that behalf, shall remove such native or Somali and send him to a native reserve or to such other place as the magistrate may determine: Provided that, when the magistrate is satisfied that such native or Somali, although residing on a farm that is not being developed, is employed by the occupier of such farm on another farm in the same occupation or ownership under a contract of service or under a resident labourer's contract, he shall allow such native or Somali to remain on such farm.

Prohibition
against
payment by
natives or
Somalis.

19. (1) (a) No payment in money or in kind shall be demanded or taken from any native or Somali lawfully residing on a farm for the right to reside on or to cultivate any land or to graze any stock, or for the use of salt-licks, fuel or water on such farm.

(b) No occupier shall enter into a contract with a native or Somali lawfully residing on his farm whereby the occupier shares any profit derived by such native or Somali from his cultivation or from the increase or produce of his stock on the farm of such occupier.

(2) Manure produced on a farm by a squatter's stock shall be the property of the squatter during the period of his contract: Provided that, if such manure is not reasonably required for the purposes of the squatter's cultivation on such farm, the occupier may use such manure for the purpose of his own cultivation free of cost other than the cost of transporting the manure from one place on the farm to another.

(3) Nothing in this section contained shall be deemed to render illegal the purchase by an occupier at a reasonable price of the stock of a squatter or the produce of a squatter's stock or cultivation.

20. Natives or Somalis employed on farms in the occupation of missions and engaged in receiving or imparting industrial or technical instruction with or without literary or theological instruction or training for not less than one hundred and eighty days in each year shall be exempt from the provisions of section 4 of this Ordinance if such instruction or training is under proper and responsible control to the satisfaction of a magistrate.

Natives or
Somalis
employed on
mission lands.

21. (1) Subject to the provisions of section 2 and of section 22 of this Ordinance a local authority may, in respect of any farm or group of farms within the area of its jurisdiction, by order published in the Gazette and in a newspaper circulating within such area—

Local option.
Power to make
orders.

- (a) prohibit the engagement of squatters on any farm, or group of farms;
- (b) limit the number of squatters to be engaged on any farm or group of farms;
- (c) prohibit the keeping of stock by natives or Somalis on any farm, either generally or in respect of any specified kind of stock, or limit the numbers of any specified kind of stock which may be kept on a farm by squatters, or prescribe the conditions under which native or Somali stock shall be kept;
- (d) prescribe the number of days in a year on which a squatter shall work and for which he shall receive wages such number of days in no case to be less than one hundred and eighty.

(2) In making any order as aforesaid the local authority shall have regard—

- (a) to the wishes of the occupiers of farms within the area of its jurisdiction, so far as such wishes can be reasonably and conveniently ascertained;
- (b) to the reasonable labour requirements of farms; and
- (c) to the reasonable needs of squatters on such farms.

(3) When such an order has been made it shall be the duty of the occupier of a farm to which such order applies, within one month after the date of the publication of the order in

the Gazette in accordance with the provisions of sub-section (7) of section 22 of this Ordinance, to give notice of termination of such contracts as may be necessary to make the said order effective, and failure to give such notice shall be an offence against the provisions of this Ordinance.

(4) The Governor in Council if he is satisfied that, contrary to the wishes of the majority of the occupiers in any areas so far as such wishes can reasonably and conveniently be ascertained, a local authority has neglected or refused to make any order as aforesaid or that circumstances obtaining in any area are such that an order under this section should be made, may call upon such local authority to make such order as in the circumstances may be just and expedient, and, if the local authority within a reasonable time after being so called upon refuses or neglects to make an order, the Governor in Council may in respect of the area of jurisdiction of such local authority or any part thereof by order exercise any of the powers conferred upon a local authority by sub-section (1) of this section.

Orders by
local
authorities,
how to be
made.

22. (1) No order shall be made or amended by a local authority unless and until a copy of such proposed order or amending order has been deposited at the office of the local authority for inspection by any person at all reasonable times, and unless and until a notice, setting forth the general purport of the proposed order and stating that a copy thereof is open to inspection, shall have been published in the Gazette and in some newspaper circulating in the district and exhibited in a conspicuous place at or near the public entrance to the local authority's offices fourteen days prior to the meeting of the local authority to be held for the purpose of making such order or such amending order.

Submission of
orders for
approval of
Standing
Committee.

(2) Any objection to any such order shall be lodged with the clerk to the local authority within thirteen days after the date of the publication of the notice as aforesaid.

(3) After any order has been made or amended by a local authority such order or amending order shall be submitted to the Commissioner for Local Government through the Provincial Commissioner for the approval of the Standing Committee, together with—

(a) a copy of the minutes of the meeting of the local authority at which the order or amending order was adopted;

(b) a certificate by the clerk to the authority that the provisions of sub-section (1) of this section have been complied with; and

(c) copies of any objections against the adoption of the order which may have been lodged in writing with the clerk, or, if no objections have been lodged, a statement to that effect.

(4) When the standing committee has approved of any order, with or without amendment, such order shall be published in the Gazette.

(5) Any person aggrieved by such order may within one month from the date of publication under sub-section (4) of this section submit to the Governor in Council a written objection to the order.

(6) As soon as possible after the expiration of a period of one month from the date of publication of the order under sub-section (4) of this section, the Governor in Council shall, after considering such written objections, if any, as may have been made under the last preceding sub-section, confirm, vary or reject such order.

Governor in Council to confirm or vary order.

(7) If the Governor in Council confirms, with or without amendment, any such order he shall cause the order to be so certified by the clerk to the Executive Council who shall then cause the order to be published in the Gazette, and as and from the date of such publication such order shall have the full force of law in the area to which it relates.

23. The Governor in Council may make orders of a similar nature to those which a local authority is empowered to make under section 21 of this Ordinance in respect of forest areas, unalienated Crown land or Railway land, and, in making such order, shall have regard—

Governor in Council shall make orders regarding Forest, Railway or unalienated Crown lands.

(a) to the reasonable labour requirements of the Railway Administration or of any department of Government concerned;

(b) to the reasonable needs of such natives and Somalis; and

(c) to the terms of any order made under section 21 of this Ordinance in force in any area adjacent to such forest area, unalienated Crown land or Railway land.

**Institution of
proceedings
for offences.**

24. (1) Proceedings in respect of any offences against the provisions of sections 4, 6, 13, 14, 15, 16, 17 and 19 of this Ordinance may be instituted by the Police or by any person authorized in writing by a magistrate.

(2) A magistrate may, in his discretion—

(a) rescind any contract made under this Ordinance where it has been proved to his satisfaction that there has been a breach of the terms thereof, or, on the application of either party to the contract, when the other party has been convicted of a criminal offence against him or of a criminal offence involving serious moral turpitude; and

(b) cancel any permit given by an occupier in contravention of the provisions of this Ordinance :

Provided that in any such case the native or Somali shall retain his rights over growing crops unless the occupier elects to give him reasonable compensation therefor. In the event of any dispute as to the amount of compensation payable the magistrate shall determine the amount thereof.

(3) Compensation payable under this section may be paid to the magistrate by an occupier, but if proceedings have been instituted by the occupier for damages against the native or Somali, the magistrate shall not pay out the compensation to the native or Somali until the liability of the native or Somali to pay damages has been determined; and if the native or Somali is found to be liable to damages, such damages may be set off against the amount paid to the magistrate by the occupier.

**Penalties for
offences
committed by
resident
labourers**

25. A squatter shall on conviction be liable to a fine of one hundred shillings or in default of payment to imprisonment for any term not exceeding one month—

(1) if he, after having entered into an agreement under this Ordinance, fails or refuses without lawful cause to enter upon his duties on the farm at the stipulated time;

(2) if he, without lawful cause, absents himself from the place proper and appointed for the performance of his work on any day when the occupier may lawfully require him to work;

(3) if he, during any time when he is lawfully required to work, is intoxicated and thus unfit to perform his work;

- (4) if he neglects or refuses to perform any work which it was his duty to have performed, or if he carelessly or improperly performs any work which from its nature it was his duty under his agreement to have performed carefully and properly;
- (5) if he, without leave and for his own purposes, makes use of any horse, vehicle or other property belonging to the occupier;
- (6) if he uses any abusive or insulting language or is guilty of insulting behaviour to the occupier or to any person lawfully placed by the occupier in authority over him, calculated to provoke a breach of the peace;
- (7) if he refuses to obey any command of the occupier, or of any person lawfully placed by the occupier in authority over him, which command it was his duty to obey;
- (8) if he grows upon the farm any crop which by his contract he is prohibited from growing;
- (9) if he, after the termination of his contract and subject to the provisions of section 5 (2) (k) and sub-section 16 (9) of this Ordinance, fails within a reasonable and specified time to leave the farm and to remove his family and stock therefrom.

26. A squatter shall be liable to a fine not exceeding one hundred and fifty shillings and in default of payment to imprisonment for any term not exceeding six months—

Penalties for more serious offences committed by resident labourers.

- (1) if he wilfully or by wilful breach of duty or through drunkenness does any act tending to the immediate loss, damage or serious risk of any property placed by any other person in his charge for delivery to or on account of his occupier;
- (2) if, by wilful breach of duty or by neglect of duty or through drunkenness, he refuses or omits to do any lawful act proper and requisite to be done by him for preserving in safety any property placed by the occupier in his charge, or placed by any other person in his charge for delivery to or on account of his occupier;

(3) if, being employed as a herdsman—

- (a) he fails to report to the occupier the death or loss of any animal placed in his charge (which animal he alleges to have died or to have been lost) at the earliest opportunity after he has discovered, or at the earliest opportunity after he should in the ordinary course of duty have discovered, such death or loss;
- (b) he fails, after having received an order from the occupier to preserve for the use or inspection of the occupier any part or parts of an animal which such squatter alleges to have died, to preserve such part or parts and is unable to prove to the satisfaction of the court the death of the animal which he alleges to have died;
- (c) he alleges the loss of any animal placed in his charge and it is proved by the occupier to the satisfaction of the court that such animal could not, in the circumstances of the case, have become irrevocably lost without the act or default of the squatter.

(4) if, being employed in any capacity other than that of a herdsman, he alleges the loss of any property placed in his charge by or for the occupier and it is proved by the occupier to the satisfaction of the court that the property in question could not have been lost without the act or default of the resident labourer.

Penalties for
offences
committed by
occupier.

27. (1) An occupier shall be liable to a fine not exceeding two hundred shillings and in default of payment to imprisonment for a term not exceeding one month, or to both such fine and imprisonment, if he is convicted of any of the following acts or omissions, that is to say—

- (a) if he fails to pay, on demand, the wages due to a squatter;
- (b) if, before or after the expiration of the contract, upon demand made and without lawful cause, he refuses to deliver or to permit to be taken away any property belonging to a squatter lawfully remaining or being upon such occupier's land;

- (c) if he fails knowingly or on demand to provide his squatters with proper medicines during illness and also, if procurable, medical attendance during serious illness: Provided that an employer's liability for medical attendance during illness shall not extend beyond a period of forty-two days.

(2) Upon any complaint brought before a court under the provisions of this Ordinance the magistrate may, in addition to any jurisdiction he might have exercised if this Ordinance had not been enacted, exercise all or any of the following powers :—

Discretionary powers of magistrates.

- (a) He may adjust and set off one against the other all such claims on the part either of the employer or of the servant arising out of, or incidental to, the relation between them as the magistrate may find to be subsisting, whether such claims are liquidated or unliquidated, and whether such claims are for wages, damages or otherwise; and he may direct the payment of such sum as he finds due by one party to the other party.

To adjust and set off claims.

- (b) He may direct fulfilment of the contract, and, in case where he might award damages for any breach of contract, he may, in lieu either of the whole of the damages which would otherwise have been awarded or some part of the damages, direct the party committing such breach to find security to the satisfaction of the magistrate for the due performance of so much of the contract as remains unperformed; and if the party neglects or refuses to find security, he may commit him to prison until he finds it, but the term of imprisonment shall not exceed three months.

To direct fulfilment of the contract.

- (c) He may rescind the contract upon such terms as to the apportionment of wages or other sums due thereunder, and as to the payment of wages or damages or other sums due, as he thinks fit.

To rescind the contract and apportion wages, etc.

- (d) When no amount of compensation or damages can be assessed, or when pecuniary compensation will not in the opinion of the magistrate meet the circumstances of the case, he may, in addition to rescinding the contract and discharging the parties therefrom, impose a fine on either party of a sum not exceeding twenty pounds or in default of payment to imprisonment for a term not exceeding one month.

**General
penalty.**

28. Any person committing or knowingly permitting a breach of the provisions of this Ordinance or any Rules made thereunder for which no specific penalty is provided shall be liable, on conviction, to a fine not exceeding one hundred pounds, or to a term of imprisonment not exceeding two months, or to both such fine and such imprisonment.

Costs.

29. In any complaint under this Ordinance the process of the court for compelling the attendance of the party accused and of all necessary witnesses shall be instituted at the public charge and without any fees of court: Provided always, that, if at the trial the complaint shall appear to the magistrate to be frivolous or vexatious, the party complaining shall be liable to pay a fine not exceeding ten pounds and to defray the cost of the process and of the witnesses in the case, and in default of payment of such fine and costs, shall be liable to imprisonment for any period not exceeding one month. Such fine and costs may be imposed upon the occasion of such trial and without any fresh action or proceeding for the recovery thereof.

Rules.

30. The Governor in Council may make rules for the better carrying out of the provisions of this Ordinance.

**Appointment
attestation
officers.**

31. The Governor in Council may appoint any fit and proper person to be an attesting officer for the purposes of this Ordinance.

**No stamp duty
shall be
chargeable
for the
attestation of
any contract.**

32. Notwithstanding anything to the contrary contained in any law for the time being in force in the Colony, the attestation of any contract entered into under the provisions of this Ordinance, shall be exempt from all stamp duty.

**Repeal.
No. 5 of 1925.**

33. The Resident Native Labourers Ordinance, 1925, is hereby repealed.

FIRST SCHEDULE.

Memorandum of Agreement made this day of 19..... by and between ⁽¹⁾..... of ⁽²⁾..... (hereinafter referred to as "the occupier") and ⁽³⁾..... registered number of ⁽⁴⁾..... (hereinafter referred to as "the squatter"), whereby it is agreed:—

1. That this agreement shall have effect from the..... day of..... 19..... and shall be for a term of years ending on the day of 19..... unless lawfully determined earlier.

2. That the squatter, together with his wife or wives and children shall reside and may graze stock on such part only of the occupier's farm at.....as the occupier may direct during the period of this agreement.

3. That during the period of this agreement the resident labourer and every male member of his family who is of the apparent age of sixteen years or over and is resident on the occupier's farm, and who is not working under any law for the time being in force in the Colony relating to master and servant, shall each work for the occupier at such times as the occupier may direct, for not less than ⁽⁶⁾.....days at the election of the occupier in each period of twelve months, and that the occupier shall provide employment for the squatter and for such male members of his family for such number of days. The occupier shall give notice in writing to every male member of such family who during the continuance of the contract may attain the age of sixteen years that on the expiration of three months from the date of receiving such notice he will be required either to enter into a contract under the Resident Native Labourers Ordinance, 1935, with the occupier, or under any law for the time being in force in the Colony relating to master and servant with the occupier or some other employer in the vicinity, or to cease to reside on the occupier's farm.

4. That the time during which the squatter is required to work for the occupier shall be so arranged as to allow the squatter reasonable time to sow, cultivate and reap his own food crops.

5. That the occupier agrees to pay to the squatter and to the male members of his family wages at the rate of not less than..... for every ⁽⁶⁾..... and ⁽⁷⁾.....

6. That the occupier shall provide good and sufficient building material for the erection of huts for the accommodation of the squatter and his family.

7. That the occupier shall provide the squatter with sufficient and suitable land for the cultivation of food crops for himself and his family, and for grazing the following

numbers of stock, namely ⁽⁸⁾.....
 provided that the resident labourer shall not plant or cultivate
 any of the following crops, namely.....
 or allow them to be planted or cultivated under his control,
 and that he shall not cultivate land other than that allocated
 to him by the occupier.

8. That with the consent of a magistrate or an attesting officer this agreement may be terminated by either the occupier or the squatter giving to the other three calendar months' notice, provided that the squatter shall suffer no prejudice in regard to the care and reaping of his crops or in regard to the removal of his family or stock and provided that the occupier may demand the fulfilment by the squatter of any conditions of this agreement to which the squatter may be liable in respect of his obligation to work.

9. On the expiration or termination of this agreement from whatever cause, the squatter shall be entitled to remove all his movable property from the farm, but shall not remove any buildings. In respect of buildings or other immovable property the squatter shall be entitled to any reasonable compensation for materials contributed by him.

*10. That the squatter shall cause his children to attend regularly at the school provided by the occupier on the said land.

†(Any other conditions).

As witness the hand of the parties hereto :—

Witness to the signature of the occupier.

.....

Witness to the signature or mark of the said squatter.

.....

SCHEDULE.

I/We being member(s) of the family of.....
 (the squatter) do hereby agree to abide by the terms of
 the agreement dated.....between him and.....
(the occupier)

Signature(s) or Mark(s).	Registered No.	Nature of Service.	Remuneration.

I hereby certify that the contents of this agreement have been read and explained by me to the squatters the signatories to this agreement, and that they appear to have executed this agreement with a full knowledge of its contents.

The..... day of 19.....

.....
Magistrate or Attesting Officer.

(1) Full name of occupier.

(2) Address.

(3) Full name of native or Somali as given on registration certificate.

(4) Insert name of native's or Somali's district, location and chief.

(5) Not to be less than 180 days, but may be more if agreed.

(6) Day, month or thirty-day card worked.

(7) Insert conditions as to rations or other considerations if agreed upon or strike out if inapplicable.

(8) Number of each kind of stock to be specified.

*This clause to be inserted only in the case of missions or farms on which schools to the satisfaction of the magistrate are provided; otherwise to be struck out.

†Any other conditions agreed to by the parties which do not contravene the provisions of this or any other Ordinance. Such conditions, if any, shall be numbered consecutively.

SECOND SCHEDULE.

THE RESIDENT NATIVE LABOURERS ORDINANCE, 1935.

Form of Bond under section 5 (8).

Be it known unto all men by these presents that we
 (1).....are jointly and severally bound
 unto (2).....and to any one or more
 of them in the sum of (3).....to be paid to
 the said (4).....their and each of their
 heirs, executors, administrators, and assigns. For which pay-
 ment well and truly to be made as liquidated damages and not
 as a penalty, we bind ourselves jointly and severally; and our
 heirs, executors and administrators, and every one of them
 firmly by these presents.

Sealed with our seals, dated this..... day of
19.....

The condition of the above written obligation is such that
 if (5)..... (hereinafter called
 "the occupier") the employer of the said (6).....
 (hereinafter called "the squatter") do pay to each of the
 squatters performing their part of the agreement after-
 mentioned the several sums of money set opposite to their
 respective names in the schedule to an agreement made and
 entered into between the occupier and the squatter at
on the day of 19..... and
 attested by (7)..... in regular
 (8).....payments to be calculated from the
day of 19..... and to execute,
 carry out and perform his part of the said agreement in all
 respects, then this obligation to be void, otherwise to be in
 full force and virtue.

Signed, sealed and delivered in the presence of :—

(To be signed and sealed by each of the obligants and
 attested, if practicable, by the officer attesting the relative
 agreement).

(1) Insert names and description of occupier and one or more sureties
 resident within the jurisdiction.

(2) Name and description of the squatter.

(3) Insert sum, not less than half the total amounts (less any advances),
 due by the contract.

(4) Repeat names of squatter.

(5) Name of occupier.

(6) Name or names of squatters.

(7) Official name of officer before whom agreement is signed.

(8) Weekly or monthly, etc., as the case may be.

THIRD SCHEDULE.

THE RESIDENT NATIVE LABOURERS ORDINANCE, 1935.

Squatter's Certificate.

(Under section 9).

I hereby certify that.....
has during the period of twelve months commencing on the
.....day of.....19..... completed
the days' work stipulated in this
contract. His obligation to work under the terms of this
contract commences again on the day of
.....19.....

Signature of Occupier and date.

FOURTH SCHEDULE.

THE RESIDENT NATIVE LABOURERS ORDINANCE, 1935.

*Permit granted under the Provisions of section 4 (1) (e) to
Reside on Alienated Lands.*

Bearer s/o
Native Registration Certificate No.
Somali

is hereby permitted to reside on
for (days), i.e. from
(to).....
Date

Signature of Occupier.

All permits to reside on any land for a period exceeding fourteen days must be countersigned by the District Commissioner in charge of the area in which such land is situated.

Approved.

District Commissioner.

Date.....District.

FIFTH SCHEDULE.

THE RESIDENT NATIVE LABOURERS ORDINANCE, 1935.

Register of Cattle and Stock (section 15).

Name of Farm
 Occupier's Name
 Registration No. and Name of Native or Somali.....
 No. of Contract
 Date of Commencement..... Date of Termination.....
 Occupier's Registered Brand
 Farm Brand No. allocated to Native or Somali
 (a separate individual number to be allocated to each Native or Somali and to be branded on all his cattle)
 No. of cattle allowed on contract

No.	Date of Arrival of cattle or stock on farm	Sex	Description of Cattle or Stock	Date of Branding	Remarks, as to death, transfer, sale, theft, etc.,
1					
2					
3					
4					
5					
6					
7					
8					

N.B.—One page of the Register to be allocated to each Native or Somali.



COLONY AND PROTECTORATE OF KENYA

Report of the Meat and Live Stock Inquiry Committee

• 1937

PRINTED AND PUBLISHED BY THE GOVERNMENT PRINTER
NAIROBI, KENYA COLONY

The expenses incurred in connexion with the preparation of this report were £327, and the cost of printing is estimated by the Government Printer at £50. These figures take no account of the time spent by officers of Government.

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Report of the Meat and Live Stock Inquiry Committee

YOUR EXCELLENCY,

TERMS OF REFERENCE.

We have the honour to submit our report on the Terms of Reference entrusted to us in October, 1935 (Government Notice No. 702, published in the Official Gazette of 15th October, 1935), which read as follows:—

- (i) To inquire into the possibility of introducing legislation in Kenya similar to that in existence in South Africa, with regard to the establishment of a Live Stock and Meat Industries Control Board, and to define its functions.
- (ii) If legislation is considered feasible, to report on the existing condition of the live stock industry of the Colony and to formulate a scheme on the lines of legislation in South Africa.
- (iii) To report similarly on the potential expansion of an export industry.
- (iv) For the purpose of this inquiry, to take evidence from interested parties.

PERSONNEL.

2. The personnel of the Committee is as follows:—

The Hon. Attorney General (Chairman),
The Hon. Chief Native Commissioner,
Major the Hon. H. H. Brassey-Edwards, O.B.E.,
R. Daubney, Esq.,
Capt. E. Caswell Long,
Lt.-Col. G. C. Griffiths, C.M.G.,
J. J. Toogood, Esq.,
H. B. Hamilton, Esq.

Mr. R. Daubney has acted as Secretary of the Committee.

As a result of a recommendation made by the Committee at its first meeting, Government appointed Mr. F. J. Bicknell as an additional member of the Committee, to represent the interests of the pig-breeders and bacon-curers.

Major H. H. Brassey-Edwards was absent from the Colony on leave from 15th April until 23rd November, 1936, and during that time his place on the Committee was taken by Capt. E. J. Mulligan.

GENERAL PROCEDURE: MEETINGS.

3. The first meeting of the Committee was held on the 12th November, 1935, and eight subsequent meetings were held at varying intervals during a period of roughly fifteen months. The general procedure of the Committee differed from that usually followed by committees of inquiry, in that a preliminary examination of the terms of reference indicated that once certain main principles had been agreed upon, the scope of the actual inquiry would be largely technical; and much of the relevant evidence would have to be obtained from sources outside the Colony. This meant that intervals between successive meetings must be longer than usual, in order to give time for the collection of the data which it was desired to discuss.

The prolonged nature of the inquiry has also been responsible, at least in part, for another departure from the procedure usually followed by such committees. From time to time, in the course of the investigations, situations arose which, in the view of the Committee, demanded that immediate action should be taken; and the recommendations of the Committee on these issues were accordingly conveyed to Government forthwith, together with suggestions as to the appropriate action. The result is that certain of the recommendations, such as those concerning the Liebig and Imperial Cold Storage projects, have already been implemented by Government during the session of the Committee.

ATTENDANCE.

4. The following is a list of attendances of members of the Committee at meetings:—

	<i>Attendances.</i>
The Hon. Attorney General (Chairman)	8
The Hon. Chief Native Commissioner	7
Major the Hon. H. H. Brassey-Edwards, O.B.E. ...	3
Capt. E. J. Mulligan	5
R. Daubney, Esq.	9
Capt. E. Caswell Long	7
Lt.-Col. G. C. Griffiths, C.M.G.	8
J. J. Toogood, Esq.	8
H. B. Hamilton, Esq.	5
F. J. Bicknell, Esq.	8

EVIDENCE AND MEMORANDA.

5. For the reasons already stated in paragraph 3, it has been unnecessary to take a great deal of evidence from members of the general public, particularly since the various branches of agriculture were so well represented on the personnel of the Committee itself. Evidence was, however, taken from Lt.-Col. W. K. Tucker, Mr. H. W. Bearcroft, Capt. C. F. Lance, Capt. Hugh Barclay, Mr. J. K. Hill, and Mr. G. de P. Colville. Memoranda were received from Mr. H. W. Bearcroft, Mr. Svan Giwin, Mr. T. Strange, Mr. Francke, and Mr. J. K. Hill.

The Committee also addressed a circular and questionnaire to pig-breeders; and 93 replies were received to the questionnaire.

In addition, the Committee had the privilege of long discussions with Mr. R. Mackenzie (Director) and Mr. G. Brinton (General Manager), both of Messrs. Liebig's (Rhodesia) Ltd., and Mr. G. L. Straith, General Manager of the Rhodesian Export and Cold Storage Co., Ltd., all of whom had toured the Colony before they met the Committee.

ACKNOWLEDGMENTS.

6. It is with a profound sense of gratitude that the Committee acknowledges its indebtedness to Government for the uniformly helpful attitude it has displayed during the conduct of this inquiry. At the suggestion of the Committee, Government despatched the Secretary of the Committee by air to Southern Rhodesia to investigate the working of the chilling and canning factories there, and the methods by which the meat industry of that territory had been organized. At a later stage Government collaborated with the Committee in negotiating with Messrs. Liebig's Ltd. and the Imperial Cold Storage Co., Ltd.; and it is undoubtedly owing to the promptitude with which Government acted in this matter that it has been possible to reach an agreement with Messrs. Liebig's for the erection of a large canning factory during 1937.

The Committee also desires to acknowledge its indebtedness to the General Manager, Kenya and Uganda Railways and Harbours, and to the Acting Commissioner for Local Government, Lands and Settlement. The tact, courtesy, and ability of these two gentlemen to find ready solutions of the difficulties that arose in the course of the negotiations have contributed very materially to the success of this inquiry.

Valuable assistance has also been received from Mr. R. C. Yates, Superintendent of the Municipal Abattoir, Nairobi; Mr. L. Shoolman, Government Coast Agent, Mombasa; Major H. G. Mundy, Secretary to the Department of Agriculture and Lands, Southern Rhodesia; Mr. C. A. Murray, Senior Animal Husbandry Officer, Department of Agriculture, Southern Rhodesia; Lt.-Col. T. Dunlop Young, O.B.E., Veterinary Adviser in London to the Government of New Zealand; Messrs. Geo. Kean & Sons, Ltd., Smithfield Market, London; the General Manager of Rhodesian Railways; and Messrs. the Crown Agents for the Colonies. The Committee is also indebted to Mr. Paul Aldrich, Editor of *The National Provisioner*, Chicago, for much valuable information supplied to the Secretary, and to the Institute of American Meat Packers for making available their reports on beef costing and permitting the reproduction of copies of their Bulletin B. C. 296 in Appendix C of this report.

INQUIRY.

7. In connection with the Committee's first term of reference, a preliminary examination of the legislation enacted in the Union of South Africa consequent upon the findings of the South African Stock and Meat Industry Committee of 1932 indicated that the measures taken in that country had been based primarily upon the need to develop an export trade which would absorb the surplus production of meat. At the outset the Committee agreed that it was not possible to contemplate the adoption of similar legislation involving control of prices and supplies in this Colony, unless an export trade could be organized as an outlet for the whole of the surplus production of the industry. Further consideration of the possibility of introducing legislation along these lines in this Colony—*vide* terms of reference (i) and (ii)—was accordingly deferred until the Committee had considered the third term of reference, and had decided (a) whether the development of a meat export trade is essential to the success of the agricultural industry of Kenya, and (b) whether it is an economically practicable proposition at this stage of the Colony's development.

THIRD TERM OF REFERENCE—POTENTIAL EXPANSION OF THE INDUSTRY.

8. In considering its third term of reference under the heads (a) and (b) set out in the preceding paragraph, the Committee is aware that it will be covering the ground necessary to comply with the instruction given in the first part of

the second term of reference: "If legislation is considered feasible, to report on the existing condition of the live stock industry of the Colony"; and accordingly no attempt is made in this report to deal with that part of the second term of reference as a separate instruction. In the investigation which follows, cattle and the beef industry are given the first consideration, since it is realized that the possibility of any commercial venture into the meat export trade must be dependent primarily upon prospects in the cattle industry, because of its magnitude in comparison with other branches of the live stock industry.

THE NEED FOR AN EXPORT TRADE.

9. To deal first with (a), it is evident that in recent years the trend of general farming practice in the settled areas of the Colony has been changed, and that the tendency to-day is towards the general adoption of mixed farming in areas that for many years have been devoted almost entirely to crop growing. Owing to the rapid progress made by the dairy industry during the last five or six years, and to the security enjoyed by owners of dairy herds during the recent period of acute financial depression, the attention of settlers has been focussed more strongly on the advantages offered by a balanced system of farming in which live stock plays its normal part.

While it is generally accepted that the sound and the only progressive method of butterfat production at world prices is by intensive dairying, it is observed that the extensive system is nevertheless employed to-day by farmers in certain parts of Kenya on lands that are totally unsuited to dairying, but are of the type required for the ranching of beef cattle. The reason for this misuse of ranching lands is the instability of the market for fat cattle; the production of fat steers has in recent years reached the point of providing a potential surplus over the requirements of the local market, with disastrous effects upon prices whenever the surplus has been released. To some extent the position has been ameliorated by an extension of the practice of slaughtering bull calves from the dairy herds, and more recently an outlet for surplus cattle has been provided by the export to Italian Somaliland; but the export to Italian Somaliland is likely to be a temporary phase only, and the continued slaughter of bull calves from the dairy herds neither solves the existing difficulty of beef-producers nor holds out any hope of stabilization of markets in the future.

10. The Committee remarks that pig-production has notably failed to keep pace with the expansion of the dairy industry. In other dairying countries pig-production is generally regarded as complementary to cream-production, and any marked increase in the latter is promptly balanced by a corresponding rise in the former. In Kenya, the number of breeding sows has remained practically stationary for several years past; and yet, in spite of this display of caution by producers, there have been occasions when the appearance on the market of a small surplus has so depressed prices that pigs have been temporarily unsaleable, and farmers have been driven to destroy breeding-stock and abandon production.

11. The Committee observes that up to the present little or no use has been made of small flocks of sheep in mixed farming operations. Here also the reason is to be found in the incapacity of the local market to absorb even the present production of fat wethers from the woolled flocks, which naturally discourages any effort on the part of farmers to breed mutton-sheep or lambs.

12. In the pastoral native reserves it has been impossible, in the absence of adequate markets for slaughter stock, to formulate any policy of economic development which would utilize to their full extent the available natural resources in live stock and grazing lands. It is conservatively estimated that these pastoral reserves produce a surplus of at least 120,000 head of cattle per annum, over and above present slaughterings for the internal markets of the Colony. The size of this annual surplus is a matter of great importance in any consideration of the possibility of exporting beef in the chilled or frozen state; since, if only a reasonable proportion of these carcasses reaches or can be made to reach an exportable standard, the operations of a packing-house can be conducted on a scale commensurate with economic efficiency. Many of the animals available from the overstocked or badly managed native reserves are of course only fit for canning or extract purposes; but the removal to a canning factory of such animals, which might conveniently be termed the accumulated "culls", would permit a general overhaul of grazing areas, the laying down of quotas of stock for the different sections of the reserves, and the initiation of plans for the economic development of the pastoral tribes.

13. The Report of the Agricultural Commission of 1929, under the chairmanship of Sir Daniel Hall, laid great emphasis on the need for the establishment of meat-canning factories to

deal with the problem of overstocking in certain reserves; but although certain proposals were submitted to His Majesty's Secretary of State for the Colonies in 1930, in an endeavour to give effect to the recommendations of the Hall Commission, it was not found possible to take any action, owing to the stringency of financial conditions during the period of the world depression.

More recently a successful application was made for a free grant of £23,590, to be expended upon the erection and maintenance of a fertilizer factory at Eldolat. It was intended to draft "culled" cattle from the northern reserves of the Rift Valley Province to this factory, but the price that it was proposed to pay for cattle (from Sh. 5 to Sh. 7 per head) seemed likely to create difficulty in the way of obtaining the necessary supplies; it is unlikely that the full support of Administrative Officers could be secured for any scheme that compelled the native to dispose of his stock for such an inadequate return. In the meantime, four years of drought and an epizootic of rinderpest in the northern areas have done much to relieve the immediate pressure of stock on the land; large numbers of cattle have died of starvation in the Masai and other pastoral reserves, and at the moment numbers are near the lowest point in the cycle. The process of building up has, however, again begun, and reports from several sources indicate that 1936 has been an exceptionally good calving year. In the view of the Committee the present is a very favourable time for the launching of any scheme that will provide satisfactory markets for native stock and make it possible to lay down plans for the future economic development of the pastoral areas.

RECOMMENDATION.

14. After reviewing conditions generally in the live stock industry, and having regard more particularly to the needs of agriculture in the matter of development of the live stock side of the industry, and to the urgency of the need to find markets for native cattle, the Committee concludes that, not only is an export trade in meat essential if the agricultural industry of the Colony is to continue to evolve in a satisfactory manner, but that the development of such an export is vital to the survival of the industry in the settled areas.

PRACTICABILITY OF EXPANSION BY EXPORT.

15. Having satisfied itself of the fundamental importance to the Colony of an export trade in meat, the Committee

proceeded to investigate (b)—the economic practicability of such a scheme under present conditions. The possibilities offered by export to neighbouring territories such as Uganda and Zanzibar were considered, and it was decided that it would be impossible to develop in these areas markets large enough to absorb an appreciable part of Kenya's surplus production, or to exert any effect on the general position of the industry. The feasibility of shipping live cattle for slaughter in more distant countries was also considered; and in this connection the Committee had access to correspondence that had passed between the Secretary and the Chief Veterinary Officer, Palestine, and between the Secretary of State and the High Commissioner of Palestine, on the subject of proposals to export live cattle from Kenya and the Rhodesias to the mandated territory, for slaughter at the port of entry. The Government of Palestine is quite firm in its decision not to permit the importation of live cattle from any of the East African territories in which the usual African tropical diseases occur.

16. After consideration of the evidence, the Committee decided that in view of the nature of quarantine regulations against the East African tropical diseases, it was improbable that any extensive trade in live cattle could be developed either with Palestine or with any other country outside Africa.

17. It remained to consider what the prospects were of developing an export trade (a) in canned meat, and (b) in frozen and chilled meat to Great Britain, and more particularly to the London market.

CANNED MEAT.

18. Some reference has already been made to the difficulties that have been encountered in previous attempts to find a regular outlet for native stock generally. It was agreed that the proposal to erect a fertilizer factory at Eldolot did not hold out any promise of a real solution of these difficulties, largely because of the extremely low price that must be paid for cattle utilized in this particular manner. The Hall Agricultural Commission regarded compulsory culling of native cattle as essential if tribes such as the Wakamba were to be preserved, and recommended that a meat factory should be established at some central point on the railway. From the evidence, the Commission concluded that it was improbable that the meat factory could be a paying proposition, and that

most of the cattle would have to be converted into meat extract, fertilizer, and hides. (Paras. 125-127, Report of the Agricultural Commission, 1929.) Fortunately, or unfortunately, the necessary funds to erect the factory were not forthcoming, and the droughts of recent years have meanwhile done much to rectify the position, temporarily at any rate; but the need for a factory to absorb future surplus production in the native areas remains as great as ever it was, even if it is not of such immediate urgency.

19. On his return from Southern Rhodesia, the Secretary submitted a report (Appendix A), and informed the Committee that he was certain that there were in Kenya large numbers of cattle suitable for treatment at a canning factory such as Liebig's (Rhodesia) Ltd. He stated that one of the Directors and the General Manager of Liebig's (Rhodesia) Ltd. had appeared to be greatly interested in the account of conditions in Kenya that he had been able to give them during an interview at West Nicholson. Cattle treated at the West Nicholson factory average 700 lb. in live weight; allowing for the inclusion of a fair percentage of larger cattle from the northern areas, such as the Samburu, and from the western section of the Masai Reserve, it should be possible to accept a fair number of Akamba and Kitui cattle and still maintain this average weight. An indication of the numbers of native cattle that are available is given in Appendix B, "Note on Numbers of cattle Likely to be Available for a Meat Factory." An approximate estimate of numbers in those native areas from which supplies would be drawn is two millions, and the annual surplus for slaughter should be at least 10 per cent. The total cattle population of the Colony is probably in excess of 4½ millions, whereas the cattle population of Southern Rhodesia is 2½ millions only; and on the basis of these figures there can be little doubt that the Colony possesses a sufficiently large cattle population to support both a canning factory and a cold storage packing house.

20. The interest shown by Messrs. Brinton and Mackenzie in Kenya conditions culminated in their paying a visit to the Colony during the latter part of July, 1936. They made a tour of the stock-raising areas and examined with particular attention conditions in those native areas that would furnish the bulk of the supplies to the factory. In the reserves they had discussions with the Hon. Chief Native Commissioner, Provincial Commissioners and Administrative Officers; and finally they met the Committee for a general discussion of the problem.

21. Mr. Brinton explained the methods by which the Company carried on its business, and expressed the opinion that, provided they were forthcoming in the requisite numbers, the Kenya native cattle would be quite satisfactory for the purpose of the Company. He stated that, in the operation of a factory such as his Company might be prepared to establish, the Company would not wish to exercise any severe selection, but would be prepared to take a reasonable proportion of culled stock. He estimated that the Company would be prepared to pay Sh. 2/50 to Sh. 4 per 100 lb. live weight, according to size and condition; so that bullocks in good condition, weighing 750 lb., might be expected to realize Sh. 30 at the factory.

This example referred to the class of animal exported from the Masai Reserve, via Ngong, to the Nairobi Abattoir. Samburu cattle were larger and rather better in quality, and would command a higher price, from which the railage cost of Sh. 5 would have to be deducted. The Akamba cattle, on the other hand, appeared to be of slightly smaller average size, and at that time they were not in such good condition.

These were the impressions gained by Mr. Brinton during a brief tour of the areas. He realized that some difficulty was likely to be experienced in inducing the native to sell cattle in the required numbers; but he had gathered from discussions with the Hon. Chief Native Commissioner, the Provincial Commissioners concerned, and the Acting Deputy Director (Animal Industry) that the price range quoted above represented, in their opinion, a very fair value for native cattle. He had several times heard the opinion expressed that at these prices there should be no difficulty in obtaining the minimum of 30,000 head of cattle per annum. At the same time, Mr. Brinton felt that it would greatly assist his directors in reaching a decision as to the relative merits of building a factory in Kenya or building a second factory in Southern Rhodesia were they to receive an assurance that the Kenya Government believed that the requisite numbers of cattle were available for purchase, and that Government would do all in its power to ensure that the cattle were forthcoming. He had been informed that there were in existence rules for the culling of cattle, which might be applied in certain areas where a suitable market available; and that the Veterinary Department, in collaboration with the Administration, were engaged in laying down stock quotas for particular native grazing areas.

22. With regard to the general terms under which the factory would operate, Mr. Brinton would be grateful if Government would indicate whether it was prepared to enter into an agreement similar to that now obtaining between the Government of Southern Rhodesia and his Company under Act No. 14 of 1934. The only alteration required would be the substitution, in paragraph 3 of the Schedule, of 20,000 acres for 10,000 acres as a holding area. This alteration was necessitated by the greater number of cattle which it was proposed to treat, and the more protracted period for which it would be necessary to hold cattle at the factory. With regard to paragraph 8 of the Schedule, he understood that it was not the intention of Government to grant any subsidies to assist export of cattle, but the insertion of such a provision was necessary in order to safeguard the future interests of his Company.

23. He had been shown a factory site within the township at Athi River, which he considered suitable, and the tentative statement as to the terms upon which a 99 years' lease would be granted did not appear to raise any difficulties. Unfortunately, however, difficulty had arisen in the matter of obtaining an adequate water supply; even were the amount of water required for the factory available in the Athi River, it was unlikely that the Water Board would consent to this amount (100,000 gallons per day) being taken throughout the year. The only alternative appeared to be the construction of a large dam to collect surface water from several dry watercourses on a farm adjoining the township. Possibly Government might be able to assist the Company to obtain the necessary facilities for the erection of a dam on this farm. The dam would take from four to five months to construct; and the requirements of his Company would make it necessary that the work should be put in hand by the month of October, if it was desired to proceed with the scheme, since the dam would have to be completed before the onset of the long rains in 1937, if it were to make operation possible during that year.

24. With regard to the general economic bearing of the factory upon trade in the Colony, Mr. Brinton pointed out that the industrialization of cattle under their process would mean the expenditure of from Sh. 30 to Sh. 40 per animal treated at the factory.

25. He would welcome an early decision in the matter, since negotiations were then in progress for the erection of a

second factory in Southern Rhodesia; and his directors were anxious in any event to have the second factory, whether in Kenya or in Southern Rhodesia, in operation early in 1937.

26. After a very full consideration of the points raised in Mr. Brinton's discussion with the Committee, it was decided that, in view of the exceptional opportunity to solve an extremely difficult problem offered by Mr. Brinton's tentative proposals, the Committee should make strong representations to Government as to the course of action that might be taken. It is convenient to reproduce here the Committee's recommendations in substantially the form in which they were conveyed to Government by the Chairman.

RECOMMENDATIONS ON THE LIEBIG PROPOSALS.

27. In the first place, it should be pointed out that the type of factory which Messrs. Liebig's propose to erect is precisely what is needed to absorb surplus and culled native stock, and that the Company does not wish to take only cattle of better type. It is the disposal of culled stock that has always been considered to present the most difficult problem; and in its efforts to provide a solution this Government has already gone to the length of obtaining a grant from the Colonial Development Fund for the purpose of erecting a by-products factory, which would turn surplus native cattle into fertilizer at a very considerable loss. The Committee need hardly remind Government of the strong recommendations that were made in this connection by the Hall Commission of 1929, and of the urgency of the problem in such badly eroded areas as the Machakos District.

28. The representatives of the Company have visited the various pastoral areas and have estimated the prices that the Company would be prepared to pay for the various grades of native cattle, at to-day's values for their products. In the opinion of the Committee the prices quoted represent a very fair and reasonable value for native cattle; indeed, members with recent experience of cattle-buying in native reserves quote considerably lower values as representing the normal before the recent rise that is to be directly attributed to the war in Abyssinia. The position created by the proximity of this country to the war zone is regarded as purely a temporary one, and it is probable that, with the cessation of hostilities in the near future, prices will lapse to their normal levels.

29. The Committee is unanimous in expressing the opinion that the purchase of 30,000 head of cattle, at the

prices indicated, should offer no serious difficulty, provided that the goodwill of Government is lent to the project, and that the Administration and the Veterinary Department co-operate in facilitating purchase wherever possible. The Committee strongly recommends that Government should give the Company an assurance of its goodwill and interest in the project and that it should express its confidence that the scheme will not fail because of a shortfall in supplies of cattle. A reference might also be made to the possible application of culling rules in certain native reserves, and to the plans that have been drawn up for rotational grazing of pastures and the limitation of numbers in certain of the pastoral areas, e.g. Samburu. The areas from which it is at first proposed to draw supplies are: Masai, 720,000 head; Samburu, 119,000 head; Akamba and Kitui and other pastoral areas of the Rift Valley Province, 438,000 head. The census figures indicate that there are ample supplies within these three areas to keep the factory working at full capacity. In the Rift Valley Province native areas alone, the Committee is informed by the Deputy Director (Animal Industry) that there are at present 48,000 cattle surplus to the quotas already laid down. In addition to the areas mentioned, cattle might also be drawn from the Tanganyika Masai Reserve. With the opening of the Solai route there are no insurmountable obstacles to export from the northern pastoral areas.

30. With regard to the land required by the Company for the factory site and holding areas, the Committee wishes to point out that the total sum involved in respect of stand premia and annual rentals is trifling by comparison with the economic benefit to be derived from the operations of the factory. The Committee feels that Government should offer all this land on terms similar to those given by Southern Rhodesia in the agreement of 1934, i.e. at a peppercorn rental. The Company will require a 99 years' lease of the factory and water sites, and a renewable ten years' lease of the holding areas. With the assistance of the Acting Commissioner for Local Government, Lands and Settlement, two holding areas have been chosen—one a block of roughly 10,000 acres, comprising L.O. Nos. 2350, 2349, 3611, 3612, 3613, 2348, and a portion of 344 and 345, which would be used for cattle drawn from the Machakos and Kitui districts; and the other a small farm immediately adjacent to the factory site, L.O. No. 1219. It will be necessary to provide a further 10,000 acres as a holding area for susceptible cattle from the

Masai and the northern areas, and for this purpose Mr. Brinton's first choice is a triangular portion of the commonage, with its base running from Embakasi Station south-west to form an isosceles triangle whose sides are the Railway and the Athi River. Failing this, the Company would accept a grazing permit over an equivalent area of the Masai Reserve, with watering facilities on the Kitengela and Embakasi Rivers; but the commonage site is the more desirable.

31. With regard to the provision of water for the factory, it is understood that although the Water Board may agree to the taking of a certain quantity from the Athi, it is unlikely that the whole requirements of the factory can be obtained at all times; and it will accordingly be necessary to make provision for the storage of a reserve of at least three months' supply. The opinion has been expressed that the construction of a dam in the Athi River would be too expensive; but an alternative dam site is available on Farm L.O. 1504. The Company has already obtained a six months' option on the dam site from the owner of this farm.

32. The Committee desires to acknowledge the extremely valuable assistance that has been given by the General Manager of the Kenya and Uganda Railways and Harbours in connection with freight rates. The reduction offered on the rate on coal has been largely instrumental in making factory operation practicable. At the same time, it appreciates that the freight rate on cattle from Lake Solai to Athi River may have the effect, as Mr. Brinton suggests, of discouraging sales by natives in that area, and should this prove to be the case it would press for the application of the lowest economic rate on this traffic.

33. It is possible that Government may wish to consider Messrs. Liebig's suggestions in the light of any further proposals that may be made by the Imperial Cold Storage Co., Ltd., after their representatives have visited this Colony. But in view of the early date at which the Company desires to begin operations, any undue delay in replying to these proposals might prove fatal to our chances of success. It appears to the Committee that the negotiation of an agreement with any cold storage company is certain to offer much greater difficulty. In the first place, the Imperial Cold Storage Co. has obtained from the Government of Southern Rhodesia certain guarantees in respect of interest on capital; and secondly, a company engaged in the freezing and chilling of beef must confine its selection to animals in good condition.

It is true that the range of animals treated by the two types of factory would overlap at the upper end of Liebig's range and the lower end of the cold storage range, and to this extent the conclusion of an agreement with Messrs. Liebig's might prejudice the chances of success of any subsequent negotiations with the Cold Storage Company. But the two companies operate side by side in Southern Rhodesia, and if one can overcome the initial difficulty in inducing natives to sell in large numbers, there is no reason why eventually they should not do so in Kenya.

34. The market for the products of the Liebig factory is a closed one, limited to the subsidiaries of the parent company. It is, incidentally, the only market for the poorer classes of our native cattle. Since it is a market for manufactured articles, created and maintained by advertisement, it is likely to prove more stable than the market for frozen beef, which in recent years has been progressively displaced by the lower grades of chilled beef.

35. It is most fortunate that the Secretary's recent visit to Southern Rhodesia should have been made at a time when Messrs. Liebig's were considering an expansion of their African business, and the Committee unanimously recommends that Government should do all in its power to take full advantage of a situation that is not likely to recur in the near future.

36. Throughout the subsequent negotiations between Government and the Company, the Committee maintained the closest touch with the situation; and in view of certain fears that had been expressed as to the possible ill-effect on the local market should the Company at any time desire to sell fresh meat locally, an assurance was obtained from Mr. Brinton that the Company did not deal in fresh meat and had no intention of doing so in this Colony.

STOCK ROUTES TO THE FACTORY AND THE CONTROL OF DISEASE.

37. As soon as it became evident that the negotiations with Messrs. Liebig's were likely to end satisfactorily, the Committee returned to consider in greater detail the arrangements that would be needed to ensure the safe and convenient transit to the factory of native cattle from the selected areas. They realized there would be need for safe stock routes, possibly fenced in part; additional water supplies; dips; and probably additional veterinary staff to control the movements,

to perform any necessary inoculations, and generally to ensure that the movements were carried out in such a manner that neither the Company's cattle, nor those of natives or settlers in the areas through which the purchased cattle must pass, should be exposed to undue risk of infection by disease. It was decided that the sum of £23,594 voted by the Colonial Development Fund as a free grant for the erection of a fertilizer and by-products factory at Eldolat could not be more profitably employed than in facilitating and assisting the Liebig enterprise in the directions enumerated; and it was agreed to ask Government forthwith to secure the diversion of the money from its original purpose to the more useful project that now seemed certain to mature.

38. Accordingly the Committee's recommendations on this subject were conveyed by letter to Government in the following terms:—

“Now that the scheme to erect a meat factory at Eldolat is about to be discarded in favour of a more profitable enterprise, the Committee recommends that Government should take steps to secure a diversion of the sum of money voted by the Colonial Development Fund for the Eldolat project to the specific purpose of facilitating the operation of the alternative scheme.

“The Committee visualizes the need for considerable organization in the matter of stock routes, fencing and dipping, and possibly in the provision of temporary staff to facilitate the movement of cattle on the lines already recommended in connection with the Eldolat factory. At a later date the Acting Deputy Director (Animal Industry) will furnish a detailed account of the requirements of the industry in this connection.”

39. The Agreement with Messrs. Liebig's (Kenya) Ltd. was eventually signed by His Excellency the Governor on the 18th December, 1936.

CHILLED AND FROZEN MEAT.

40. Meanwhile the Committee, having settled to its satisfaction the problem of providing an outlet for the hitherto unmarketable general run of native cattle, turned to consideration of the allied problem: that of providing a remunerative market for the better types of beef-cattle, both native and European.

In examining this question the Committee had before them a memorandum (Appendix C) on factory operation, compiled by the Secretary, partly from data gathered during two visits to the United States, and partly from data derived by Mr. M. H. French from a series of comparative beef tests carried out on native and grade cattle at the Nairobi Abattoir in August, 1935. Mr. French has since published his findings in the *Empire Journal of Experimental Agriculture*, Vol. IV, p. 108, 1936. This investigation, which was most timely, was undertaken at the suggestion of the Chief Veterinary Research Officer, and the Committee is greatly indebted to the Director of Veterinary Services, Tanganyika Territory, who allowed Mr. French to carry out this work at Nairobi.

41. It will be observed that in the Memorandum on Factory Operation considerable emphasis is laid upon the importance of three factors: (a) the scale of production, (b) the regularity of supplies to the factory, and (c) the significant correlation between the price that it is possible to pay for the live animal and the price received for the final product, i.e. the beef.

(a) Scale of Production.

42. It is stated in the memorandum that a factory with an output of 100,000 beef-carasses per annum is an economically sound unit, but at the same time it is admitted that many factories in the United States and elsewhere are operating successfully on a smaller scale. Reference to the report of the Secretary's visit to Southern Rhodesia will show that in 1933, the first year in which chilled beef was exported, the Bulawayo Factory of the Rhodesian Export and Cold Storage Co., Ltd., slaughtered 32,000 cattle, operating on 140 days only; the stoppages were mainly due to outbreaks of foot-and-mouth disease, with consequent stoppage of export through Union ports. In 1934, for the same reason, only 152 days' work was done, and 36,000 cattle were exported. The factory has a capacity of from 70,000 to 75,000 head per annum, and in these two years substantial losses were incurred. In 1935 the factory operated at full capacity from 1st April to 15th October, and at half capacity from 15th October to the end of the year. During the months of January, February and March it was closed down completely; but in spite of these handicaps 57,000 animals were slaughtered, and the factory made a net profit of approximately £15,000.

Mr. Straith, General Manager of the Rhodesian Export and Cold Storage Co., was apparently satisfied that an output

of 50,000 head per annum would be an economic proposition in the early years of operation; and the Secretary stated that it was within his knowledge that factories were operating successfully in the United States on outputs of from 50,000 to 70,000 beef carcasses per annum.

43. The Committee is convinced that there need be no difficulty in arranging for a supply of 50,000 cattle suitable for chilling, freezing, or boning during the first year of the factory's operation, providing adequate notice is given to the agricultural industry of the intention to build the factory and that Government, through the agency of the Meat Control Board, whose appointment is recommended later in this report, takes the necessary measures to stimulate and assist production of beef-cattle of the required type.

(b) Regularity of Supply.

44. It is hardly necessary to emphasize the importance of securing regular supplies of cattle for the factory to enable it to operate continuously throughout the year. The Committee is informed that the overhead charges in the Bulawayo factory of the Rhodesian Export and Cold Storage Co., Ltd., amount to approximately £4,200 per month when the factory is closed, and it will be evident how easily serious financial loss can be sustained when a factory is forced to close down periodically through shortage of supplies. It will be equally evident that an export trade cannot be satisfactorily maintained unless regular shipments are made to the overseas market; this is particularly important in the case of chilled meat, which is a perishable product with a life not much in excess of thirty days. The wholesale meat business is largely a weekly trade, and one cannot expect to build up a trade in a particular brand of chilled meat unless supplies of uniform quality are available each week to the home buyer. Frozen beef or frozen boneless beef can of course be stored for longer periods, but even with frozen and boneless beef it is necessary to have some regularly available source of supply, since sales are frequently made by forward contract.

45. A serious shortfall in supplies of cattle may be occasioned either by outbreaks of certain contagious cattle diseases or by a dearth of cattle in suitable condition for slaughter. The most important of the contagious diseases are rinderpest and foot-and-mouth disease. The Committee is assured that rinderpest need never be responsible for stoppage of export, provided certain simple precautions are taken, and

all animals are vaccinated before they are permitted to leave the farms in settled areas or the collecting centres in the native reserves. The control of foot-and-mouth disease is not such an easy matter. It will depend entirely on the closeness with which supervision can be exercised in the districts from which cattle are drawn for the factory; and it may even be necessary, in the event of serious outbreaks occurring, to close down particular districts and to infect artificially all animals in the area. In respect of the incidence of this disease, this country is no worse off than the South American exporting states, and certainly better off than Southern Rhodesia, whose export must be made through Union ports.

46. Scarcity of cattle in suitable condition for slaughter is a factor less likely to affect supplies of chiller cattle than those of freezers and boners, since grass-fed chillers are likely to be finished under better conditions than freezers or boners, and grazing conditions will not greatly influence the condition of chillers that are finished by stall-feeding or supplementary feeding. With regard to grass-fed animals generally, this Colony is singularly fortunate in its climatic conditions. Normally there are two growing seasons, and the dry-weather intervals are comparatively short. There is also a considerable variation between different districts in the highlands in respect of the season of the year at which rains occur; and with the exception of January, February and March there is no time at which one normally expects dry conditions to be universal throughout the Colony. It is only necessary to compare our climatic conditions with those of the greater part of South Africa and Southern Rhodesia to realize how favourably Kenya is situated in this respect. The prolonged dry winter in these areas operates most unfavourably against the maintenance of good condition in grazing cattle. Reference to a recent publication on the subject ("The Supplementary Feeding of Mineral and Protein Supplements," C. A. Murray and Coll., Bull. 989, 1936, reprinted from the *Rhodesian Agricultural Journal*), shows that it is not uncommon for steers to lose, during the winter months, the whole weight gained during the summer of that year; e.g. two-year old steers of beef breeds, weighing from 550 lb. to 560 lb. at the low winter point, reached 780 to 800 lb. during the following summer, only to fall to 560 to 565 lb. in the following winter. The same animals reached weights of from 840 to 890 lb. in the next summer, but again fell to 675 to 700 lb. during the following winter, by which time they were more than 3½ years old.

47. We have tabulated below the dead weights of monthly consignments of cattle from two estates during the year 1936; in the one case the animals are low grades of dairy type with a preponderance of Shorthorn blood, and in the other the cattle are of the Boran breed. The grade cattle were from three to four years old, and it is interesting to record the manager's statement that in the February consignment, which averaged 581 lb., 23 steers were included, none of which was more than 36 months old; these 23 animals averaged 549 lb. dead weight. The Boran cattle were from 5 to 6 years old. All the animals are entirely grass-fed, and must, during the greater part of their lives, have been exposed to conditions of unusual drought; that is, judged by Kenya standards. It will be observed that there is no very marked seasonal variation in weights.

**SLAUGHTER STOCK SUPPLIED TO THE STOCKBREEDERS
CO-OPERATIVE SOCIETY**

MONTH	Grade Cattle from Lady Eleanor Cole's Estate			Boran Cattle from Mr. G de P. Colville's Estate		
	No. of Animals	Dead Weight	Average Per Animal	No. of Animals	Dead Weight	Average Per Animal
		lb.	lb.		lb.	lb.
January ..	Nil	—	—	63	34,859	553.32
February ..	20	11,620	581.00	30	17,328	577.60
March ..	30	15,771	525.70	65	37,572	578.03
April ..	15	8,494	566.26	48	27,855	580.31
May ..	14	8,584	613.14	102	55,550	544.61
June ..	25	14,090	563.60	104	57,771	555.50
July ..	25	14,033	561.32	40	23,006	575.15
August ..	45	25,086	557.47	33	17,948	543.82
September ..	9	5,147	571.90	82	47,390	577.93
October ..	29	14,998	517.17	83	46,000	554.22
November..	Nil	—	—	101	52,341	518.23
Average for Each Animal Throughout the Year ..			555.77	—	—	556.80

*(c) The Significant Correlation Between Price of Cattle
and Value of Beef.*

48. It is pointed out in the memorandum that the packing industry is one of a group of industries, all of which operate on a very narrow margin between the initial cost of raw materials and the final value of the finished products; and, in fact, this margin in the case of the packing industry is lower than in any other member of the group; it amounts

only to 10 per cent of the original cost of materials. Fluctuations in operating costs do not therefore greatly affect the price of the final product, which is controlled by the price paid in the first instance for cattle. If the figures relating to the value of the by-products from slaughtering of cattle are compared with the cost of slaughtering, based upon American returns, it will be evident that the net sum realized by the sale of by-products, on the average, equals or exceeds the cost of processing the animal. It is only when dealing with the lowest classes, such as cutter cows and cutter bulls, that the cost of manufacture exceeds the value of the by-products, and then only by the narrowest margin. The actual figures given for American cattle are based on the weekly reports of the Institute of American Packers for the week ending 30th August, 1934, and the week ending 26th March, 1936; during the intervening seventeen months by-products values moved in favour of the meat packers.

49. Calculations of the value of by-products of Kenya cattle are based upon world prices prevailing in 1934 and 1935. In a communication to the Secretary of the Committee, dated 13th January, 1936, Major Mundy, Secretary to the Department of Lands and Agriculture, Southern Rhodesia, stated that the value of by-products from Rhodesian cattle had fluctuated greatly, and that during recent months the total value of offals from a chiller had been from Sh. 25 to Sh. 30 per head. The Committee consider that the assumption that by-product values will balance out slaughtering costs is a conservative one. Such an assumption means that it will be possible to pay for cattle at the factory a price equal to the sum realized by the sale of the carcass less actual transport and marketing charges. Reference to the graph accompanying the memorandum shows that during the eighteen months prior to July, 1934, the average price realized by Rhodesian chilled hindquarters was a little over 4d. per lb., and that of forequarters roughly 2d. per lb. The gross yield from a 600 lb. carcass would therefore be roughly £7-11-6. The total expense on such a carcass, including sea freight at the South African rate, landing, cartage, selling commission and insurance, would amount to £2-7-3½, leaving a net return to the producer of £5-4-2½. This sum represents about Sh. 17/4 per 100 lb. dead weight at the factory. For convenience of reference, the freight rates on frozen beef, frozen offal, and chilled beef from Australia, New Zealand, and South Africa, landing, cartage charges, selling commission, etc., are tabulated in

Appendix D. It is assumed it would be possible to obtain approximately the same rate from Mombasa as that in operation to-day from Capetown to London.

50. The Committee consider that the figure quoted in the preceding paragraph is not an uneconomic return to the producer for a grass-fed or pen-finished animal of chiller class; indeed, representative stock-breeders have stated that Sh. 15 per 100 lb. dead weight would be a remunerative price for grass-fed animals, provided the farmer were assured of a market for his entire production. It is probable that a better price will be secured for young or baby beef, fed to early maturity and prime condition, and in the opinion of the Committee none of the large beef-producing countries has a cheaper supply of supplementary foodstuffs available.

51. The Committee notes with satisfaction that it is the intention of the Imperial Government to revise the existing regulations governing the importation of meat and meat products into Great Britain; and that in all probability new conditions will come into force in 1937 which will accord a preference to Empire meat of one-halfpenny a lb. over foreign meat. It is anticipated that the imposition of a duty on foreign meat will result in a general hardening of prices for imported meat on the home market.

QUALITY OF KENYA CATTLE.

52. The Committee considered in greater detail the question of Kenya's ability to supply cattle of the right quality for export as chilled beef. In Mr. French's beef tests, ordinary slaughter cattle from European farms killed at Nairobi in the month of August averaged 558.9 lb. carcass weight, with a yield of carcass equal to 57.2 per cent of the live weight. The percentage yield is good, and may itself be taken as an indication of fair quality; and as Mr. French rightly remarks, "The Kenya grade stock therefore kills very well, and were the animals beef grades instead of dairy grades there is no doubt that they would be very suitable for export as chilled beef."

He is of opinion that, on the whole, the carcasses are a little too small for the frozen and chilled beef markets; but fashions change, and the demand on the London market is no longer for a 600 lb. carcass, but for one of about 550 lb.

53. The Committee accepts the view, stated in the memorandum, that in the grade cattle of this country we have a foundation stock from which animals suitable for the English

chilled beef market could readily be produced by judicious crossing to a beef breed such as the Angus. Confirmation of the approximation of average weights of European grade stock throughout the year to Mr. French's August figures is afforded by the table on page 20. Two points are of considerable interest in this table: the first, that pure native cattle of the Boran breed can, under European management, be brought to the same weight as grades at from 5 to 6 years of age, on grazing alone, which speaks well for the quality of this native breed; and the second, that dairy grades can reach a dead weight of 549 lb. (*vide* Return for February) at 36 months or less, again entirely on grass. These weights, and in particular the weights of the February batch of three-year old animals, compare very favourably with the weights of grass-fed animals given in the Rhodesian Bulletin No. 989 to which reference is made on page 19 of this report. At from 3 years and 3 months to 3 years and 5 months, the animals in this experiment, which were well-bred Lincoln Red Shorthorns, reached peak weights of from 850 to 890 lb. Taking the average Kenya carcass yield from grades as 57.2 per cent, the three-year old Kenya grass-fed animals must have weighed 960 lb. (Cole's February consignment), whereas in the Rhodesian experiment the grass-fed animals did not attain this weight until they were 4 years and 3 months old. In the Rhodesian experiment grazing was unlimited in quantity, but of extremely poor quality in the winter; it was of the type known as sand veld. The Kenya animals with which the comparison is made came from the Rift Valley, off good grazing of Naivasha Star grass type.

54. At this point it is desirable to refer to sources of information that only became available later in the inquiry. The Secretary of the Committee concludes the report on his visit to Southern Rhodesia with the statement: "No one who has seen the two colonies could fail to be impressed by the superior conditions obtaining in Kenya"; and he expresses the opinion that we should have no difficulty in procuring from the native reserves supplies of freezer and boner cattle up to export standard. As a result of contacts established during the Secretary's visit, and of the interest displayed by the Rhodesian Export and Cold Storage Co., Government formally invited the Company to send a representative to examine conditions in Kenya. Mr. G. E. L. Straith, General Manager of the Rhodesian Export and Cold Storage Co., visited Kenya in September, 1936, making a tour of representative stock-breeding districts in the settled areas and native reserves, and

afterwards meeting the Committee on the 24th September, 1936. The Committee feels that it cannot do better than to reproduce in full the part of the minutes of this meeting that refers to the discussion with Mr. Straith.

55. Mr. Straith stated that he was greatly impressed with the potentialities of this country as a stock country. Seasonal conditions, the nature of the grazing, and our ability to grow crops were, in his opinion, far more favourable to stock-raising than those of Southern Rhodesia, and, in fact, immeasurably superior to conditions in any other African territory that he had visited. The cattle, both native and grade, were better than the foundation stock in Rhodesia; and although the cattle were of dairy type, there were many that were fit for export as chilled beef to-day. He had seen cattle, three years old, taken off the grass, which were up to export standard as chilled beef; whereas it was quite impossible to produce animals of this weight and in this condition without heavy additional feeding in Southern Rhodesia. Of the native cattle that he had seen, those of the Samburu represented a very high standard indeed; and many of them were fit for export as chilled beef to industrial centres such as Bristol, Birmingham and Liverpool. In his view, it should be the aim of this country to enter the highest class of meat export trade, that is, the chilled beef trade for the London market. He saw no reason why this country should not compete, and compete successfully, with the Argentine. The great advantage of the chilled beef market was that there was a steady demand, and prices were not unremunerative under the conditions that obtained in Kenya. In the absence of any form of subsidy, it should be possible to pay from Sh. 14 to Sh. 15 per 100 lb. dead weight for chiller cattle. It was possible that some form of topping-off would be found to be profitable when chillers were being produced.

There were two markets for chilled beef, each taking a different grade: (i) the London market, and (ii) the market of the industrial centres. The requirements of the latter were not so high as those of the London market. In addition, one could export frozen beef, and for this there was a limited demand at the equivalent of a factory price of about Sh. 10 to Sh. 12 per 100 lb. dead weight. For boneless beef, which represented a lower category, there was a steady demand, chiefly from Scotland; and the prices that could be paid ranged from Sh. 8 to Sh. 9.

56. With regard to the location of the factory, it was not yet certain whether it would be preferable to have a factory and store at the Coast, or to have the factory inland and a storage works at the Coast. This question would eventually be decided, mainly, by reference to comparative freight charges for the different items. The capital required would probably be in the region of £200,000; and, of this, roughly half would be expended on plant, machinery and buildings. In the case of an inland factory, there might be a difficulty with regard to the provision of sufficient mechanically operated or ice-bunkered refrigerator trucks for the transport of chilled beef to the Coast. Chilled beef was a perishable product, with a life not much in excess of 30 days. It was therefore necessary to slaughter and dress cattle, destined for export as chilled beef, in a comparatively short period just before the arrival of the ship that was to take them to England.

57. In the chilled beef trade it was essential that shipments should be regular and that supplies should be constantly available on the London market. At present, the period occupied by the voyage from Mombasa was about twenty-seven or twenty-eight days, and there was not a regular service. It should be possible to arrange for a regular fortnightly shipment from Mombasa, and for a speeding-up during the voyage which would reduce the time taken to twenty to twenty-one days. Under such conditions, meat could be carried over from one week to the next; that is, half the consignment could be sold the week of arrival, and the other half retained in cold store to be sold during the following week, pending the arrival of the next fortnightly supply. It would also be necessary, of course, to equip the vessels carrying out these services with adequate facilities for the carrying of chilled beef. The product required more careful handling than frozen or boneless meat.

58. In addition to the export of chilled beef, this country ought to be able to produce at least 10,000 porkers fit for freezing and export. As a result of a number of experimental shipments they had made from Southern Rhodesia, he stated that a price of 6d. might be expected on the London market, and that costs of preparation, transporting, selling, etc., would amount to 2d. per lb., leaving a net return to the producer of about 4d. (or 33 cents) per lb. Fat lambs also could be produced in comparatively large numbers under the conditions obtaining in Kenya.

59. His Company would not be prepared to shoulder the whole burden of organizing an export trade; because, during the first few years, much depended upon the goodwill and assistance of Government. He doubted if the Company would be prepared to enter into an arrangement similar to that made with the Government of Southern Rhodesia, but imagined that, were Government prepared to interest themselves substantially by taking a large holding in the new company, this would make a strong appeal to the directors.

60. In reply to a question, Mr. Straith stated that it was essential that any company operating a cold storage export should be permitted to release a certain quantity of rejected chiller carcasses on the local market. This was the most profitable method of disposing of good carcasses that failed to reach the grade required by export.

61. In his opinion, an effort should be made to negotiate an agreement between Government and the Imperial Cold Storage Co., Ltd., at the earliest possible date. A decision might then be taken to open a factory and begin operations in, say, from 2½ to 3 years' time. The interim should be used to build up a population of cattle suitable for export, to multiply the numbers of pigs in the country, and in general to make such preparation as would ensure that the factory should work to capacity almost from the start. This Government should undertake, as soon as possible, a series of trial shipments of chilled beef, frozen porkers and frozen lambs, with a view to ascertaining how present supplies are likely to be received on the London market.

62. During his stay in the Colony, Mr. Straith not only visited many of the beef-producing areas, but on several occasions inspected carcasses in the Nairobi Abattoir. He was also interested in our methods of hide preparation, particularly in view of the high reputation that Kenya shade-dried hides enjoy with overseas buyers. During a visit with the Secretary to Mombasa, a factory site was tentatively chosen in the port area; and the problem of providing the accelerated and more frequent steamship services required by a chilled beef export was discussed with representatives of the steamship lines.

63. On his return, Mr. Straith was able to interview the General Manager of the Railways on the subject of freight rates and railage facilities. It was at once apparent that, were the factory to be located up-country, a very serious difficulty would arise in connection with the provision of the necessary

refrigerated trucks. Chilled meat can usually be carried in ice-bunkered insulated trucks, provided they are thermally efficient; but frozen beef, pork and lamb require the lower temperatures only obtainable by mechanical refrigeration. Since chilled beef is so perishable, it would eventually be necessary to transport the whole of each fortnightly shipment, say 8,000 quarters, to the coast within two or three days; and since a bogie truck can take approximately 160 quarters only, 50 refrigerated truck-loads would have to be moved for each shipment on the basis of a fortnightly shipment of 2,000 carcasses. A comparison of the freight rates on cattle and on the various by-products that would be railed—in the one case to the port for export, and in the other from the port to the highlands for local consumption—leaves no doubt that the only possible location for the factory is at the coast. It will be necessary to provide a suitable resting ground for cattle within a day's easy march of the port, where the cattle can be held for two or three days to recover from the effects of the rail journey.

64. It will be evident that, in so far as concerns the quality of our foundation stock and the suitability of Kenya conditions, the expert opinion of Mr. Straith amply confirms the tentative conclusions already reached by the Committee. Incidentally, Mr. G. Brinton and Mr. Mackenzie, of Messrs. Liebig's (Rhodesia) Ltd., who toured the country in an examination of the native cattle industry, had already expressed similar opinions as to the quality of Kenya cattle in the settled areas and in the better pastoral reserves.

65. The Committee had two other sources of information on this subject: a report by the Secretary on an experimental shipment of frozen beef to Palestine (Appendix F), and the records of weights of native cattle shipped to Italian Somaliland in 1936. Opinions on the sample consignment shipped to Palestine, which consisted entirely of native cattle, were unanimously favourable, and indications were given that a market might be found for both chilled and frozen beef in Egypt, Palestine, and the Near East.

With regard to the second point, figures supplied by the Stockbreeders Co-operative Society, Ltd., Nairobi, show that three consignments of Samburu cattle shipped from Mombasa averaged 845 lb., 796 lb., and 756 lb. respectively, when weighed at the port. The loss of weight in native cattle during a railway journey of nearly three days is high; the actual loss in dead weight in certain tests was 12 per cent as between

cattle walked to Nairobi and cattle railed to Mombasa, and it is probable that the loss in live weight considerably exceeds this percentage. This puts the Samburu bullocks, some of which were actually seen by Mr. Straith, at a good 900 lb. average weight when in rested condition.

66. The Chief Veterinary Research Officer has discussed with the Committee his tentative plans for the development of the better pastoral areas, beginning with the Masai Reserve, of which the western section is the more promising. He has imported a number of pure-bred bulls of beef breeds, which he intends to use in a crossing experiment with native cows. The progeny of these crosses will be maintained with control animals of native breed under purely native conditions, and growth and weight records will be kept; eventually the cross-bred and native animals will be brought to a beef test. In this manner it is hoped to determine at what nutritional level under the varying conditions of Kenya Colony use can be made of half-bred or three-quarter-bred animals of beef breeds, in the certain knowledge that the advantages offered by such animals in the way of quality of carcass, early maturity, and general rapidity of development will not be thrown away. He shares with Mr. Brinton and Mr. Straith the opinion that the western section of the Masai Reserve is excellent ranching country, and that under a suitable programme of development, which will include the provision of additional water supplies and the conservation of fodder for dry periods, this area is capable of producing very large numbers of cattle of chiller quality, which at the age of from 2 to 3 years should be bought for finishing by feeders in the more fertile areas. It is necessary in the first place to decide by experiment what is the most suitable breed for the purpose, and how far grading up should be carried. It is proposed to carry out the actual experiments with the aid of the artificial insemination technique developed at the Experiment Station, Naivasha, and to employ this method later in multiplying grade stock on a commercial scale.

The Committee strongly supports this project to develop an area which has hitherto been grossly neglected because of a mistaken impression that economically the pastoral reserves and their stock are worthless to the Colony; and it recommends that Government should give every facility for the carrying out of the initial experimental work, with a view to practical application of the plan on a large scale, should the proposals of the Committee with reference to export of chilled beef be accepted.

Having examined the evidence at its disposal, the Committee unanimously decided that its conclusions should be conveyed to Government by the Chairman without any further delay. The recommendations, which actually formed the basis for the opening of negotiations between Government and the Imperial Cold Storage Company, were as follows:—

(1) The Committee considers that the provision of a meat export is essential to the prosperity of the agricultural industry of this Colony, and that it will lead to the development of a more balanced system of farming, affording a greater measure of security both to the individual and to the community as a whole.

(2) The Committee is convinced that there are very real possibilities for the immediate organization of an export trade in cold-stored meat and meat products. After hearing the evidence of Messrs. Brinton and Mackenzie of Liebig's Limited, and Mr. Straith of the Imperial Cold Storage Company, the Committee ventures to recommend to Government that every effort should be made to reach, within the next two or three months, a firm agreement with the Imperial Cold Storage Company under which operations can be begun in about 2½ years' time. The Committee points out that a certain time-lag between the conclusion of the agreement and the commencement of operations is inevitable. Although there are to-day in the country numbers of cattle suitable for export as chilled beef, it will be necessary to stimulate the production of this class of animal, both by breeding and by attention to feeding, since it is on the export of chilled beef rather than on that of frozen beef that the stability of the industry must rest.

(3) The Committee recommends that in the interim an attempt should be made to negotiate with the Conference Steamship Lines an agreement to provide suitable transport to London for chilled beef. It remarks that the Union-Castle Company are considering the replacement of certain ships on the eastern run, and the British India Line have also under consideration a scheme for rebuilding or refitting the "M" boats on the eastern run. A director of Messrs. Gray, Dawes and Company, who manage the British India Line, recently visited the Colony and discussed proposals for the future with the Secretary of the Committee. The Committee learns also that the Chairman of the Union-Castle Line will visit Kenya in December, 1936.

(4) The Committee points out that before encouragement can be given to farmers to produce cattle of the desired type in large numbers, and equally before any inducement can be offered to shipping companies to provide the necessary refrigeration facilities, a definite agreement must be reached as to the date upon which a factory will commence operations and the conditions under which it will operate.

(5) The Committee wishes to impress upon Government its view that the possibilities of development are immediate. There are already numbers of cattle in the settled areas of first-grade chiller quality, even though they are largely derived from dairy stock. The native reserves can provide quantities of cattle suitable for freezing and/or boning, and many of the cattle that are now being exported from Samburu Reserve to Italian Somaliland are of a quality suitable for chilling and exporting to industrial centres such as Bristol, Birmingham, Liverpool and Manchester.

(6) The Committee gathers from its discussions with Mr. Straith that his company would prefer that Government should take a substantial interest in any company that might be formed to operate in Kenya. The capital required is estimated at about £200,000. This agrees with the estimates made by the Secretary on the basis of his American experience.

Apparently the Company is not anxious to enter into another agreement of the kind made with the Government of Southern Rhodesia, that is, under a guarantee of interest of 10 per cent, with a maximum contribution by Government of £15,000 per annum. It would prefer an arrangement under which Government would be directly interested in the new venture as a shareholder.

The Committee feels that there are advantages to be obtained from actual participation by Government in the holding of the Company. It seems probable that an offer from Government to share in putting up the necessary capital on a £ for £ basis, with a maximum of £100,000, would be acceptable to the Imperial Cold Storage Company; and, in view of the cheap rate at which money can now be borrowed, the Committee strongly recommends that Government should make an offer of this kind in preference to any guarantee of interest.

67. Later in the year the Chairman and Secretary were present at an interview that took place between Mr. Robertson

Gibb, the Chairman of the Union-Castle Steamship Line, and His Excellency the Acting Governor. The whole problem of providing the necessary refrigerated transport for the export of chilled beef, and the need for acceleration of steamship services was discussed; Government's interest in the project was explained to Mr. Robertson Gibb, who in turn assured His Excellency that his company was greatly interested in the project, and that they would give the scheme every possible support. None of the difficulties was likely to prove insuperable, and in his view it was fortunate that adequate notice would be given to the companies of Government's intentions in this matter, before the actual facilities would be required. He proposed to communicate with the Chairman of the Conference Lines on the subject at an early date in 1937.

68. On the arguments advanced, the Committee finds it impossible to escape the conclusion that, not only does the position of the industry in Kenya warrant the making of a serious attempt to establish an export trade in chilled and frozen beef on a large scale, but that it demands that such an effort should be made with the least possible delay.

This conclusion answers the question asked in our third term of reference in respect of European-bred cattle and the better types of native cattle, such as the Samburu and western Masai cattle.

THE PIG INDUSTRY.

69. At one of its earlier meetings the Committee discussed in general terms the probable needs of the pig industry. For some years past pig production has been more or less stationary, owing to the inability of the local domestic market to absorb any greater number of pigs, either in the form of pork or bacon.

70. It is a generally accepted principle that pig production should be regarded as a complementary activity to intensive dairying; indeed, it has been authoritatively stated in Australia that the feeding of pigs should bring in a net return to the dairyman equal to that obtained from a 20 per cent increase in the butterfat yield of his herd.

During the period 1930-35 gradings of butter in New Zealand rose from 95,343 tons to 142,526 tons, and during the same period exports of frozen pork to the United Kingdom rose from 137,000 cwt. to 490,000 cwt.; an indication of the extent to which increased production of butterfat is usually followed by increased pig production. The ratio of pigs to

dairy cows in New Zealand and Australia in 1926-27 was 4 pigs to every 10 cows; while that of Denmark in the same year was 24.5 pigs to 10 cows (12th Report of the Imperial Economic Committee, 1929); and the report observes that the Commonwealth and New Zealand have not as yet taken full advantage of their dairying industries for the development of pig-raising. The respective numbers of cows and pigs in the possession of Europeans in Kenya in 1922 were 50,310 and 16,121, a ratio of 3.2 pigs to 10 cows; in 1934 the figures were 80,002 and 14,973 respectively, a ratio of 1.87 pigs to 10 cows.

71. The following table, compiled from the Agricultural Census of the Colony, will indicate the extent to which numbers of pigs have fluctuated during the 12 years covered by the table, in contrast with the steady increase in numbers of cows:—

YEAR	Cows and Heifers Over Three Years	Total Pigs
1922	50,310	16,121
1925	56,827	8,564
1926	55,384	9,125
1927	56,809	12,957
1928	58,134	18,152
1929	60,850	17,746
1930	67,511	17,370
1931	71,452	15,230
1932	75,342	13,760
1933	80,540	14,631
1934	80,002	14,973

The variation in numbers of pigs is to be attributed entirely to "in and out" production, brought about by rise and fall in prices. The so-called "pig-cycle" is a well-recognized phenomenon in the industry all over the world. It is a cycle in which numbers, with a short lag, follow prices, which, in importing countries or countries with no surplus production, in turn reflect fluctuations in the value of foodstuffs used in pig-raising. In Kenya, no doubt, the main cause of the fluctuations, first in the price of pigs and then in numbers, has been the inability to dispose of any production that is surplus to the requirements of the domestic market.

72. During the last seven years the dairy industry of the Colony has made phenomenal progress, which has been based entirely on the development of an export trade in butter; exports have risen from 6,000 cwt. in 1930 to 24,900 cwt. in

1936, and Kenya butter is now firmly established on the London market. It is impossible to exaggerate the significance to Kenya agriculture of this achievement, which stands entirely to the credit of the Kenya Co-operative Creameries, for it holds out a promise of success or at least security to increasing numbers of settlers who are turning from planting to dairying and mixed farming as a livelihood. The increase in the production of butterfat in all probability infers an even greater increase in the surplus of skim-milk available for pig-feeding, since during the seven-year period the average productivity of the dairy cows in the Colony has unquestionably been raised; and the amount of this surplus per cow will continue to rise as the cattle employed in intensive dairying gradually reach their maximum productivity. Taking into consideration the factor dealt with in the next paragraph—maize production—the Committee sees no reason why the pig-cow ratio in Kenya should not in the near future greatly exceed that of Australia and New Zealand, and, in fact, approach that of Denmark; provided always that it is possible to find a satisfactory and remunerative market for the excess production of pig meat.

73. In considering the potentialities of Kenya for large-scale pig production, reference must also be made to the maize production of the Colony. It is estimated that in 1937 the exports of maize from the Colony will be from 54,000 to 64,000 tons. In this connection it is significant that between 30 and 40 per cent of all the maize grown in the United States is marketed in the form of pigs. It is in the maize-growing districts of Kenya that the tendency to change over to genuine mixed farming methods is most marked, and it is to these areas that we must look for most of the fattening of prime chiller cattle and the feeding of porkers or baconers for export.

74. The Committee is greatly indebted to one of its members, Mr. F. J. Bicknell, for the preparation of a memorandum on the problems associated with the export of pigs from this Colony (Appendix E). Not only did Mr. Bicknell and Colonel Tucker place the experience of the Uplands Bacon Factory at the disposal of the Committee, but they devoted considerable time to the formulation of plans for export of porkers, tentatively basing such proposals upon use of the existing killing and dressing facilities at the Uplands Factory, which would be enlarged and provided with additional cold storage as the needs of the export industry demanded such expansion.

It will be observed that the essence of the plan is the pooling of returns from home and overseas sales, and that the returns to the producer from the pool decrease proportionately with expansion of the export quota.

75. Mr. Bicknell's memorandum was summarized in a circular which was addressed, together with a questionnaire (reproduced below), to about 200 pig producers; 93 replies were received.

*Copy of Circular and Questionnaire Addressed to
Pig Producers.*

Ref. No. A.3/34A./1433.

Veterinary Research Laboratory,
Kabete,
12th May, 1936.

Sir,

The Meat and Live Stock Inquiry Committee has under consideration certain proposals for the rationalization of the pig industry in this Colony. At a recent meeting these proposals were crystallized into a definite scheme, depending upon the application of the pool system to all sales of pork and bacon for domestic consumption or export.

2. Briefly, the weakness of the present situation of the industry is that while the domestic market is already saturated and the export market in neighbouring territories incapable of any great or rapid expansion, it is impossible for any commercial concern to undertake the financial burden of attempting to establish an export trade with the home market. With the increasing development of the dairy industry in Kenya it is desirable that all possible steps should be taken to ensure a parallel development of the pig industry, which may be regarded as an essential complement to dairying on intensive lines.

3. The scheme upon which you are invited to comment has three main features: (a) the pooling of returns from domestic and export sales of pork and/or bacon, (b) the vesting of control of the industry in a Pig Control Board, (c) the concentration of all slaughtering, freezing, curing, etc., of pigs for export as frozen pork or bacon at one factory, which would be operated as a co-operative concern on behalf of the industry. It is proposed that export should begin on a comparatively small scale—about 3,000 porkers per annum for the first year—in order to give the industry time to adjust

itself to the new requirements; and that numbers should gradually be raised until an annual export of 10,000 frozen porkers is reached. It would be necessary to provide freezing plant to handle 250 export porkers per month, and the plant should be capable of expansion to the point of dealing with at least 10,000 frozen porkers per annum. Once a business of these dimensions has been established and the inevitable difficulties of the pioneering stage overcome, it is submitted that no difficulty should be experienced in securing capital for rapidly increasing production thence onwards.

4. With reference to (a) above, the domestic consumption is estimated at 7,000 baconers of 150 lb. each and 3,000 porkers of 75 lb. per annum, and, under control, the net return derived from local sales would equal 40 cents per lb. at present retail prices. Under the present system the average net return to the producer is estimated to be 36 cents.

5. It is calculated that the commencing cost per lb. of exporting 3,000 porkers would amount to 27.3 cents, made up as follows:—

Factory Costs	6.7	cents
Packing Material	1.3	"
Freight to Factory	2.9	
Freight to Kilindini	2.7	
	5.6	"
Coast Charges	1.4	"
Sea Freight	8.0	"
Insurance, London Charges, Selling Commission	4.3	"
TOTAL	27.3	"

A selling price in London of 5d. per lb. would yield a net return of 14.3 cents; 5½d., one of 18.45 cents; and 6d., 22.7 cents.

6. On a pool basis, including the local trade and an export of from 3,000 to 10,000 porkers yielding 20 cents per lb., the net pool return to the producer would be on the following scale: When 2,500 porkers were exported, 37 cents; 5,000 porkers exported, return 35 cents; 7,500 porkers, 33 cents; and 10,000, 31 cents. In addition, there should be savings on the costs of preparation and transport—once the trade is established.

7. The Control Board referred to under (b) would organize the industry on rational lines. The licensing of producers and factories, the allocation of production quotas, prescription of the types of pigs that should be raised, the grading of pigs

and the fixation of a minimum price would constitute the main functions of the Board. It would, of course, be upon advice tendered by the Board that Government would frame legislation necessary for the control of the industry. With regard to (c) it has been suggested that the industry might, as a co-operative society, acquire the present business of the Uplands Bacon Factory by purchase over an extended period whereby no new capital would be needed. It is believed that sufficient private capital would be forthcoming to finance the concern by the issue of debentures to run until they are redeemed by profits.

8. The only alternatives to the scheme appear to be either to create a new factory and organize on co-operative lines, or to await the eventual erection of a large meat exporting works financed by Government or by one of the large meat-packers.

9. I am to ask if you will be good enough to answer the questions in the appended questionnaire, and to add thereto any brief remarks that you may think relevant to the subject under examination. Your replies will, of course, be regarded as confidential.

I have the honour to be,

Sir,

Your obedient servant,

R. DAUBNEY, *Secretary*,

Meat and Live Stock Inquiry Committee.

Questionnaire.

- (1) Have you experienced any difficulty in selling baconers or porkers of good quality?
- (2) What do you consider to be your average cost of production per lb. for (a) baconers of 150 lb., and (b) porkers of 75 lb. dead weight? What is your annual average production of (a) and (b), and what average price do you receive for each type?
- (3) Have you large supplies of skim-milk available for feeding?
- (4) Do you purchase cereal or other foodstuffs for pig-feeding?
- (5) Please state the composition of your usual feeding ration and the approximate prices paid for each foodstuff.

(6) Do you consider a preliminary expansion of the industry by 30 to 100 per cent through the agency of an export trade, which if successful should lead to a very much larger out-turn, to represent sound policy under the price conditions set out in the attached memorandum?

(7) Are you in favour of the introduction of a rationalization scheme for the industry on the lines set out in the attached memorandum?

(8) Have you any criticisms or alternative suggestions to offer?

Questions (6) and (7) of the questionnaire were framed with the object of ascertaining the views of producers on (a) expansion by means of an export trade at the prices indicated in Mr. Bicknell's memorandum, and (b) rational control of the industry, with pooling of returns from domestic and export sales. Ninety-two producers answered questions (6) and (7) in the affirmative, the great majority without any qualification. Two negatives were received; one from a producer who answered "No" to both questions, and stated that the local price of 40 cents per lb. was too low, and that it should be 60 cents; and one from a producer, who answered "No" to question (6) and "Yes" to question (7), qualifying his "No" with the remark, "Unless reasonable profit can be assured over the cost of production," and his "Yes" with the observation that "Production costs in the memorandum appeared to be too high."

On the whole, the replies indicated to the Committee that the producers were strongly in favour of an attempt being made to organize an export of porkers on the lines indicated in the memorandum. The replies to the questions relating to costs of production showed such a great variation in the producers' estimated costs that no conclusions could be drawn from them; the replies to question (5), however, indicated that the rations employed were surprisingly good, and that very few producers relied entirely on rations of maize or maize meal.

76. Since the industry appeared to be practically unanimously in favour of expansion by export, and of the creation of a sales pool, the Committee next considered the possibilities of organizing an export trade on the lines indicated in Mr. Bicknell's memorandum. Mr. Bicknell's estimates of costs

in connection with production, manufacture and transport appeared to the Committee to have been framed on a conservative basis.

It will be observed that the estimated cost from the arrival of pigs at the factory station to their eventual sale in London amounts to 24.4 cents per lb., whereas Mr. Straith stated that the expenses incurred in the experimental Rhodesian shipment were approximately 2d. or 16.6 cents per lb.—a reduction of 32 per cent. The total expense incurred from port of shipment to eventual sale in Mr. Bicknell's memorandum is 12.3 cents, whereas a reference to Schedule of Costs of Transport on frozen beef and offal (page 93) shows that from South Africa the corresponding figure for frozen beef or offal is 0.8156 of a penny, or 6.8 cents, which probably accounts for most of the difference between the two estimates.

77. It was evident to the Committee that any proposal which aimed at an almost immediate commencement of export on a small scale must suffer from very grave disabilities. Mr. Bicknell's plan to start under present conditions with an export of, say, 3,000 porkers per annum would be seriously handicapped by the irregularity and infrequency of the steamship sailings, and by lack of refrigerator space, all of which is now required to accommodate butter. In these circumstances it would be impossible to comply with the two most important conditions laid down by Mr. Bicknell in his memorandum, viz. that, quality and type of carcasses should be uniform and that shipments should be regular. The Committee considered that it was extremely improbable that any improvement of steamship services could be expected on the score of providing facilities for the export of pork alone, but that it would first be necessary to prove that the much larger project of exporting chilled and frozen beef was a live and practical issue before any action would be taken by the Conference Lines.

78. This raised the question as to whether the exports of all chilled and frozen produce, that is, beef, pork, lamb, poultry, butter, and even fruit, could not be handled more cheaply and with greater efficiency by one large cold storage plant, than by several smaller plants located in different parts of the Colony, and limited in scope to the handling of, say, pork or poultry or fruit. Beef would be the main export, and in organizing the factory and necessary transport the other products would be treated as side-lines.

79. It is the view of the Committee that a start should not be made until shipments can be made at fortnightly intervals and on a commercial scale, by which is meant at least 100 pigs per week, or 200 per shipment. The provision of a surplus of 5,000 pigs per annum in excess of present production will necessitate a preliminary multiplication of breeding stock, and it will no doubt be found necessary to import some breeding stock from overseas. The intervening period, between the conclusion of the agreement to erect a factory and the actual commencement of operations, is just as greatly needed by the pig industry for preparation as it is by the beef industry. If Government can reach an agreement with a cold storage company to begin operations in $2\frac{1}{2}$ to 3 years, the intervening period must be used to stimulate production of animals of the right type, to the point where the available surplus is not less than 5,000 pigs per annum.

It will be necessary to decide by experiment what are the most suitable breeds for this country, but there can be no doubt that the pigs will be sired by Large White boars, and the Large White x Middle White, Large White x Berkshire, Large White x Large Black, will all be acceptable on the London market.

80. The first step should be the appointment of a Pig Control Board, which might conceivably be a sub-committee of the Meat Control Board discussed under the heading "Legislation" (page 52), with power to regulate supplies of pigs for the local market. Breeders with suitable stock should be directed to retain gilts, which would then be distributed to other breeders. The Board would also control the assisted importation of pedigree breeding stock, its multiplication at selected centres, and the eventual distribution of boars and gilts to approved producers.

The next stage in the preparatory period might be the accumulation of a surplus which could no longer be disposed of by distribution of female stock; and this surplus could be quite conveniently utilized by carrying the animals on to the larder stage. The producers of pigs that are converted to lard should be compensated at a rate which takes into consideration the comparative costs of pork, bacon and lard production; and this method of conversion should be continued until the factory is ready to take export porkers.

81. From the outset, in the view of the Committee, the Pig Control Board should levy a small cess on local sales, to

build up a reserve fund from which the producers of larders should be compensated.

Questions relating to costs of production on the farm, and to the multiplicity of bacon factories, of which there are seven for an annual slaughtering of 7,000 baconers, should be left to the Control Board for more detailed examination.

82. Throughout its examination of this problem the Committee has regarded an export in the form of frozen porkers as that in which least difficulty is likely to be encountered. It observes, however, that should the experimental findings of the Low Temperature Research Station, Cambridge, with regard to the possibility of exporting mild cured bacon in the chilled state, be confirmed by practical tests from East Africa, then the export of baconers in this manner will become practicable when the cold storage factory is built.

83. It is emphasized that there is in these proposals no suggestion that the price to the consumer in this country should in any way be increased, and that the industry is well able to finance an export out of its own funds, taking into consideration present costs of production and present values of pork and bacon in this territory.

84. In view of the considerable divergence of the views held by individual producers on minor points, the Committee has decided not to put forward any detailed proposals at this stage, but merely to indicate the broad outlines of the scheme, and to leave the minutiae to the decision of the Board itself.

85. The Committee's unanimous recommendation is that Government should appoint a Pig Control Board (which might be a sub-committee of the Meat Control Board referred to later in this report), with power to levy a cess on local sales of porkers and baconers, and at a later stage to create a pool for the equitable division of the proceeds of local and export sales. The Control Board should come into existence immediately, since even if the negotiations now in progress with the Imperial Cold Storage Company, Ltd., should fail, it is essential, in view of the needs of the industry, and of the expansion now taking place in the dairy industry, that an export of pork should be arranged.

During the period between the appointment of the Board and the commencement of factory operations, the Board should plan production along the lines already indicated, and should dispose of surplus pigs in the manner suggested above.

From the outset, the Board would levy a cess on local sales, in order to create a reserve fund for the payment of bonuses to those farmers whose pigs were forced into lard production during the period of increasing production. Eventually, when the factory began operations, the Board would arrange suitable compensation for the exporter in whatever manner it considered best.

86. The Committee also recommends that from time to time during the period of preparation trial shipments should be undertaken under the supervision of the Pig Control Board, with a view to ascertaining the exact type of porker required by the London market, and how closely the pigs produced in the Colony can be made to approach that standard.

THE SHEEP INDUSTRY.

87. During the period 1920-1934 the number of sheep owned by Europeans in the Colony has increased from 92,108 to 252,250, but one can assume that the market for fat wethers has not expanded at anything approaching this rate. Fortunately, during the earlier years of post-war expansion, the state of the wool market and the fact that sheep farmers were generally under-stocked enabled the wethers to be carried on for wool production, without any loss to flockowners. Moreover, from 1923 to 1929, most of the large flocks suffered extremely heavy losses, in young animals particularly, from internal parasitic worms and from a lung disease of young lambs. The mortality from intestinal parasites was not at first attributed to its correct cause, but a survey made in 1926 revealed the existence of species, such as the hookworm and the various small trichostongyles, highly pathogenic for sheep; and the appropriate preventive and curative measures were rapidly worked out and applied. The lung disease of lambs was also investigated, and it is probable that the improvement in the situation that has been observed in the last six years is to be attributed partly to the effect of wholesale vaccination, and partly to a general reduction in the size of the worm-burden carried by sheep in this country. The wastage from these diseases, and the time needed by flockowners to acquire the necessary experience of sheep-raising under Kenya conditions have together been responsible for a considerable slowing up in the rate of increase.

88. The Committee has already drawn attention in paragraph 11 to the remarkable fact that little or no attempt has so far been made to utilize small flocks of sheep in ordinary

mixed farming operations, and that in consequence sheep-raising has been practically confined to the larger ranches. This lack of interest on the part of the owners of smaller holdings of more fertile land is no doubt due in part to their knowledge that the larger flockowners have experienced difficulty in marketing fat lambs and wethers, and to the relatively heavy wastage from disease that is known to occur in the larger flocks. There are, however, some manifestations to-day of a greater interest in the use of small flocks on mixed arable and stock farms; and should it prove possible to provide a satisfactory export market for fat lambs and wethers, a great stimulus would be given to this branch of the industry.

89. The United Kingdom is the world's greatest market for frozen mutton and lamb, as well as for beef. Statistics compiled by the Intelligence Branch of the Imperial Economic Committee (Mutton and Lamb Survey, September, 1935) show that, while the consumption per head of beef is declining, the consumption of mutton and lamb is increasing, and that each year a considerable quantity of mutton is displaced through an increased production of lamb. New Zealand has for many years specialized in the production of mutton and lamb, and more recently the great wool-producing countries, such as Australia and the South American States, have taken up mutton and lamb raising as an alternative to pure wool production. In all these countries, and in South Africa as well, there has been a good deal of research and experiment on fat lamb breeding. In Australia and New Zealand the fat lamb industry is largely based on Downs crosses with Merino or half-bred ewes; but it is held by some authorities in South Africa that a straight cross of a Downs breed, preferably Southdown, on a Merino ewe will furnish quite a satisfactory lamb for fattening. Attempts are also being made in South Africa to bring the improved Black-headed Persian to the necessary standard for this trade.

90. In the bulletin referred to in the preceding paragraph the Imperial Economic Committee rightly points out that the emphasis laid upon lamb production in recent years has resulted in a change in the composition of flocks in wool-producing countries. The proportion of ewes in the flocks has risen, affording a greater elasticity in breeding policy, enabling the flockowner to expand or reduce his flock rapidly in accordance with market conditions, and to switch from wool to lamb production or vice versa whenever prospects make it

desirable to effect a rapid change. The average age of the large flocks can be maintained at a younger level, with a very definite reduction in wastage from disease.

91. According to the Chief Veterinary Research Officer (*Parasitology*, XXV, 1933): "The areas in which sheep-raising is practised in Kenya can be conveniently considered as of two main types: high plateau country with a high annual rainfall, well-distributed throughout the year, and a preponderance of cloudy or even misty weather; and lower plains country with a relatively low annual rainfall, restricted to one or two rainy seasons, and for the rest brilliant sunshine and a low degree of atmospheric humidity. In the former, the breed of choice is the Romney Marsh, with certain admixture of Lincoln and Corriedale; and in the latter the flocks are almost entirely Merino grades. All flocks have been graded up from the Masai ewe, which is a singularly good native type. The Black-headed Persian type from the northern areas has hardly been used at all, no doubt because of its greater susceptibility to internal parasitic infestations and its lack of resistance to unfavourable climatic conditions."

In the Romney Marsh areas flockowners are well able to grow feed for sheep, and no great change in farming practice would be involved in organizing a large production of fat lambs by crossing a percentage of the ewes with a suitable ram—Southdown or Dorset Horn.

In the Merino areas, however, not all the flockowners have land suitable for the growing of crops or the forcing of lambs, but the Merino flockowners would derive considerable benefit from fat lamb production in another way. Most of the large Merino flocks to-day contain an excessive proportion of aged ewes, of which a large percentage are affected by chronic progressive pneumonia. Under the more arduous conditions of life on a large sheep run, with its constant exposure to dust inhalation while large flocks are trekking to grazing or water, there is annually a heavy wastage among these old animals from pneumonia and debility, either during the dry season or soon after the onset of the rains. At present the flockowner has no sale for these old ewes; although under the less exacting conditions of life, in a small flock on a mixed farm, many of them would probably give three or four crops of lambs. The Chief Veterinary Research Officer is of opinion that the disposal of these old ewes at a low price to mixed farmers who desire to raise fat lambs would be to the mutual advantage of both purchasers and sellers. Should the first

cross between the Merino and one of the English mutton-breeds prove suitable for the London fat lamb market, a custom would no doubt eventuate under which the Merino flockowners cast all ewes at 5 or 6 years old, and lamb breeders would make their purchases each year at regular sales. Even if research should show that a half-bred ewe is needed for fat lamb production, there would still be a place in the industry for the cast Merino ewe. As a result of the lowering of the average age in the large Merino flocks, there would, in the view of the Chief Veterinary Research Officer, be a substantial gain in general vigour, with a corresponding reduction in the wastage from all causes.

92. The Chief Veterinary Research Officer has already imported a small pen of pedigree Southdown sheep, and has begun crossing experiments with Merino, Romney Marsh, and native ewes. It is his intention to send home a small sample shipment of frozen lamb for report at Smithfield early in 1937. The Committee is also informed that as a result of the renewed interest in the mutton breeds, referred to in the preceding paragraph, there have been several importations of other mutton breeds (Suffolk, Ryland, and Dorset Horn) during the last twelve months.

93. The Committee is strongly of opinion that this experimental work should receive the support of Government, and that if necessary special facilities should be accorded to the Veterinary Research Laboratory to continue this line of investigation until it is brought to a commercial stage.

94. It will be necessary to investigate the seasonal variation of supplies to the London market, and to study the possible advantage to be gained by making shipments from Kenya during the months when supplies are at a low level. The bulk of the importations occurs between the 1st March and 31st August, and the smallest shipments from October to December inclusive. New season's lamb from New Zealand appears first in the London market in January, and supplies reach their maximum between March and July. South American shipments arrive all the year round, but are heaviest from January to August. An examination of price records compiled by the Imperial Economic Committee (*loc. cit.*) does not indicate that there is any regular seasonal fluctuation in wholesale prices, though the tendency is for prices to be lowest in the third quarter and highest in the first and second quarters of the year. These conditions would fit in very well with lambing in October and shipment during late February

or March, before supplies reached their peak. Again, a May lambing in Kenya would produce fat lambs for shipment in October, which would arrive in London before the new season's New Zealand supplies were available.

95. Wholesale prices of imported lamb tend to move in sympathy with those of general commodities, but on the whole prices in recent years have been in favour of mutton and lamb, the index figure as a rule varying between 115 and 130. Prices of mutton and lamb declined considerably during the period 1931-1935, but have been a little firmer during 1936. A figure of 7d. per lb. wholesale seems a safe value to use in calculations. If one allows a total expense rate of 0.8456 of a penny per lb. from Mombasa to completion of sale in London, one is left with a return of roughly 6d. per lb. at the factory, or from Sh. 16 to Sh. 17/6 per lamb of 32-35 lb. weight.

96. The Committee recommends that every effort should be made to encourage the production of fat lambs, as a potentially valuable export from the cold storage plant which it hopes will be erected in the near future.

97. The Chief Veterinary Research Officer intends, if possible, to carry out a large-scale field experiment in the grading-up of sheep in certain reserves by Merino crosses. He asserts that much of the western section of the Masai Reserve is ideally suited to the raising of grade Merinos, and he wishes to attempt to interest the Masai in commercial sheep-raising for wool. He proposes, with the agreement of Government, to make use of the method of artificial insemination that has been studied at the Experimental Station, Naivasha, during the past eighteen months, and if it is successful the employment of this technique will greatly accelerate the process of grading up, besides effecting savings in the number of rams needed for this work.

98. The Committee is informed that this project forms part of the comprehensive plan for economic development of the Masai Reserve, referred to in paragraph 66. It wishes to impress upon Government the desirability of according every support to the experiments, and to draw attention to the existence in the Colony of a large undeveloped asset in the shape of some three million unimproved native sheep, some of which can, by reason of the excellent pastoral conditions under which they are maintained, be readily brought to a productive stage by grading up with Merino rams.

MISCELLANEOUS FUNCTIONS OF COLD STORAGE.

99. In the natural course of events, any cold storage plant established to handle the export of beef, pork and lamb would engage in all the other multifarious activities of such concerns. The present cold storage accommodation for export butter at the coast is admittedly inadequate, and there have already been discussions as to the advisability of enlarging the Government Cold Store on this account. A cold storage plant erected for meat export would be capable of taking over this work on behalf of the dairying industry. The packing house would also store and export eggs and frozen dressed poultry. The Committee is informed that monthly deliveries of eggs by the Kenya Poultry Club have risen within twelve months from 4,061 dozen to 7,565 dozen.

The ships chandlers' business alone is quite an important factor in trade at the coast, and supplying of ships with beef, pork, mutton, poultry, eggs, butter, cheese, etc., would be greatly simplified with a cold store at the port.

THE GOAT PROBLEM.

100. The Committee has given some time to a consideration of the goat problem as it exists in Kenya. Unquestionably many of the strictures passed by the Hall Agricultural Commission on the native goat are justified, and there is no doubt that these animals are responsible for a great deal of damage, both to the natural grass sward in the dry areas and to growing forest in the higher country.

101. The Committee learns with satisfaction of the movement to demonetize the goat in dowry transactions, and trusts that Government will encourage this innovation wherever an opportunity offers. There is evidence to show that Government's insistent propaganda on the subject of the damage done by goats has not been entirely without effect, and that some impression has been made on the attitude of the native in the reserve towards his goats. Pressure in this direction should be increased wherever possible, and Government should encourage District Farmers' Associations to take advantage of the option that will be extended to them by the Resident Labourers Ordinance to exclude squatter-owned goats from the settled areas.

102. It is the view of the Committee that the plans for the improvement of native sheep by grading, discussed in paragraph 97, may have the effect of lessening the native's regard for his goats, when he sees that a substantial cash

return can be obtained from wool; and that in areas where this form of development is possible the goat will be forced to give way to the woolled sheep. We must not be content with slow, niggling measures against the goat, nor continue to rely entirely on the cumulative effect of education, propaganda, and the gradual advance of civilization with its concomitant acceptance of economic standards, to displace the goat from its prominent place in the native social structure. The objective of Government should be to bring the native to such an early realization of the uselessness of the goat that Local Native Councils will be prepared to pass legislation that will effect drastic reductions in the numbers of goats in the native reserves.

The Committee did address a circular to District Associations inviting them to submit suggestions for dealing with this problem, but nothing more startling than the usual proposals to tax goats, or to tax all movements of goats except for purposes of slaughter, was forthcoming.

FIRST TERM OF REFERENCE: LIVE STOCK LEGISLATION.

103. The chief instrument of economic control of the live stock industry in the Union of South Africa is a comprehensive Act (No. 48 of 1934), which is described as "An Act to establish a Live Stock and Meat Industries Control Board and to define its functions; to provide for the imposition of a levy upon slaughtered cattle, sheep and goats, and for the manner of expending such levy; for the improvement of cattle; for the sale by public auction of certain classes of live stock by weight; for the erection and inspection of cold storages; for the inspection for the purposes of grading of meat; for the regulation of the live stock and meat industries, and for matters incidental thereto."

The Live Stock and Meat Industries Control Board consists of eleven members, presided over by an officer of the Department of Agriculture. Four of the members represent live stock farmers; and the board contains one representative each of the pedigree stock breeders, the exporters, the commercial community, the wholesale and retail butchers, local authorities and the live stock auctioneers. The Board has power to impose a levy (not exceeding 2/- per animal of six months and older, and not exceeding 6d. per animal under six months, and in the case of sheep not exceeding 6d. per

animal) on all cattle and sheep slaughtered at any registered abattoir; and to pay out of its funds a bounty or premium (which may vary according to the grade of the article exported, and from which meat or animals below a specific grade may be excluded) of an amount which the board with the consent of the Minister may determine. The board has also power to utilize levy funds to meet expenses incurred in appointing servants to enable it to exercise its functions and in hiring or acquiring property which it may consider necessary for the same purpose. The board is expected to advise the Minister generally on all matters concerning the development of the live stock and meat industries, and to recommend to the Minister any steps which, in the opinion of the board, are calculated to promote the welfare of those industries, with due regard to the interests of the consumers of meat.

Chapter 3 of the Act relates to cattle improvement. The Governor General may by proclamation declare to be a cattle-improvement area, any district or defined area in which a resolution recommending that such district or area be proclaimed a cattle-improvement area has been passed by a majority of stockowners at a duly advertised public meeting. After a date fixed by the proclamation, which shall not be less than twelve and not more than eighteen months later than the date on which the proclamation takes effect, only approved bulls may be introduced into or kept in a cattle-improvement area. Unapproved bulls may be impounded and castrated.

In Chapter 4 provision is made for the erection of cold storages and factories with the assistance of State funds. This chapter also gives power to the Minister of Agriculture to refuse permission for the operation of any cold storage that does not conform to regulations.

Chapter 5 provides powers to control the meat trade. It is laid down that in certain defined areas live stock sold at a public auction must be sold by live weight. In this chapter power is also given to appoint official meat graders; and the Governor General is empowered to prohibit the delivery of meat in retail quantities within an area in which it has not been sold.

104. In Southern Rhodesia a similar control of the industry is based in part upon Act No. 28 of 1935, "To provide for the collection of a levy on cattle slaughtered within the Colony and on cattle exported to territories in Africa during

the year ending 31st March, 1936, the payment of bounties on beef and cattle exported overseas during that year, and to enable the Governor to control the slaughter of cattle and the sale of beef in certain areas." The Act provides for the imposition of a levy at the rate of Sh. 10 per head on cattle slaughtered when over the age of six months, and Sh. 2 per head on calves slaughtered under six months old. A levy of 15 per cent of the net sale price is also imposed on live cattle exported to any African territory. Power is also given to the Minister of Agriculture to control the numbers of cattle exported to any African territory, if in his opinion the numbers available are likely to be in excess of the capacity of the market concerned. The funds obtained from the levy are to be used for the payment of bounties on meat exported overseas, and powers are given to grade such exported meat and to vary the rate of bounty payable in accordance with the grading. Power is also given to the Minister to control the importation into or the sale of cattle for slaughter within prescribed areas.

The Stock Improvement Scheme does not come under the provisions of this Act. For the year 1st April, 1936, to the 31st March, 1937, the sum of £3,000 has been voted by Parliament for the importation and improvement of stock. The object of the scheme is to afford assistance to approved stockowners to improve their herds and flocks; and general conditions, health, and the methods of management applied to the herd or flock, especially in respect of young stock, are taken as the measure of efficiency of the stockowner for the purpose of the scheme. A candidate who applies for assistance will not be approved unless he can show evidence that sufficient supplementary feed is supplied; in the case of sheep, that regular dosing for internal parasites is carried out, and that ewes are only bred during the breeding season; and in the case of pigs, that buildings are suitable for the purpose. A sum not exceeding half the landed cost of a bull will be granted to approved applicants who wish to purchase bulls from overseas; and similar provision is made in respect of the importation of rams and boars; with the proviso that Government's contribution in respect of one animal shall not exceed £75 for a bull and £20 for a boar or ram.

With regard to animals purchased in the Colony, Government will again contribute half the certified cost of an approved animal, provided the total expenditure in this case does not exceed £25 for a bull and £4 for a ram or boar.

105. After examining the relevant legislation of South Africa and Southern Rhodesia, the Committee proceeded to consider carefully those aspects of the stock industry which in Kenya seemed to call for legislative control or Government assistance.

106. It was pointed out to the Committee by the Acting Chief Veterinary Officer that the placing of permanent or quasi-permanent veterinary quarantines on pastoral native areas had in the past restricted to a reasonable volume the supplies to the large urban markets, such as Nairobi. Once it became possible, as a result of disease control measures taken within the reserves, to remove stock for slaughter without exposing stock in the unquarantined settled or native areas to undue risk of infection, the potential effect upon markets such as that of Nairobi of the release of large additional supplies of good native cattle must be taken into consideration, and any measures necessary to protect these markets from flooding must be recommended to Government. If the industry were to be permitted to develop normally there must be much greater freedom of movement, particularly of slaughter and store cattle. The Liebig factory would open, probably in September, 1937, and during its first year of operation it would be necessary to move some thirty thousand head of cattle by road or rail to the factory. Disease-control measures had already been taken in the Samburu Reserve, a satisfactory stock route to a railhead on the Solai branch line had been chosen, and a number of steers surplus to the requirements for Italian Somaliland had been allowed to move under careful control to the Nairobi and Mombasa Abattoirs. Post-mortem examination of these slaughtered cattle indicated that controlled movement for slaughter under such conditions of supervision and prior immunization involved no serious risk to cattle in the intervening areas; and, in fact, it would be necessary to move Samburu cattle under these conditions to Liebig's factory at Athi River.

As soon as it became generally known that this movement was to be permitted, numerous applications would be received from speculative cattle buyers, who would wish to move cattle from these areas to the main slaughter markets of the Colony; in fact, a number of such applications had already been received. It was difficult to see how, if such movement were considered safe to the factory at Athi River, it could be held to be dangerous for veterinary reasons when it was desired to move the cattle to the Nairobi Abattoir, with

its comparatively good facilities for segregation. Any dealer or buyer who was engaged in a regular trade would be only too ready to comply with any regulations that might be imposed to ensure the satisfactory segregation of these cattle when moved for slaughter to such a market as Nairobi.

If it were contended that the free access of such cattle to the Nairobi market was likely to affect adversely the market values of cattle, or to disturb the equilibrium at present existing between supplies of native and grade cattle, then the problem was one for which a solution should be sought on purely economic lines, and there should be no attempt to maintain the *status quo* by veterinary regulations.

107. The Committee is of opinion that if the Samburu cattle and similar cattle from the northern areas are allowed free access to the Nairobi and Nakuru Abattoirs, the present suppliers, both native and European, will suffer severely during the period of fluctuation of values that is bound to follow. There will be a good deal of speculative buying in the newly opened areas, and the unloading of abundant cheap supplies in Nairobi will generally depress and undermine values of cattle on our main domestic market; while, at the same time, excessive buying will gradually force up prices in the remote Samburu and northern areas, upon which Government is depending for a good proportion of the supplies for the Liebig factory.

108. It is realized that under present marketing conditions insufficient attention is paid to the quality of supplies of beef and mutton, and that in consequence there is little encouragement to the former to strive to produce a better quality animal. Although grading of meat is undertaken voluntarily by the General Manager of the Stockbreeders' Co-operative Association in respect of supplies marketed by them, the public is either unaware of or indifferent to this attempt to effect an improvement in the quality of meat offered for sale in Nairobi, and fails to exercise any discrimination in its buying.

The Committee considers that the institution of a system of official grading of beef, mutton and lamb would be a useful first step towards bringing the trade under some measure of control. It accordingly recommends that all meat marketed in the Nairobi municipal area shall be officially graded and stamped in such a manner that the general public will readily be able to recognize the grade with which they are being served. A repeating stamp, similar to that employed

in marking chilled beef, should serve the purpose, and the expenses of grading can reasonably be covered by making a charge for the service of 50 cents for every ox slaughtered and 25 cents each for sheep, goats, and pigs. The system of grading might eventually be extended to other municipalities, where the services of officers of the local authority can be impressed for the purpose. Such officers might be given a short course of instruction by the official grader in Nairobi.

109. In the view of the Committee, grading alone is unlikely to effect the necessary degree of stabilization of marketing conditions in Nairobi and the other urban centres, and it is recommended that the regulation of supplies and the allocation of markets should be among the functions of the Meat Control Board, whose appointment is advocated in the next paragraph.

110. In the course of its examination of the many problems offered by the live stock industry, the Committee has been impressed by the industry's need for some co-ordinating and controlling authority, readily accessible to the farming community, able to advise Government in matters of broad policy, and endowed with executive powers for the administration of Government's plans for the practical development of the industry. Reference has already been made to the need for planning and control in the pig industry, and the Committee visualizes that a similar need will arise in the cattle industry as soon as any attempt is made to put into effect the Committee's recommendations regarding the export of chilled and frozen beef.

111. Although the Committee has throughout ruled that the payment of Government bounties on exported meat is out of the question, it realizes that some method of equalization of return between the exporter and the producer who sells on the local market is desirable. The present price of No. 1 grade beef on the Nairobi market is Sh. 25 per 100 lb. dead weight wholesale, and that of No. 3, Sh. 16 per 100 lb. It is unlikely that the return to the producer from chilled beef would exceed Sh. 17 at the factory, and during the early years it would probably be as low as Sh. 14 or Sh. 15. To ensure that cattle of the best quality are brought forward for export it is therefore essential that some form of pool shall be arranged.

112. The Committee accordingly recommends that Government should forthwith appoint a Meat Control Board, consisting of representatives of each branch of the industry

and official members of the departments concerned. The main functions of the Board will be to stimulate the production of cattle, pigs, and lambs suitable for export; and so to organize production and marketing that the industry can secure every advantage offered by Kenya's natural resources as a stock-raising country.

The Board should be given the necessary statutory powers to regulate supplies of stock to home and overseas markets in order that the industry should not suffer any severe setback, either during the period of rising production that must intervene before the factory begins operations, or later, when competition is likely to arise between home and export markets.

The Board should be empowered to impose a cess or levy on local sales of slaughter pigs, and to apply the funds accruing from the imposition of a levy to bountifying sales for export or sales of surplus pigs made during the period of preparation. Power to create a pool of returns from domestic and export sales should also be furnished in respect of cattle and sheep.

In the examination of any issue raised before the Board, the Board is to be guided by its estimate of the probable effect of any projected course of action upon the fabric of the industry as a whole, and the export trade must be regarded as the keystone of the arch.

A Pig Control Board, a Sheep Control Board, and a Beef Control Board should be formed as sub-committees of the main Meat Control Board, and detailed examination of matters affecting these branches of the industry should be undertaken by the appropriate sub-committee, which would then report to the full Board.

When the official meat grader is appointed, the fees for grading should be handed over to the Board, which would retain any surplus that there might be over and above the cost of the service, including the salary and other emoluments of the grader. The surplus funds might be applied to the legitimate purposes of the Board.

113. Representations have been made to the Committee that it is desirable that public weighbridges should be installed in native reserves at centres recognized as cattle markets. It is suggested that when forced sales of cattle have

to be made to meet payments of hut tax, something closely approaching a "ring" is usually formed by traders; and one man alone comes forward to bid for the cattle, which are afterwards distributed to the actual purchasers. By this method it is possible for dealers to buy at absurdly low prices.

114. The Committee recommends that forced sales of native cattle should only be made at recognized marketing centres in the reserves, and that before such sales take place notice should be given of the date upon which each sale will be held, in order that buyers may be attracted to the sales. The Committee visualizes that the holding of these forced sales at recognized centres may eventually lead to the establishment of regular cattle markets at these centres. This is a matter in which progress should be watched carefully by the Meat Control Board.

LIVE STOCK IMPROVEMENT.

115. In its capacity as an advisory body, the Meat Control Board will no doubt, from time to time, advise Government of any measures that it may consider necessary to further the development of the industry, particularly with reference to the export trade.

Uniformity of type and quality is perhaps the most important requirement on Smithfield Market, and uniformity of the right type will be more rapidly reached if some assistance can be given to breeders to obtain suitable stud animals from overseas; and if educative propaganda can be employed to impress upon farmers that success will depend upon correct breeding and correct feeding. In the country to-day there are neither sufficient breeding cattle of the correct beef type, nor sufficient breeding pigs to ensure a rapid multiplication of animals suitable for the export trade, and the statement applies equally to sheep of the mutton type.

116. The Committee has considered the methods adopted in the Union of South Africa and in Southern Rhodesia to assist farmers in improving the quality of their stock to the standard demanded on the export markets.

In South Africa, the Government is empowered to proclaim cattle improvement areas, and within such areas, in which none but approved bulls may be used, any farmer is entitled to receive assistance in the purchase of pedigree breeding stock.

In Southern Rhodesia the method is essentially different. There are no proclaimed areas, and applicants for assistance are required to show that their general farming practice is of a character likely to benefit to the full extent from any assistance that may be granted by Government towards the purchase of pedigree stock. The applicant's farm is visited by an Animal Industry Officer, who decides whether the conditions justify the grant of any assistance; and, further, in the event of the application being accepted, what type of animal will best serve the purpose of the farmer, whether country-bred or imported pure-bred from overseas.

117. The Committee favours the Rhodesian plan as being more suited to the needs of this country. It has also this advantage: that the scheme can be adjusted according to the sum of money made available by Government to assist farmers in any one year, and it does not involve Government in any unlimited commitment to subsidize the industry upon particular terms.

118. The Committee therefore recommends that, as part of the programme of development, a sum of, say, £3,000 per annum should be set aside for the purpose of providing assistance to approved farmers to purchase pure-bred breeding stock, preferably males. Grants should not exceed in amount half the landed cost of the animal at the purchaser's farm, and in the case of animals imported from overseas should not exceed £50 for each bull, and £20 for a boar or ram; in the case of animals purchased locally the maxima of the grants should not exceed £25 and £5 respectively. Farmers should be invited to submit during a specified period each year applications for assistance from the fund, and grants should then be allocated for the year after an examination of the applications. The initial allocation of the funds as between cattle, pigs, and sheep might be decided by the Meat Control Board, who should be in the best position to judge the relative needs of each branch of the industry.

119. After this report had been drafted, word was received from Government that the Imperial Cold Storage Co., Ltd., had submitted definite proposals concerning the terms upon which the Company was prepared to establish a cold storage meat-exporting plant in this Colony. The Committee has been asked to advise Government in the negotiations with the Company, and is at present considering the proposals. It is, however, not considered advisable to hold up publication of this report on this account.

120. The Committee desire to place on record their appreciation of the ability and industry of their fellow member and Secretary, Mr. Daubney, without whose untiring efforts the practical results of their labours, as enumerated in the preceding pages, could never have been accomplished.

W. HARRAGIN (*Chairman*).
H. R. MONTGOMERY.
H. H. BRASSEY-EDWARDS.
R. DAUBNEY.
E. CASWELL LONG.
G. C. GRIFFITHS.
J. J. TOOGOOD.
H. B. HAMILTON.
F. J. BICKNELL.

APPENDIX A**REPORT ON A VISIT TO SOUTHERN RHODESIA
TO EXAMINE THE MEAT FACTORIES
OF THAT COUNTRY.****THE BULAWAYO FACTORY OF THE RHODESIAN EXPORT
AND COLD STORAGE CO., LTD.**

On the 17th June, and again on the 19th June, I visited the factory of the Imperial Cold Storage Co., Ltd., at Bulawayo.

This factory is situated about two miles from the town, and has a railway siding and the usual collecting yards. Judged by American standards, the plant could hardly be considered an efficient one, but it is undeniably well operated. The fuel used is coal, costing about Sh. 20 per short ton delivered, and the steam-operated compressors are some forty years old. There is no moving chain in the factory.

The animal is first sprayed with cold water in the race, and then walks up a padded ramp to a knocking pen, which is slightly raised from the killing floor; incidentally, this is the ground floor. The pen is automatic, and after being stunned the animal is ejected, shackled and hoisted for bleeding. Blood is collected in an efficient manner. After bleeding, the carcass is lowered on to pitch blocks of wood, and flaying is carried out much in the same way as in any small abattoir. The flayers are imported Zulu boys, working under the direct supervision of a European, who undertakes the most difficult part of the operation himself. Evisceration is carried out normally, and the finished carcass is split by an electrical circular saw. Offal, etc., is wheeled away on trucks. Carcasses are graded in the pre-cooler, and are divided into chillers (Imperial and Standard grades), and rejects, which may be sold locally or frozen or boned. Freezers and boners are largely purchased as such.

Products.

In addition to the chilled, frozen and boned beef already mentioned, the factory exports hides, frozen offal, and various minor products. There is a local market for tallow, edible fat, and meat, bone and blood meals.

Hides.—The hides are pitted for six or seven days. This is the method employed in the large packing-houses in the United States, but not in the frigorificos of South America.

Although the Imperial Institute recently reported unfavourably upon pitted hides from Rhodesia, it is to be noted that the hides forwarded for examination had been retained in the pit for from twenty to twenty-one days. At the factory, the hides do not remain longer in the pit than six days. There is thus no swelling of the corium, and no tendency to the development of tender grain. Very good prices are obtained for these hides in London and New York, and the cost of preparation is said to amount to Sh. 1 per hide, including salt, labour, supervision and grading. In comparing returns from Kenya and Rhodesian cattle, the management was favourably impressed by the hide weights given in the memorandum that accompanied my A. 3/344/2884 of 30th November, 1935, of which all members of the Committee have a copy. The estimated costs of preparation, selling, etc., shown in Table III of that memorandum were considered to be on a conservative basis.

Offal.—Livers, tongues, and the kidneys from freezers and boners are frozen, moulded and exported. Tails are also exported. The cost of preparation of the offal, including freezing, is 0.18d. per lb. The packing material for shipping the offal costs approximately Sh. 1 for every 40 lb. of offal. Glands are collected and exported in the frozen state.

Fats.—The edible fat is refined and sold locally in sealed cans for use in the confectionery trade. Tallows are also consumed locally by the soap industry.

Meals.—The factory prepares meat, bone and blood meals, all of which find a ready sale in the Colony. Quantities of the meat and blood meal are used in supplying the deficiency of protein during the winter season, in the fattening of stock, and the maintenance of dairy cows.

Beef.—The slaughtering of cattle from the time they enter the abattoir to the time they are loaded in the refrigerated truck, is said to cost just under $\frac{1}{4}$ d. per lb. This charge includes freezing or chilling and bagging. At full capacity working it is stated that this charge would be lowered. The cost of freezing is about Sh. 10 per ton, and the temperatures employed follow American practice. In calculating this charge the offal is left entirely out of consideration.

Pigs.—The factory prepares a certain amount of bacon, and the cost of sticking, scalding, scraping and chilling varies between Sh. 1/6 and Sh. 2 per pig. This amounts, in the case of the export porker, to approximately $\frac{1}{4}$ d. per lb.

Prices.

The factory can afford to pay from Sh. 10 upwards per 100 lb. carcass weight for freezers and boners. Animals in better condition are fetching slightly higher prices. To these prices, Government adds a bounty for the producer, formerly at the rate of $\frac{1}{4}$ d. per lb. and latterly at $\frac{1}{2}$ d. per lb. There is really no need for this bounty, but it is the policy of Government to encourage the immediate export of freezers and boners, in order to reduce the numbers of this class of cattle, and presumably it is their aim eventually to export chilled beef only. The market for boned beef is very steady, and all the output goes to Great Britain. On the other hand, the market for frozen beef is less reliable, but owing to the wide business associations of the Imperial Cold Storage Company they are able to place all the frozen beef produced, and most of it is sold ahead by contract. A good deal of the frozen beef goes to Italy.

The frozen offal is said to fetch the same prices on the Smithfield Market as frozen offal from the Argentine. During the discussion on prices, we compared in detail the figures given in Table III of my memorandum already referred to, and the actual results obtained at the Bulawayo factory. The only items to which exception was taken were the heart, which was said not to be worth export, and the feet, for which the market is extremely poor, the head and cheek meat, which are not considered worth exporting, and the charge for preparing edible fat, which in the case of the Bulawayo factory amounted to 2d. instead of $1\frac{1}{2}$ d. allowed in my total. With regard to the edible fat, my charges were based on the preparation and shipment of oleo in tierces, whereas the Imperial Cold Storage Company's charges are for the finished product packed in small containers. The difference on the other items mentioned amounts to between Sh. 2 and Sh. 3 per head.

Owing to the higher cost of preparing and transporting chilled beef, there is not a great deal of difference between the price the factory can afford to pay for chilled and frozen beef. The manager was inclined to regard the difference as insignificant, but analysis of the figures for 1935 indicates that the Company has been paying roughly Sh. 13 per 100 lb. dressed weight for chillers, and that Government has been subsidizing this export to the amount of roughly Sh. 11 per 100 lb.

Operating Costs—General.

The agreement between the Cold Storage Company and the Rhodesian Government began to operate in 1928. At that time, the export of European-bred cattle was on the hoof. With the closing down of the live cattle trade, the export of chilled beef was commenced in 1932. 1933 was the first year in which the export of chilled beef was undertaken on a commercial scale, but owing to outbreaks of foot-and-mouth disease in Southern Rhodesia, and the consequent stoppage of export through Union ports, the factory was able to operate for 140 days only, and the number of cattle treated was 32,000. In 1934, only 152 days' work could be done, and 36,000 cattle were exported. The plant is capable of handling 6,000 head of cattle per month, and the overhead expenditure is stated to amount approximately to £4,200 a month. During these two years' working the Company sustained a heavy loss, and Government was called upon to pay the full amount of its guarantee; that is, £15,000 per annum. In 1935, the factory was closed from 1st January to 31st March; from 1st April to 15th October the factory operated at full capacity, and from 15th October to the end of the year at half capacity. 57,000 animals passed through the factory during 1935, and the Company made a net profit of £15,000, so that Government had to pay £5,000 only.

It will be observed that the price which the factory is able to pay for freezer and boner cattle approximates closely to the present-day value of native slaughter cattle in the less remote areas, and one may conclude that, at to-day's prices, such cattle can be exported as boners and freezers at a profit.

With regard to the chilled beef industry, to be on the safe side, one should assume that for the moment the chiller can command little or no premium at the factory over the freezer and boner class. It is difficult to foresee what the effect will be of the Empire preferential tariff when the import duty on meat is introduced in Great Britain. It is possible that the tariff will bring about a narrowing of the present margin between Argentine and Empire chilled beef. Whatever its effect, stability will have been reached before this country is in a position to export chilled beef in any quantity.

The Managing Director at Bulawayo was evidently quite interested in the possibility of opening a factory in Kenya. Beef and hide yields from our average cattle struck him as being remarkably high, and another point in the favour of

this country was our two rainy seasons with two periods of growth, and the consequently better average condition of cattle throughout the year. He discussed the subject of our interview with the Chairman of the Board in Capetown, who suggested that a representative of the Company might visit the Colony in the near future.

LIEBIG'S MEAT FACTORY, WEST NICHOLSON.

I visited the factory of Messrs. Liebig at West Nicholson on the 18th of June, and followed the complete process. I was able to discuss our problems with Mr. R. Mackenzie, Liebig's Director for Africa, and Mr. G. Brinton, the General Manager for Southern Rhodesia. The factory is a semi-permanent structure, and has a capacity of 200 head of cattle per day. Under Rhodesian conditions the most that a factory of this type can operate is nine months in the year, owing to the very poor condition of scrub cattle in the winter months. Actually, if the cattle were available, the factory could run ten or eleven months, allowing one or two months for reconditioning of plant. The average weight of animals treated at the factory is in the neighbourhood of 700 lb., including a number of animals in quite reasonable condition from Messrs. Liebig's own ranches. I was informed that the cost of a plant of this capacity is between £45,000 and £50,000; a plant of half this capacity would cost rather more than half this sum.

Cattle are killed in the usual manner, and the carcasses are then opened by native labour. Lean beef is trimmed and hashed, and dried in rotating steam-jacketed driers for the production of granulated dried beef, which is packed in tins of approximately 40 lb. capacity. This product is taken over by the Lemco Company, and is used in the preparation of oxo, soups, etc. Lean beef with a certain amount of adherent fat is pickled, cooked and canned. This canned beef is sold under the mark "Fray Bentos" in the Union of South Africa. I was informed that the yields of corned beef amounted to about 50 per cent of the raw meat, and the figures approximate to those given in the memorandum for American canning practice.

The canned beef is disposed of by the parent company to retailers in the Union. The remaining beef, including all trimmings, is made into extract. Edible fat is refined and sold to bakers, etc., in small tins. Tallow is sold locally to the soap industry. The livers are not exported, but tongues are

pickled and canned; the thyroid, ovaries, and pituitary gland are dried and shipped to Great Britain. The factory includes an efficient can-manufacturing plant, which makes all cans out of flat sheet-metal. Freight on corned beef is heavy—Sh. 166/10d. to Johannesburg, Sh. 190 per ton gross to Capetown, or Sh. 240 per ton net of beef. The canned meat actually sells wholesale at approximately Sh. 4/6d. per dozen 8 oz. tins. The extract, which is a No. 2 grade, is shipped to Lemco in Great Britain. Meat meal, bone meal and blood meal are produced. An average animal will yield 35 lb. of meat meal when corned beef is not being produced. The average yield per animal of bone meal is 40 lb. and of blood meal 4 lb. The hides are pitted and shipped in the usual manner. They are carefully flayed and well cured.

It is difficult to obtain actual operating figures, since so much of the produce is not sold on the open market, but is taken over by the parent concern. Liebig's and the associated companies undoubtedly control the market for powdered beef and extract, and when the Imperial Cold Storage Company started an extract plant in East London in 1931 they found it almost impossible to dispose of extract at a remunerative price, and the project had eventually to be abandoned.

The Manager of the factory informed me that they were able to pay from Sh. 2 to Sh. 4/6d. per 100 lb. live weight, according to the condition of the animal. The Company appears to be quite satisfied with the present method of operating, and it is significant that they propose to put through the factory large numbers of their own ranch cattle, most of which could be included in the freezer or boner plant. On these cattle they will doubtless receive the ½d. per lb. bounty which the Government gives to producers. Mr. Mackenzie had actually been in Kenya in 1922, and had then discussed with Government the question of opening a by-products factory. At that time, the average price of native cattle was in the neighbourhood of Sh. 100, and the owners were extremely reluctant to sell. Government considered it quite impossible to apply pressure to sell in any form, and the matter was not carried any further. Mr. Mackenzie appreciated that conditions in this Colony had considerably changed and he proposed to communicate with his directors in London on the question of a re-examination of the possibility of operating in Kenya.

RANCHING.

Messrs. Liebig's have several large ranches to the south of West Nicholson on the low veldt. I drove through part of this area, and visited the ranch known as Section O, on which the cattle are Angus, Sussex, and Afrikaner pure-breds. The land is fairly heavily bushed, and there is only a poor grass covering. Poor grass species, such as *Aristida*, predominate, but I was told that these had largely colonized during the recent droughts. At the present moment the country is extremely dry, although good rains have fallen this year. During the annual winter drought, cattle lose condition very badly, sometimes falling during the third year of life to a point below the minimum weight of the previous year. Breeders have experienced the same trouble as breeders in this and other colonies, and highly bred cattle produced after many successive matings to imported European bulls, appear to lack size and constitution. Of the European breeds it seems to be the general opinion that the Sussex has proved the most adaptable and most hardy, and most of the Sussex stock has been imported from South Africa. The other beef breeds, Hereford, Angus and Shorthorn, appear to suffer rather more than the Sussex under the same conditions.

Messrs. Liebig's now propose to introduce more Afrikaner blood. The Afrikaner appears to withstand the adverse conditions of the winter much more successfully than any of the European grades. He is bigger, grows better, and will acquire a better finish on grass alone. It is not an ideal beef breed, being long in the leg and having the quarters and shoulders of the zebu. At the present moment it is, however, the most favoured breed in the dry areas, and extremely high prices are being paid for pure-bred stock in the Union and in Rhodesia. In spite of the deficiencies of the breed in conformation, well-finished Afrikaner steers can make the Imperial grade of the chiller class. In mixed lots of steers, those with a large proportion of Afrikaner blood always appear to be better grown and to be in better condition than the other grades. I was assured that under favourable conditions the Afrikaner could be brought to maturity as early as the Hereford and Angus grades, but that under extremely adverse conditions the Afrikaner would mature in six years, whereas the other breeds would fail to mature. Undoubtedly conditions in Southern Rhodesia are more severe than anything we have to contend with in Kenya, at least in the settled areas. Each winter cattle suffer from both a protein and

energy deficiency, which brings about an extreme loss in weight unless they are heavily fed with concentrates.

After visiting Messrs. Liebig's ranch, I went to another ranch of Colonel Fenwick, near Gwanda. During recent years this ranch has turned over almost entirely to Afrikanders. A good deal of pedigree breeding stock is produced for sale, and the ranch feeds a large number of Afrikander-grade steers for the chiller export. Good veldt hay is grown, and large quantities of bean and cowpea hay are stored for the winter season.

Cattle for the chilled beef market are fed in one of two ways, according to the season. In summer they are penned at night, and given a small feed of maize meal, with possibly a little meat meal or blood meal, first thing in the morning, and then turned out to graze for the remainder of the day. In winter, the cattle are penned and topped off by intensive feeding. Rations are composed of maize or millet meal, meat meal, blood meal, cowpea hay, sunflower-head meal, or groundnut cake, with bone meal and salt. They are fed for from ten weeks to three months, according to their condition on arrival. In general, from 450 to 550 lb. of concentrates and a rather larger amount of veldt hay are consumed per 100 lb. live weight gain. During the feeding period, something less than a ton of excellent manure can be obtained from each beast. At the Matopos Estate Experimental Station I examined the records of a large number of feeding experiments, which bear out the information already given. It is not proposed to make any detailed report on these experiments since they are incorporated in various publications that have been issued by the Department of Agriculture.

SHEEP.

There are practically no woolled sheep in Southern Rhodesia, and attention is being paid to the development of the improved Black-headed Persian. Experimental consignments of Black-headed Persian lamb carcasses and first-cross lambs from Black-headed Persian rams and Kaffir ewes have been exported to Smithfield Market. Encouraging reports have been received, but I imagine that the export trade is not likely to develop in the near future.

PIGS.

A few experimental consignments of porkers have been made to the London market. I have already referred to the costs of factory preparation. Of the breeds used in these

experimental consignments, Berkshire x Large Black cross was the best, followed by the Large White x Large Black cross. The Tamworth x Large Black cross was third, and the Middle White carcasses next. The average weight was 76 lb., and the average age five months. The chief criticism, which applied to almost the whole consignment, was excessive fat compared with the amount of lean. This is obviously due to failure to force pigs before and after weaning. The rations fed in experiments consisted of 100 lb. maize meal, 2 lb. bone meal, 1 lb. salt, plus a gallon of skim milk for every 3 lb. of meal consumed; or 60 lb. maize meal, 36 lb. of pollard or bean meal, 4 lb. of blood meal, 45 lb. of millet meal, 10 lb. of carcass meal, 2 lb. of bone meal, and 1 lb. of salt. Of these rations, the pigs consumed approximately 2.4 lb. per day, with a total consumption of about 300 lb. for 100 lb. gain in live weight. It should not be difficult to produce pigs which will satisfy Smithfield requirements, using rations available in this Colony; and this matter might be reserved for full discussion when the answers to the pig questionnaire receive consideration.

GENERAL.

It must be conceded that in the matter of beef production this Colony has several advantages over Southern Rhodesia. The better distribution of rainfall, with two growing seasons for pasture, ensures that the animals are in good condition for a much greater period of the year. Indeed, with proper management, in a normal season there should be little or no loss of weight in growing animals at grass. This good average condition is well displayed in the beef test data gathered by Mr. French at Nairobi in August, 1935. The Imperial Cold Storage Company's manager was greatly impressed by the good growth and excellent yields of both native and grade cattle, as illustrated in this report.

The fact that in Kenya we have a good port, situated at a reasonable distance from the cattle areas, is also a considerable help in the production of beef for export. The rail journey to Durban or Capetown, the former for frozen beef and the latter for chilled beef, is excessively long; and since both ports are outside the Colony, the exporters have been subjected to considerable inconvenience and loss as a result of the imposition of severe veterinary restrictions by the Union Government. At the present moment, the Company is investigating the feasibility of erecting suitable cold storage

accommodation at Beira, with a view to switching exports of frozen beef to that port, when veterinary restrictions in the Union make transport difficult.

So far as numbers are concerned, the cattle population of Southern Rhodesia is some two and a half millions only, as against from four and a half millions upwards in this Colony, so that there should be no unreasonable risk of short-fall in supplies. I was informed that in Southern Rhodesia in the early stages it was difficult to persuade the native to sell, but that to-day supplies are forthcoming, although no pressure is used other than that required in the collection of the male poll tax of £1 per head. The buying organization of the Company appears to operate smoothly without forcing up the price beyond the economic level.

No one who has seen the two Colonies could fail to be impressed by the superior conditions obtaining in Kenya. I have no hesitation in saying that we should have no difficulty in procuring from native reserves freezer and boner cattle up to the required standard. Government has, at my suggestion, already extended an invitation to the Company to investigate conditions in this Colony, with a view to the commencing of operations, and I would emphasize that the time is most opportune for such an inquiry. Prices of native cattle in the less remote areas to-day fall into line with the value of the beef for export, and there do not appear to be any insuperable difficulties in the way of establishing this industry.

R. DAUBNEY.

5th July, 1936.

APPENDIX B

MEMORANDUM ON THE NUMBERS OF CATTLE
LIKELY TO BE AVAILABLE FOR A
MEAT FACTORY.

NATIVE AREAS.

It is extremely difficult to obtain any accurate figures relating to the numbers of cattle in the native reserves. There is no complete set of figures of a later date than those prepared in 1930 for the World Agricultural Census. To some extent, however, the figures supplied to the Carter Land Commission may be taken as a guide.

FIGURES SUPPLIED TO THE CARTER LAND COMMISSION

NORTHERN FRONTIER PROVINCE (excluding	
Samburu and Galla)	200,000
Masai	*720,000
Ukamba and Kitui Machakos	248,000
Kitui	220,000
RIFT VALLEY NATIVE RESERVES—	
Samburu (Census 1933)	119,000
East Suk	100,000
Nandi	150,000
Squatter Stock, Nzoia	113,000
Turkana Province, West Suk	188,000
TOTAL ..	2,058,000

*A count by the local Veterinary Officer in the Kajiado District indicates that this figure should in all probability have exceeded 1,000,000.

The figures that have been extracted refer to those areas from which cattle will be drawn for a meat factory. Since the time of the Carter Commission the country has been through severe periods of drought and locust infestation, and one can assume that in practically every area numbers at the moment are considerably reduced. As an example, the estimate for the Kitui area is now said to be in the neighbourhood of 200,000, while the Kajiado district of the Masai has been reduced somewhere in the neighbourhood of 160,000. It would probably meet the position roughly if one reduced the estimate by 50 per cent, and stated that at the moment there are possibly a million cattle from which one could draw supplies. At the same time, however, it should be pointed out that variation in numbers of cattle in native reserves is undoubtedly a cyclic phenomenon; and the Carter Commission figures represent peak numbers which are regularly

reached after a succession of several favourable years, only to be followed by a rapid decline as a result of starvation and contagious disease.

According to data compiled by the United States Bureau of Animal Industry, a 500-cow ranch should comprise about 1,460 head of stock, including 160 adult males; and, on the basis of maturation at three years, should furnish about 260 head of slaughter stock, or 17 per cent per annum, allowing the usual reserve for replacement. If one doubles the age at which maturity is reached, it is necessary to carry an additional 800 animals for disposal, bringing the total number of the ranch up to 2,260 head, of which there will be an annual saleable surplus of 11.5 per cent. Applying these figures to the native cattle population, it is evident that a million head of cattle should supply a saleable surplus of 115,000. Representative counts indicate that the actual numbers of adult males now being carried in the native reserves is much higher than would be the case of a well-conducted ranch, so that in the first few years there should be no difficulty at all in realizing this surplus. As an example it might be mentioned that the 1933 census of Samburu cattle showed that adult male stock represented rather more than 30 per cent of the total cattle population including calves.

The returns of hide exports demonstrate the enormous wastage that is taking place under present conditions. The average yearly export of hides from Mombasa during the last four years has been equivalent to 522,000 pieces. It is doubtful if the hides from slaughter animals amount to more than 100,000 pieces per annum, so that the remaining 420,000 pieces represent a wastage from starvation and disease, principally the former. It is suggested that any improvement that may be brought about by culling will rapidly be reflected in a reduction of the figure for fallen hides. There can be no fear that the taking of 100,000 or even 200,000 head of cattle will in any way endanger the food supply of natives. Indeed, production at the factory of a certain quantity of dried beef each year would be an excellent assurance against starvation during times of famine. Moreover, if under present conditions the cattle in the areas in question reach during peak years a level of roughly 2,000,000, the annual toll of 100,000 for the factory will hardly be sufficient to keep the variation of numbers within reasonable limits.

SETTLED AREAS.

According to the 1934 census, the number of cattle owned by Europeans was 256,167, and of these 80,000 were cows and heifers over three years old. If we assume, for the sake of argument, that all the dairy farmers in the country can be induced to rear their bull calves, and on the other side assume that none of the beef-ranching cattle-owners will sell heifers for slaughter, and that the average calving interval is eighteen months, we see that 25,000 bull calves should be born each year that will eventually be available for slaughter. The annual slaughterings of European-owned cattle amounted in 1934 to 11,079, leaving a balance of roughly 14,000. It seems not unreasonable to aim at reaching a production of chiller cattle of from 10,000 to 12,000 head per annum at an early date.

Bulls.—In 1934, the total number of adult bulls in the settled areas was 3,566. Of these rather less than one-sixth were pure bred. It is difficult, without making a close survey of the country and of the conditions of farming, to estimate how many bulls of the beef type would be required and how long it would take to reorganize the industry for beef production. It is probable that a scheme for assisted importations, similar to that formerly supported by the Empire Marketing Board, would have a prompt effect in inducing farmers to import bulls of the right stamp; and within a few years no doubt certain of the more favourably situated breeders of pure-bred cattle would be in a position to supply at least the major part of the Colony's requirements.

R. DAUBNEY.

April, 1936.

APPENDIX C**MEMORANDUM ON FACTORY OPERATION.**

Compiled by the Secretary, 30th November, 1935.

Neglecting for the moment the question of markets for produce, one may state that successful operation of the factory will depend upon—

(a) scale of production;

(b) regularity of supply; and

(c) upon a significant correlation between the price of animals and the price of the final product.

With regard to (a), as I have already stated, a factory with an output of 100,000 beef carcasses per annum is an economically sound unit, and can be so arranged as to be capable of handling an increased output of beef, as well as a complementary production of fat lambs, porkers, and frozen poultry.

So far as (b) is concerned, a factory of the type under discussion should operate for at least ten months of the year. If the factory can be sited in a highland district, or if ample grazing areas can be allocated as collecting centres, there need be no difficulty about feeding the plant for at least ten months of the year.

By (c) is meant the correlation between cattle and beef price levels, which in countries like the U.S.A. and South American States follow each other very closely. Taking as an example the packing industry of the U.S.A., which handles meat of all grades, we find that according to statistics meat-packing is one of a group of industries producing major products and by-products; all the industries of this group operate on a very narrow margin between material cost and value of products, as compared with other types of manufacturing industries. The margin between cost of materials and value of finished products, which of course represents manufacturing costs plus profit, varies in this group of industries from 10.9 per cent to 18 per cent, the lower figure representing the actual margin of the packing industry. If one compares this margin with the figures available for ordinary manufacturing industries, such as electrical manufacturing, chemicals, brick and tile works, iron and steel, where the margin varies from 50.6 per cent to 67.4 per cent, one can readily appreciate how closely the costs of raw

materials and the price of finished products are bound in the meat-packing industry with its margin of only 10.9 per cent. In the packing industry beef prices and cattle prices move together; and on the English market, according to data published by the Imperial Economic Committee, both (apart from minor deviations) follow closely the fluctuations in the general price index. The point to be made here is that under American conditions the significant cost is the cost of raw materials, i.e. animals; and that, given an efficiently organized factory, the price one can pay for the animal is entirely dependent upon the final selling value of the finished products, particularly the major product beef.

By-products Returns.

If one now examines Table I, which is a costing sheet based on market prices obtaining in Chicago for the week ending 30th August, 1934, it will be evident that the returns derived from by-products on the average more than cover the total expense of processing the beef carcass; in fact, only in one class, that of cutter cows, is there a deficit, which amounts to 7 cents per 100 lb. To ascertain how far this correlation between manufacturing costs and by-products returns would hold good for Kenya, it is necessary to have available the results of beef tests of the type upon which these figures are based. Table II summarizes data derived from a beef test carried out in August last on 214 full-mouthed native cattle, and 60 grade animals slaughtered by Europeans, both at the Nairobi Abattoir. The test was made by Mr. M. H. French, of Mpwapwa Laboratory, at my suggestion, and I am extremely grateful to Mr. Hornby, Director of Veterinary Services, Tanganyika Territory, for allowing Mr. French to undertake this work. The results, together with those of tests made of Tanganyika cattle, will shortly be published in the *Empire Journal of Agriculture*. For purposes of comparison I have included in Table II standard figures for American medium-common heifers, 550-750 lb. live weight, and figures from an actual beef test of 499 butcher cattle made in Chicago.

The chief points of interest in Table II are the comparatively good yield of dressed beef from both classes of Kenya animal; the heavier proportionate weight of the hide in the native animal, the heavier liver in both classes, the poor yield of fat in the native animal, and the unexpectedly good fat return in the grade. The American steers of Table II would fall into the medium steer class of Table I, which show a margin of 26 cents per 100 lb. live weight for the value of

TABLE 1

INSTITUTE OF AMERICAN MEAT PACKERS. BEEF COST TEST INFORMATION

Bulletin BC-214

(PREPARED BY INSTITUTE'S DEPARTMENT OF MARKETING)

30th August, 1934

WEEKLY BEEF COST TEST—FIRST HALF CURRENT WEEK (FIGURES IN DOLLARS PER CWT. ALIVE)

CLASS AND GRADE OF CATTLE	*Live Cattle Cost (1)	Total Expense (2)	*Total Cost and Expense (3)	*By-products Credits			*Net Beef Cost (7)	Yield (8)	Beef Cost Per Cwt. Dressed (9)
				Hides (4)	Other (5)	Total (6)			
	\$ cts.	Cents	\$ cts.	Cents	Cents	Cents	\$ cts.	Per cent	\$ cts.
STEERS—									
Prime and Choice:									
550-900	8 13	55	8 68	34	44	78	7 90	59	13 39
900-1,100	9 48	50	9 98	36	45	81	9 17	60	15 28
1,100-1,300	10 08	48	10 56	42	47	89	9 67	61	15 85
1,300-1,500	10 29	45	10 74	42	47	89	9 85	62	15 89
Good:									
550-900	7 29	54	7 83	34	41	75	7 08	58	12 21
900-1,100	8 21	50	8 71	36	41	77	7 94	59	13 48
1,100-1,300	8 63	47	9 10	42	43	85	8 25	60	13 75
1,300-1,500	9 17	45	9 62	42	44	86	8 76	61	14 36
Medium:									
900-1,100	6 42	48	6 90	36	38	74	6 16	55	11 20
Common:									
900-1,100	4 50	47	4 97	36	34	70	4 27	53	8 06

*Cattle prices are from Daily Market Report of the U.S. Department of Agriculture. By-product prices are from the National Provisioner, as follows:— Hides, heavy steer, 9 cts.; light steer, 8 cts.; extra light steer, 7½ cts. (nominal); Light cow, 7 cts.; Bull, 5½ cts.; 2 oleo oil, 7½ cts.; prime packer's tallow, 5 cts.

TABLE 1—Contd.

INSTITUTE OF AMERICAN MEAT PACKERS. BEEF COST TEST INFORMATION

Bulletin BC-214

(PREPARED BY INSTITUTE'S DEPARTMENT OF MARKETING)

30th August, 1934

WEEKLY BEEF COST TEST—FIRST HALF CURRENT WEEK (FIGURES IN DOLLARS PER CWT. ALIVE)

CLASS AND GRADE OF CATTLE	*Live Cattle Cost (1)	Total Expense (2)	*Total Cost and Expense (3)	*By-products Credits			*Net Beef Cost (7)	Yield (8)	Beef Cost Per Cwt. Dressed (9)
				Hides (4)	Other (5)	Total (6)			
	\$ cts.	Cents	\$ cts.	Cents	Cents	Cents	\$ cts.	Per cent	\$ cts.
HEIFERS—									
Choice—Good :									
550-750	6 92	59	7 51	29	36	65	6 86	55	12 47
750-900	7 17	52	7 69	29	35	64	7 05	56	12 59
Medium—Common :									
550-750	4 71	57	5 28	29	29	58	4 70	51	9 22
750-900	4 79	50	5 29	29	28	57	4 72	52	9 08
Cows—									
Good	5 04	48	5 52	29	27	56	4 96	52	9 54
Medium—Common ..	3 48	50	3 98	29	22	51	3 47	50	6 94
Cutter	2 40	52	2 92	25	20	45	2 47	46	5 37
BULLS—									
Butcher	3 38	45	3 83	25	21	46	3 37	56	6 02
Cutter	3 02	41	3 43	25	17	42	3 01	53	5 68

*Cattle prices are from Daily Market Report of the U.S. Department of Agriculture. By-product prices are from the National Provisioner, as follows:— Hides, heavy steer, 9 cts.; light steer, 8 cts.; extra light steer, 7½ cts. (nominal); Light cow, 7 cts.; Bull, 5½ cts.; 2 oleo oil, 7½ cts.; prime packer's tallow, 5 cts.

TABLE 1a

INSTITUTE OF AMERICAN MEAT PACKERS. BEEF COST TEST INFORMATION

Bulletin BC-296

(PREPARED BY INSTITUTE'S DEPARTMENT OF MARKETING)

March 26th, 1936

WEEKLY BEEF COST TEST—FIRST HALF CURRENT WEEK (FIGURES IN DOLLARS PER CWT. ALIVE)

CLASS AND GRADE OF CATTLE	*Live Cattle Cost (1)	Total Expense (2)	*Total Cost and Expense (3)	*By-products Credits			*Net Beef Cost (7)	Yield (8)	Beef Cost Per Cwt. Dressed (9)
				Hides (4)	Other (5)	Total (6)			
STEERS—	\$ cts.	Cents	\$ cts.	Cents	Cents	\$ cts.	\$ cts.	Per cent	\$ cts.
Prime and Choice:									
550-900	10 13	57	10 70	61	65	1 26	9 44	59	16 00
900-1,100	10 63	50	11 13	61	67	1 28	9 85	60	16 42
1,100-1,300	10 75	47	11 22	66	70	1 36	9 86	61	16 16
1,300-1,500	10 92	45	11 37	66	70	1 36	10 01	62	16 15
Good:									
550-900	9 00	57	9 57	61	63	1 24	8 33	58	14 36
900-1,100	9 50	49	9 99	61	63	1 24	8 75	59	14 63
1,100-1,300	9 63	46	10 09	66	66	1 32	8 77	60	14 62
1,300-1,500	9 58	44	10 02	66	67	1 33	8 69	61	14 25
Medium:									
900-1,100	8 17	47	8 64	61	59	1 20	7 44	55	13 53
Common:									
900-1,100	7 04	46	7 50	61	52	1 13	6 37	53	12 02

*Cattle prices are from Daily Market Report of the U.S. Department of Agriculture. By-product prices used in this test are based on quotations in The National Provisioner, as follows:— Hides, heavy steer, 13 cts.; light steer, 12 cts.; extra light steer, 12 cts.; Light cow, 10½ cts.; Bull, 9 cts.; prime oleo oil, 10 cts.; prime packer's tallow, 6 cts.

TABLE 1A—*Contd.*

INSTITUTE OF AMERICAN MEAT PACKERS. BEEF COST TEST INFORMATION

Bulletin BC-296

(PREPARED BY INSTITUTE'S DEPARTMENT OF MARKETING)

March 26th, 1936

WEEKLY BEEF COST TEST—FIRST HALF CURRENT WEEK (FIGURES IN DOLLARS PER CWT. ALIVE)

CLASS AND GRADE OF CATTLE	*Live Cattle Cost (1)	Total Expense (2)	*Total Cost and Expense (3)	*By-products Credits			*Net Beef Cost (7)	Yield (8)	Beef Cost Per Cwt. Dressed (9)
				Hides (4)	Other (5)	Total (6)			
HEIFERS—	\$ cts.	Cents	\$ cts.	Cents	Cents	\$ cts.	\$ cts.	Per cent	\$ cts.
Choice—Good :									
550-750	8 27	59	8 86	49	56	1 05	7 81	55	14 20
750-900	8 38	52	8 90	49	54	1 03	7 87	56	14 05
Medium—Common :									
550-750	6 67	57	7 24	49	48	97	6 27	51	12 29
750-900	6 67	50	7 17	49	46	95	6 22	52	11 96
Cows—									
Good	6 13	48	6 61	49	45	94	5 67	52	10 90
Medium—Common ..	5 27	50	5 77	49	39	88	4 69	50	9 78
Cutter	4 14	52	4 66	44	36	80	3 86	46	8 39
BULLS—									
Butcher	6 25	44	6 69	47	37	84	5 85	56	10 45
Cutter	5 83	40	6 23	47	32	79	5 44	53	10 26

*Cattle prices are from Daily Market Report of the U.S. Department of Agriculture. By-product prices used in this test are based on quotations in The National Provisioner, as follows:— Hides, heavy steer 13 cts.; light steer, 12 cts.; extra light steer, 12 cts.; Light cow, 10½ cts.; Bull, 9 cts.; prime oleo oil, 10 cts.; prime packer's tallow, 6 cts.

TABLE II.—COMPARATIVE CARCASS AND ORGAN WEIGHTS OF KENYA AND AMERICAN CATTLE

	KENYA COLONY Native—Full Mouthed Cattle		AMERICA Heifers—Medium— Common		KENYA COLONY Grades—European Killed		AMERICA 499 Steers—Medium Grade	
	Weights	Percentage of Live Weight	Weights	Percentage of Live Weight	Weights	Percentage of Live Weight	Weights	Percentage of Live Weight
	lb.	Per cent	lb.	Per cent	lb.	Per cent	lb.	Per cent
Live Weight	590	100	590	100	970	100	982	100
Carcass	308.5	52.3	303.85	51.52	558.9	57.2	528	55
Hide	43.4	7.3	35.4	6.0	64.01	6.6	62.4	6.5
Feet	12.8	2.2	—	—	19.50	2.0	12.16	1.3
Stomachs	41.4	7.0	—	—	57.87	5.9	—	—
Tongue	2.5	0.4	2.5	0.4	4.04	0.4	3.41	0.3
Tail	1.6	0.3	0.59	0.1	2.55	0.3	7.1	0.1
Liver	8.3	1.4	5.9	1.0	11.33	1.2	6.59	0.68
Heart	2.2	0.4	2.06	0.35	3.28	0.3	2.64	0.25
Kidneys	1.2	0.2	—	—	1.88	0.2	1.0	0.06
Fat	9.5	1.6	20.6	3.5	27.54	2.8	28.74	2.8
Blood	20.0	3.4	—	—	30.07	3.1	—	—
Blood, Dry	4.4	—	4.4	—	7.4	0.72	6.5	0.68
Head	23.9	4.0	—	—	36.2	3.7	22.96	2.5
Horns							2.09	

by-products over total cost of beef production; and under the same factory conditions, the Kenya grades ought to show at least an equal margin. It is to be observed that in the case of certain organs the weights given may not be strictly comparable, since, for example, no allowance has been made for trimming in the weight of the tongue in the Kenya animals; tongue trimmings generally amount to 15 per cent. The weights given for the feet and tail may not be taken on the same basis.

To carry the computation a stage further, Table III has been compiled. Table III shows the application of current market prices, as far as they can be ascertained, to the yields of various by-products. The deductions for manufacturing, loading, selling, etc., are based upon American figures, and in American practice include curing, loading, selling, and differential for branded hides, cuts, warble-fly, condemnation of organs, etc. I have then allowed an additional sum for freight, $\frac{1}{2}$ d. per lb. for ordinary shipment, and 1d. per lb. for shipment frozen or in cold store. Finally, in the total by-products return I have allowed a discount of 17 per cent to cover the loss from excessive condemnations from all causes. On this basis: the net return from by-products from a full-mouthed native animal is about 16/-, and from a grade steer weighing 970 lb., 27/11 $\frac{1}{2}$ d. The total cost of slaughtering as shown in Table I would be for native animals 57 cents of a dollar per 100 lb. live weight, or \$3.36 per head; at \$4.90 to the £, this is equal to Sh. 13/80 per head, taking the native as being represented by the medium-common heifer class of 550 lb. to 750 lb. In this grade the by-product return should be 65 cents of a dollar per 100 lb. live weight; whereas according to Table III the return is equivalent to 66 cents of a dollar per 100 lb., even after the additional 17 per cent discount has been allowed. The higher figure is explained by the greater weight of the hide and liver, which advantages are not neutralized by the higher yield of edible fat from the American animal. Incidentally, at the time the American figures were taken the price for oleo was low.

There is another rule of thumb method for figuring the costs of slaughtering. A good all-round figure is said to be \$2.00 per head for slaughtering and 50 cents per 100 lb. dressed weight for chilling. On this basis the cost of processing the 308 lb. carcass of the native would be \$3.54, or Sh. 14/45.

TABLE III.—ESTIMATED VALUE OF BY-PRODUCTS—KENYA NATIVE ANIMAL

	Lb.		Sh. d.		Sh. d.
Hide	43.4	Less 20 per cent shrinkage—34.7 lb. at 4d. per lb.	11 6½	Less ½d. per lb. for curing, loading, selling, brands, 10/1d. less ½d. per lb. freight	8 6½
Feet	12.8	Including hoof £10 per ton, bone £6/10, all at £6/10	9	Less preparation, freight, etc., say 2½d.	6½
Tongue	2.5	Less 15 per cent trimming at 6d. per lb. ..	1 0½	Less freezing, etc. ½d. and freight at 1d. all at 1½d.	9
Liver	8.3	At 6d. per lb.	4 2	Ditto	3 1½
Tail	1.6	At 4d. per lb.	6	Ditto	4½
Heart	2.2	At 2½d. per lb.	5½	Ditto	4
Kidneys ..	1.2	At 6d. per lb.	7	Ditto	5
Head and Cheek Meat	4.0	At 2d. per lb.	8	Ditto	6
Fat	9.5	=48 per cent at 65 per cent Oleo at Sh. 56 per cwt.	4 7	Less preparation, etc., ½d. and freight at 1d., all at 1½d.	3 6
Blood Tankage ..	20.0	=4 lb. Conc. to 10 per cent moisture, 17 per cent NH ₃ ; 4 lb. Conc. to 10 per cent moisture, 17 per cent NH ₃ at Sh. 30 unit	8	Less 25 per cent preparation and freight	6
Tallow	3.4	From stomachs, etc. at 3d. per lb. ..	10	Ditto	7½
					19 2½
				Less 17 per cent condemnations, etc.	3 2½
				Sh.	16 0

This table does not include returns from such things as casings, head, glands for pharmaceutical purposes, etc., all of which are utilized. For example: the net value of casings is estimated in the U.S.A. at 44 cents of a dollar per head; that of heads at 1.2 cents per 100 lb. live weight. In the case of feet, I have included only bone values, whereas in America tallow and oil values net are estimated at 10 cents per 1,000 lb. live weight.

TABLE III—(Continued).
ESTIMATED VALUE OF BY-PRODUCTS—KENYA GRADE CATTLE

	<i>Lb.</i>		<i>Sh. d.</i>		<i>Sh. d.</i>
Hide	64-01	Less 20 per cent shrinkage—51 lb. at 4d. per lb.	17 0	Less ½d. per lb. for curing, loading, selling, brands, 14/10½, less ½d. per lb. freight	12 9
Feet	19-50	On basis of above quoted prices	1 1½	Less preparation, freight, etc., say 3½d.	10
Tongue	4-04	Less 15 per cent trimming at 6d. per lb. ..	1 8½	Less freezing, etc., ½d. and freight at 1d., all at 1½d.	1 3
Liver	11-33	At 6d. per lb.	5 8	Ditto	4 3
Tail	2-55	At 4d. per lb.	10	Ditto	7½
Heart	3-28	At 2½d. per lb.	8	Ditto	6
Kidneys	1-88	At 6d. per lb.	10	Ditto	7½
Head and Cheek Meat	4-0	At 2d. per lb.	8	Ditto	6
Fat Oleo	27-34	From caul and ruffle—48 per cent other sources at 65 per cent yield, 28 lb. ..	13 0	Less 25 per cent preparation and freight	10 10
Blood Tankage ..	30-0	—6 lb. concentrated to 10 per cent moisture (NH ₃), 4 lb. concentrated to 10 per cent moisture (NH ₃)	10	Ditto	7½
Tallow, etc. ..	4-6	.. .. .	1 1½	Ditto	9
				Less 17 per cent condemnations, etc.	33 6½
				<i>Sh.</i>	27 11½

This table does not include returns from such things as casings, head, glands for pharmaceutical purposes, etc., all of which are utilized. For example: the net value of casings is estimated in the U.S.A. at 44 cents of a dollar per head; that of heads at 1.2 cents per 100 lb. live weight. In the case of feet, I have included only bone values, whereas in America tallow and oil values net are estimated at 10 cents per 1,000 lb. live weight.

For the grade carcass we can employ the figures given in Table I for the medium steer: cost 48 cents of a dollar per 100 lb. live weight, i.e. \$4.65, or Sh. 18/75 (East African shillings), for a 970 lb. animal. On the rule of thumb basis the cost would be \$4.80 or Sh. 19/50 per head. The net return on American figures would be \$0.74 per 100 lb., whereas the figure reached in Table III is equivalent to 70 cents per 100 lb. In this case the hide weights are the same; the Kenya animal has a considerable advantage in liver weight; fat yields are the same, although the current price used in calculating the return from the Kenya carcass is 50 per cent higher than the price in August last when the American figures were taken. Had the oleo quotations been at the same rate, and had one excluded the discount of 17 per cent, there would have been very little difference between the expected and the obtained result.

Table IV gives the price quotations used in estimating the value of by-products, indicating the sources from which they are taken. Owing to the difficulty of obtaining detailed quotations for some of the by-products on the English market, a few of the items are listed at the American prices of the 30th August, 1934, but fortunately this has only been necessary in the case of certain small items.

TABLE IV
PRICES OF BY-PRODUCTS

Hides	..	..	Chicago and New York 9-5 to 14-5 cents per lb. (Cured) S. American 11-5 to 13 cents c.o.f. New York National Provisioner, 12th Oct., 1934.
Feet	..	..	Hoof £10. Bone £8 to £10 per ton. Hoof £10 to £14 per ton. Modern Meat Marketing, October, 1935.
Tongue	..	..	28 cents per lb Chicago. National Provisioner, 12th Oct., 1935, i.e., same price as liver. Best frozen offal prices, Smithfield Meat Trades Journal, 23rd August, 1934—
Liver	..	..	Sh. 4 to Sh. 4/2 per stone 8 lb.
Tail	..	..	Sh. 2/8 to Sh. 3 per stone 8 lb.
Heart	..	..	Sh. 1/6 to Sh. 1/8 per stone 8 lb.
Kidneys	..	..	Sh. 4/8 to Sh. 5/4 per stone 8 lb.
Head and Cheek Meat	..	..	Sh. 1/2 to Sh. 1/4 per stone 8 lb.
Oleo and Stearine	..	..	From Sh. 41 to Sh. 61 per cwt. Modern Meat Marketing, October, 1935.
Blood	..	..	Sh. 12/6 per unit NH3. Modern Meat Marketing, October, 1935.
Tankage	..	..	Sh. 10/6 per NH3 unit. Modern Meat Marketing, October, 1935. p. 493.
Tallow	..	..	No. 1 Tallow, Sh. 28/6 to Sh. 32/6 per cwt.

I suggest that these figures justify the conclusion that a properly operated factory ought to be able to balance processing costs against by-product returns.

One other point is worthy of mention in connection with the operating costs. The incidence of the cost of the actual slaughtering and dressing of a carcass is per head slaughtered and the figure remains roughly the same whether the animal slaughtered weighs 1,000 lb. or 530 lb.; the chilling room cost depends of course upon the weight of carcass to be chilled and the cubic space occupied by the carcass in the chiller. At first sight the size of the native animal would seem to put the cost of slaughtering at an unduly high rate, but since the return from hides and liver, etc., are proportionately greater than in American cattle of the corresponding weight class, the figure is readily balanced out by the by-product return. It is also of interest to note that, of the total of \$2 post per head for slaughtering, labour charges accounted at one representative factory for 85 cents per head. Bearing in mind the simple nature of each task in packing-house operation, and the readiness with which the East African native takes to butchering operations, it is doubtful if many additional labour units would be required on the killing floor. In fact, the method of operation is so mechanized that I doubt if any additional operatives could be accommodated on the floor. It is evident that the native employee must perform the same task as the white workman, whose wages average roughly Sh. 16 per day. It is of course possible to slow up the operations by missing out every alternate hook on the moving chain, slowing down production by 50 per cent; but it is, in my opinion, extremely improbable that this would be necessary. I saw a night gang of beef dressers in Minnesota reach 75 per cent of the normal factory output after only two weeks' practice. These men were all unemployed, and none of them, with the exception of the "knocker", had ever before worked in a packing-house.

The Beef Return from Native Cattle.

So far nothing has been said about the major product of the factory—the beef. Mr. French's beef-test figures, both for native and grade animals, were in the nature of an agreeable surprise. Full-mouthed native cattle slaughtered in Nairobi furnish a carcass more than 40 lb. heavier than that of similar animals from Tanganyika Territory. The Kenya cattle also have heavier hides, lighter heads and heavier internal organs. In his manuscript, Mr. French remarks: "The figures also

indicate that the large Boran cattle and the biggest of the Masai oxen, which together represent the cattle yielding carcasses of over 350 lb., yield almost as high percentage returns of carcass and edible offal as do the improved animals, i.e. zebu cattle graded up by bulls of European breeds." Of 214 full-mouthed native cattle, 58 yielded carcasses over 350 lb. in weight, with an average of 384.8 lb. The percentage carcass yield for the two classes of native animal was 52.3 per cent and 53.8 per cent respectively (*cf.* medium-common heifers, Table I). In 50 animals Mr. French was able to divide the carcass between the 10th and 11th ribs, i.e. in the orthodox manner, and in these animals the hindquarters represented 50.4 per cent of the total carcass weight. Referring generally to the quality of the beef from the zebu carcasses, Mr. French expresses the opinion that "the carcasses are too small for export to Great Britain as chilled or frozen meat, and that they are more suited for a local packing industry. Carcasses from good Boran or Masai oxen carry a nice covering of external fat, and a fair percentage of intermuscular fat. 'Marbling', however, is not seen often, even in good zebu carcasses."

Suitability of Grade Beef for Chilling.

Regarding the quality of beef from the grade cattle, I quote Mr. French verbatim: "The hindquarters of these grade carcasses formed 51.5 per cent of the total carcass weight. This compares very well with Fourie's figures for South Africa (51.1 per cent) and with the figures for the native zebu cattle. . . . The carcass percentages of the Kenya grade cattle (56 per cent) are higher than was found for the zebu animals. They compare well with the figures given by Chalmers for Argentine (56 per cent) and Uruguay (53.6 per cent) cattle. The figures obtained by Hammond (64.6 per cent) are for animals slaughtered at Smithfield Fat Stock Show, and are therefore for cattle in a much fatter condition than the market normally requires. Wentworth, from experience at Chicago, states that good steers yield from 56 to 59 per cent carcass, and that cattle in show condition will yield up to 64 per cent of their weight as carcass. The Kenya grade stock therefore kills very well, and were the animals beef grades instead of dairy grades there is no doubt that they would be very suitable for export as chilled beef.

"The grade carcasses as a whole are a little too small for the frozen or chilled meat markets. There are, however, about 50 per cent which weigh over 600 lb. carcass weight,

and these would be suitable. The heavier grade carcasses are much better finished than the ordinary zebu carcasses. The grade animal has the ability to deposit fat intramuscularly. The grade carcass, generally, is longer, the ribs have a better spring, the sides are deeper, and the meat is thicker than in a zebu carcass. The shins are better fleshed, and there is much more meat on the aitch-bone and rump joints, and the thighs are also better developed. The insides and backs of the thighs are covered with a thin layer of fat, which extends over the rump and along the back and sides of the carcass to the shoulders. Generally there is also a little fat covering the insides of the ribs, and a large deposit on the kidneys. It is, however, in the better distribution of fat among the muscles that the grade scores most over a good zebu carcass. In Kenya the slaughter stock are all grass fed, and, as was noticed in Tanganyika, there is a definite tendency for the fat covering a carcass to become very yellow. This detracts very considerably from the market value of the meat. The grade cattle examined appeared to be very heavy boned, but no figures could be obtained to check this point. Much, however, could still be done to improve the carcasses of grade cattle by introducing blood of a good light-boned breed, such as the Aberdeen Angus. Such crosses will be just as early maturing, but in addition will possess a high rate of meat to bone in the carcass, and a greater development of the higher priced joints."

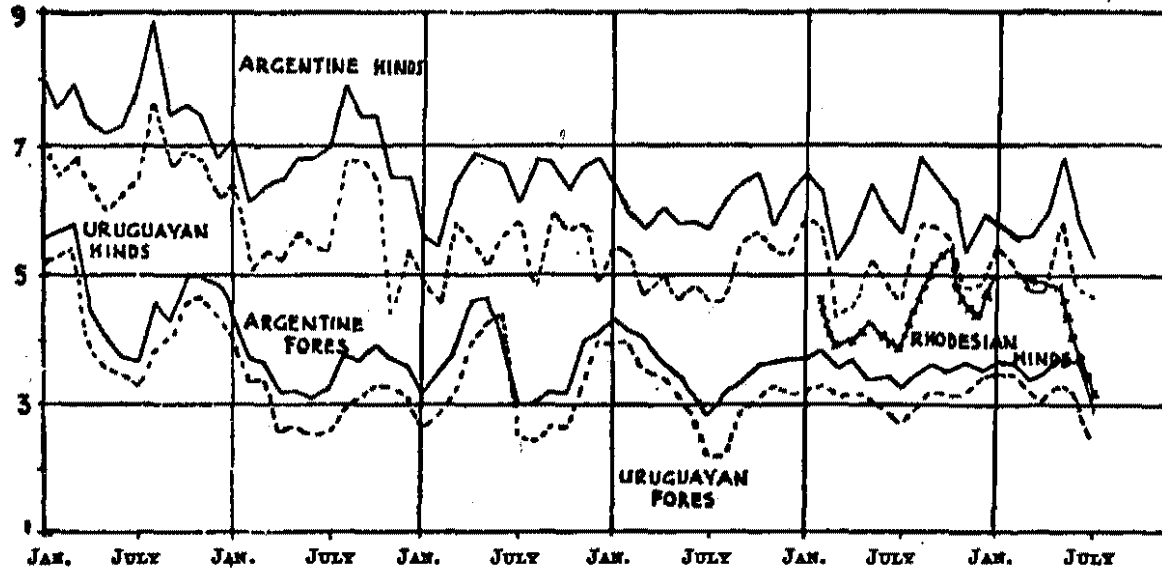
It is quite evident that in the grade cattle of this country we have a foundation stock from which animals suitable for the English chilled beef market could readily be produced by judicious crossing to a beef breed, such as the Angus. Once a suitable type has been obtained, the great insistence at Smithfield is upon uniformity and regularity of supply. It is in securing uniformity of carcass that legislation, such as that which in the declared areas of South Africa prohibits the use of any but approved bulls, would prove most useful. And, finally, there is little doubt that it would be an enormous advantage with our cheap food supplies to finish cattle on grain.

Prices of Chilled Beef.

In a recent article on supplies and prices of chilled beef in Great Britain, published in *Farming in South Africa*, Dr. Tomlinson has compiled from the Agricultural Market Reports a chart depicting the weekly variations in the market price of Argentine, Uruguayan and Rhodesian chilled beef—

for the first two during the last 5½ years, and for Rhodesian during the last 18 months. I attach a reproduction of this chart for ready reference. It will be seen that Rhodesian hind-quarters fall midway between Uruguayan hindquarters and Argentine fores, with an average price something in excess of 4d. per lb. At the moment of making up the chart, prices show the usual yearly July slump. It has been suggested that Rhodesian producers should greatly restrict the export of fore-quarters in view of the low price they realize at Smithfield. However, if an average price of only 2d. per lb. is obtained for the forequarters of a 600 lb. carcass, there would be a return of 48/6, out of which sea freight would absorb 24/3. The hindquarters of the same animal, at 4d. per lb., would yield 103/-. of which 25/9 would be spent on sea freight. The return to the producer, allowing 2½ per cent selling commission, would be in the neighbourhood of 99/-. less freight between the factory and ship, port charges in Mombasa and London. Chilled meat may be packed in bunkered insulated trucks, and on the South African Railways the number of quarters per truck varies between 140 and 160, equivalent to, say, 12.5 tons of chilled meat. The overhead bunkered truck used in South Africa works quite satisfactorily, and does not require recharging during the four-day run of 1,360 miles from Bulawayo to Capetown. I am informed that, on the present tariff, the charge for hauling a truck-load of 11 tons between Nairobi and Mombasa would be Sh. 724/46, equivalent to a rate of 3.3 cents per lb., or 20/- per 600 lb. carcass.

PRICE
PER LB.



The monthly variation in Argentine and Uruguayan chilled-beef prices on the Smithfield market January, 1930, to July, 1935, and the Rhodesian prices from February, 1934, to July, 1935.

Markets and Prices for Native Stock.

Turning now to the native cattle, the markets suggested are Palestine and the Gold Coast. Below are statistics relating to the importation of live animals into Palestine through Haifa during the two years 1933-34 and 1934-35:—

	1933-34.	1934-35.
Cattle	22,300 ...	27,600
Sheep and Goats ...	258,800 ...	333,100
Chickens	423,000 ...	1,032,000

Prices quoted are: Cattle, 20 to 22 mils per kg. live weight; sheep and goats, 70 to 80 mils per kg. live weight (975 mils to the £ sterling). In an official reply to an inquiry it is stated that fresh beef is sold at 100 mils per kg.

There is a large monthly immigration of Jews into Palestine, and the country around Tel Aviv is undergoing progressive industrialization. The High Commissioner, in a letter dated 23rd February, 1935, writes:—

“The principal demand for beef in Palestine is from the Jewish community, and for slaughter cattle. The fees levied by local authorities and the Rabbinical Council on slaughter cattle contribute both to the general revenue of those authorities and to the subsistence of rabbis and ritual slaughterers. There are thus strong vested interests antagonistic to the importation of chilled or frozen beef.

“In any case, chilled or frozen beef intended for Jewish consumption would have to be guaranteed Kosher. This would probably involve the imposition of a Kosher tax on carcasses by which the local authorities would be able to recoup themselves for the loss of fees derived from the animal slaughter tax.

“Such chilled beef as is at present imported (370 tons in 1932 and 378 in 1933) is principally from Australia; it is unlikely that it would be profitable for Kenya to attempt competition with Australia on so restricted a market. Higher prices for Kosher chilled or frozen beef than for fresh beef need not be expected; the present price of fresh beef being approximately 100 mils per kilogram.

“Cattle and frozen or chilled beef are exempt from import duty.

“It is, however, conceivable that if the present rate of development is maintained in Palestine, consumption of chilled meat may increase, and the likelihood of disposing of surplus Kenyan stock thus be greater.”

On the subject of freight rates, the Union-Castle Co. have informed the Crown Agents that they would be prepared to carry frozen meat to Port Said at 1d. per lb., less 10 per cent.

It is the intention of Government to explore the possibilities of the Palestine market by means of a sample shipment, and in all probability I shall personally visit Palestine when the shipment is despatched, with a view to ascertaining what arrangements can be made with the Rabbinate and the Palestine Government.

With reference to the other projected market, the official reply to inquiries was definitely discouraging in tone. I quote the three pertinent paragraphs:—

“ Generally speaking, it may be said that amongst the mass of the population there is no demand for imported frozen meat. Such a demand would have to be created, and the possibility of success depends on three factors, viz: price, taste and distribution. At the present time, local beef is retailed in the southern markets at anything from 1/- to 1/6 per lb., a high price which limits the expansion of the trade among the Africans, whose natural diet is dried fish. In districts where mutton, poultry, and game are obtainable, it will not be easy to persuade people to eat frozen beef. A big artificial market in canned meat has been developed on account of the cheapness, convenience and portability of this product, and during the last three years the import has practically doubled. There is, of course, at all the large towns a market for locally killed meat, and the trade is entirely in the hands of Hausas; any attempt to retail imported frozen meat in the local markets would meet with determined opposition. Moreover, the elimination of rinderpest in the Northern Territories and in the coastal areas of the Eastern Provinces will doubtless result in more and more cattle coming into the market. This should lead to reduced prices and increased consumption.

“ Whether or not the Kenya product would appeal to the Gold Coast native is a matter which can only be determined by trial; if retailed at 6d. to 9d. per lb., it might find a market in the south. In the north, frozen beef could not hope to compete successfully with the local product. An additional difficulty would be the question of distribution. In the absence of a chain of cold storage depots, imported frozen carcasses would have to be disposed of very soon after release from a central station, and no one would undergo the business without

a daily sales guarantee, which could hardly be forthcoming. I understand, however, that the Accra Ice Company, Limited, are willing to accept a trial shipment of a small number of carcasses which they propose to retail in their shops. Even if this small experiment is successful, it would still remain improbable, owing to the facts mentioned above, that such a trade could be developed on a large scale.

"With regard to canned beef, I am informed by the Comptroller of Customs that Kenya could not compete successfully in this Colony with the Argentine, except under the shelter of a high preferential duty."

On the other hand, I have been informed through personal channels that there are good prospects of establishing a trade on the Gold Coast. The Chief Veterinary Officer, Gold Coast, writes:—

"In my opinion, there is every prospect of an excellent market for frozen beef from Kenya in the coastal towns, which are perpetually short of meat. . . . Most of the cattle imported over the Northern Territories frontier and the Northern Territories cattle themselves which go south are sold before they get the length of the coast proper. Accra is supplied by local cattle and those imported alive from Nigeria, but even in Accra there is often shortage, and the price always is too high. The latter fact is general as regards meat in the Gold Coast everywhere, except the Northern Territories. The price of meat in the Gold Coast is from three to six times as much as in similar parts of Nigeria.

"If such a scheme was tried, it would be necessary to get one of the commercial firms to do it on the basis of a wholesale trade; that is, to vend such meat to the butchers and not retail it themselves, a procedure to which there is considerable objection for obvious reasons. In July, I approached the United Africa Company and the Accra Ice Company at Accra. The manager of the Accra Ice Company stated that he would be quite willing to test out a trial shipment of a small number of carcasses in order to try to ascertain how the scheme might work. I suggested that the carcasses be vended in Accra, Sekondi, Winneba, Cape Coast, etc., and possibly such places as Tarkwa, Nsawam, and Koforidua. Transporting and distributing frozen meat to such places as these presents little difficulty, but if the trade grew, additional storage accommodation would have to be provided.

"Since then, Messrs. Edwards and Trower, Agent and Acting Agent of the United Africa Company at Kumasi, have both talked about the scheme and discussed it with interest, and have raised a few objections, the chief of which are:—

(a) That it is possible that the African butcher and public would not buy nor like frozen meat. The Ice Company manager also raised this point, and quoted where his firm had tried and failed to sell frozen meat in markets, but it seemed to me that there were other and more cogent reasons for its failure than dislike of the product, and the manager agreed that he had tried to retail it, which consequently would have roused the butchers' opposition. Nevertheless, this objection might prove correct. A trial shipment or two would surely test out this.

(b) That the trade would be one-sided and would not benefit the Gold Coast, as the latter would be receiving goods from Kenya and not disposing of any in return.

"I think prospects are sufficiently promising to warrant the investigation of the question on the spot here by an accredited representative of the Kenya Government."

"Further, in this connection, I append a list of cattle prices in the coastal and near-coastal towns:—

Accra.—Zebu from Nigeria by sea, £7 to £10; zebus from French Sudan by land, £3/10/- to £6; local small cattle, £1/10/- to £4.

Nsawam.—£8/10/- per head.

Koforidua.—Zebu cattle from £4 to £8, according to demand and quantity available.

Kpong.—Zebu cattle from £3 to £6; native cattle from £2 to £3/10/-.

Mpraeso.—Zebu from £5 to £7.

Swedru.—Zebu average £8.

Mampong-Akwapim.—Zebus, £6 to £8; native cattle, £2/10/- to £6.

Kibi.—Zebus, £8 to £10.

Ada.—Cattle, local, £7 to £8.

Saltpond.—Zebus, £7 to £10.

Tarkwa.—Zebus, £10 (1/- per lb.).

Wiawso.—Zebus, ex Kumasi, £4 to £6, plus 6d. per head droverage."

In a memorandum dated 3rd May, 1934, addressed to the Economic Development Committee, I drew attention to the magnitude of the live cattle trade between exporting French territories and the Gold Coast; to the high prices realized in this trade, and to the significance attached to the trade by the French Colonial Administration. In the last year for which statistics were available the imports into the Gold Coast from French West African territories were estimated at 51,572 head of cattle, and the Chef du Service Veterinaire laid great emphasis upon the need to place this trade on a permanent basis by the conclusion of trade conventions or agreements with the Gold Coast Government. In his report for 1934, which has just come to hand, the Chef du Service Veterinaire has some very interesting observations to offer. I append a translation of a section of his report that deals with the export of animals:—

"Live Animals and Meat.—The Niger, which is the principal exporting colony for live animals accounts this year for 53,084 cattle in place of 60,701, and 261,322 sheep and goats in place of 285,681; that is to say, there was a slight drop. It is necessary to remark that these figures are those furnished by the Commandants de Cercle. They are lower than was actually the case. If one compares the figures of departures from the stations such as Niamey, N'Guimi, there is no difference between 1933 and 1934. We have to announce a new importing country, Tripoli. In spite of the absence of controlled statistics, the number of animals exported to this country should be important.

"In the Sudan, the organization of export has been improved by creation of the markets of Kayes, which draw on the live stock population of the eastern districts. The success of these markets is a great argument in favour of their being made permanent. They will furnish supplies for the trade in frozen meat exported from Dakar, and for the local consumption of this city.

"The organization of the export of frozen meat has continued in the same manner as in 1933; campaigns of castration in the Sudan and in Senegal; organization of markets for stock, rationing of the abattoir at Dakar, and so on. The meat exported has been 821.7 tons in place of 728.2 tons in 1933, and 268.6 tons in 1932; nothing in 1931. It is to be observed that the export of frozen mutton has made important

progress—11.9 tons instead of 1 ton. It is the export of mutton which in future years should proportionately make the greatest expansion, since beef will go to the military contractors of the metropolis; and the regulations, which limit the export to animals weighing at least 400 kilograms live weight, will exclude in particular the cattle of Ndama, which are our best beef breed. The efforts of the administration and of the exporters have resulted in the shipment to France of a product which in general terms is classed in the reports of the military veterinarians as superior to the frozen beef of Madagascar.

“The export to the Gold Coast has been important; one can summarize it as follows:—

EXPORT TO THE GOLD COAST

					1934	1933
Cattle Coming from the—						
Sudan	..	..	..	52,197	85,197	51,572
Ivory Coast	..	..	..	33,000		
Sheep Coming from the—						
Sudan	..	..	..	24,552	38,552	14,110
Ivory Coast	..	..	..	14,000		
Goats Coming from the—						
Sudan	..	..	..	5,669	9,669	3,511
Ivory Coast	..	..	..	4,000		

“These figures only include animals inspected by the Veterinary Service; they demonstrate the usefulness of a strict inspection. Actually, if one adds the cattle exported by the Niger (55,000 approximately, of which 37,659 were inspected by the Veterinary Service) and those passed to the Gold Coast by the Ivory Coast, one arrives at 145,000 cattle (not including the other exports from Senegal, the western parts of the Sudan, Mauritanie, Guinee), although the customs statistics give a total of only 95,878. The Gold Coast has collected for the animals imported from the Sudan and Ivory Coast £10,723 in the form of an import tax.”

It is perhaps worth while remarking that the Gold Coast importation fees, which I believe are scheduled as veterinary inspection fees, amount to Sh. 6/6 per head. On the other hand, should this colony or any other British country wish to export cattle to France or to a country within the customs administration of the French Republic, we should be faced

with duties amounting roughly to £3/7/0 per head on a frozen native carcass, or £5 on a similar carcass chilled, and £5/10/0 per head on live cattle, possibly subject to a further tax of 15 per cent *ad valorem* on account of the depreciation of our currency against the gold franc.

In addition to this protective tariff, France has also imposed a quota on fresh, chilled and frozen meat, except mutton, and on importation of live animals. The quantities permitted to be imported from April to September, 1935, are: Cattle, calves, pigs and sucking pigs, nil; fresh and chilled pork, beef, and other meat, nil.

It has been suggested by Mr. Stewart, Principal Veterinary Officer of the Gold Coast, that a sample shipment should be despatched to Accra early in the year, and that I should endeavour to accompany this shipment, and learn something of the possibilities of developing a trade. I believe that Government is favourably disposed to this plan, and will possibly put it into effect after the trial shipment has been sent to Palestine.

APPENDIX D

FREIGHT RATES ON FROZEN AND CHILLED BEEF, ETC.
TO LONDON

EXPORTING COUNTRY	Net Freight Rates	Net Sterling Rates Per. lb.
AUSTRALIA ..	Frozen Beef, $\frac{3}{4}$ d. per lb less $7\frac{1}{2}$ per cent	·69375d.
	Frozen Offal, $\frac{3}{4}$ d. per lb less $7\frac{1}{2}$ per cent	·69375d.
	Chilled Beef, 1d. per lb.	1·00d.
NEW ZEALAND	Frozen Beef, $\frac{1}{4}$ d. per lb. less 21 per cent	·69125d.
	Frozen Offal, $\frac{3}{4}$ d. per lb. less 21 per cent	·5925d.
	Chilled Beef, 10 per cent above frozen 105 cu. ft.	·7604d.
SOUTH AFRICA	Frozen Beef and Offal, 9/16d. per lb. ..	·5625d.
	Chilled Beef, add 10 per cent.. ..	·61875d.

TOTAL EXPENSE CALCULATED F.O.B. SHIPPING PORT TO
COMPLETION OF SALE

AUSTRALIA ..	Frozen Beef or Offal—Freight ..	·69375d.
	Inclusive Charge Covering Port Dues, Landing, Cartage, Smithfield Tolls, Pitching and 30 days Cold Storage..	·2531d.
	Total Expense ..	·94685d.
NEW ZEALAND	On Same Basis—Frozen Beef	·94435d.
	Frozen Offal	·8456d.
SOUTH AFRICA	On Same Basis—Frozen Beef or Offal	·8156d.
AUSTRALIA ..	Chilled Beef— Freight	1·00d.
	Port Rates, Landing, Cartage, Tolls and Pitching	·1433d.
	Total Expense ..	1·1433d.
NEW ZEALAND	On Same Basis at 105 cu. ft.	·9037d.
SOUTH AFRICA	On Same Basis	·76205d.

**EXAMPLE 600 LB. CHILLED CARCASS,
EXPENSE CALCULATED AT AUSTRALIAN FREIGHT RATE
AND SOUTH AFRICAN FREIGHT RATE**

	Costs	Value
AUSTRALIAN RATES—	£ s. d.	£ s. d.
Crop 291 lb. at 2d. per lb.	—	2 8 6
Hind Quarters 319 lb. at 4d. per lb.	—	5 3 0
Total Freight, Landing, Cartage, etc., Australian, 1-1433d. per lb.	2 17 2	
Selling Commission at 4 per cent	6 1	
Insurance at 2-75 per cent	3 1½	
F.O.B. Value	4 5 1½	
	£ 7 11 6	7 11 6
If Hind Quarter only is Shipped	—	5 3 0
Total Freight, Landing, Cartage, etc. Australian, 1-1433d. per lb.	1 10 3½	
Selling Commission at 4 per cent	4 1½	
Insurance at 2-75 per cent	2 10	
F.O.B. Value	3 5 9	
	£ 5 3 0	5 3 0
SOUTH AFRICAN RATES—		
Crop, 291 lb. at 2d. per lb.	—	2 8 6
Hind Quarter, 319 lb. at 4d. per lb.	—	5 3 0
Total Freight, Landing, Cartage, etc. South African, 76205d. per lb.	1 18 1½	
Selling Commission at 4 per cent	6 1	
Insurance at 2-75 per cent	3 1½	
F.O.B. Value	5 4 2½	
	£ 7 11 6	7 11 6
If Hind Quarter only is Shipped	—	5 3 0
Total Freight, Landing, Cartage, etc. South African, 76205d. per lb.	1 0 3	
Selling Commission at 4 per cent	4 1½	
Insurance at 2-75 per cent	2 10	
F.O.B. Value	3 15 9½	
	£ 5 3 0	5 3 0

APPENDIX E

EXPORT OF PORK AND PIG PRODUCTS.

*Memorandum compiled by F. J. Bicknell, at the
Request of the Meat and Live Stock Inquiry
Committee.*

Now that the rationalization of the wheat industry has been successfully established in Kenya, and that farmers are universally showing readiness to apply similar principles of control to the dairy industry, it is possible to review the prospects of the export of frozen pork in very different circumstances from those which have obtained in the past.

It has been proved that in the highlands of Kenya we have a country eminently suitable for the raising of pigs, and the rapid expansion of the dairy industry now assures an ample supply of dairy by-products which are essential to the production of pigs of a quality suitable for export to the English market. Moreover, there is comparative freedom from disease, with the exception of certain areas in the Colony where swine fever is epidemic.

The deliberations of the Meat Control Committee to date appear to indicate that it will be some considerable time before the export of beef and mutton can become an accomplished fact. The existing herds have been bred for milk, and the flocks for wool; consequently, it will be necessary to change over to the dual-purpose animal, and this will take time.

With pigs the situation is somewhat different. For many years now the Uplands Bacon Factory have been steadily carrying out propaganda work—with beneficial results—for the improvement of existing herds. Regular importations of pedigree stock have taken place, with the result that the pig industry in Kenya, although small, is from all accounts far more progressive and advanced than either Rhodesia or South Africa.

It is now evident that farmers themselves are anxious that the exportation of pork should be established at the earliest possible opportunity, and that no undue delay should take place. This opinion was expressed and approved at the recent Stockowners' Conference.

During conversations in London last year with Mr. Swain of Simons and Swain, Ltd., who are among the largest importers of Empire pork, it was made abundantly clear to the

writer that, should Kenya embark on the export trade of pork, two things are of the utmost importance if success is to be achieved; these are:—

- (1) Quality and type.
- (2) Regular shipments.

As regards No. (2), it was pointed out that London buyers are seldom interested if consignments are spasmodic and irregular. Competition in the London market is very keen, and only the best would find a sale at remunerative prices.

With this advice before us, it is considered that the Colony should consider making a start with a limited number of pigs. The number suggested is 250 per month, or 3,000 a year. This would increase the existing market by approximately 33½ per cent, to which would be added an essential lard market for disposal of all the unsuitable pigs now in the country.

Once we are able to export this number successfully and satisfy buyers in London, then rapidly to increase production would not present any great difficulty. Too much importance cannot be laid on the vital necessity of starting on the right lines.

Export need not necessarily be confined to porkers; experiments could be carried out with the shipping of frozen carcasses of pigs of bacon weight (120-140 lb.), and, of course, lard. By means of the latter a market would be provided for any existing and future pigs found to be unsuitable either for the pork or bacon market. The pig, which is slaughtered at an immature age, yields but little in the way of by-products other than lard, as the moisture contents of the carcass are unduly high as compared with a bullock.

Although Southern Rhodesia and other countries have apparently had to resort to Government subsidies to pioneer a trade in frozen pork, the writer feels that it is neither necessary nor desirable, taking into consideration the state of the Colony's finances, to submit to Government any scheme that would entail subsidization or financial assistance, and this memorandum is based entirely on a self-supporting scheme.

If for no other reason, the disparity between the value of pigs for the local trade and for export, in the opinion of the writer, necessitates the dealing with all pigs sold for slaughter

on a pool basis, because only by means of such a pool could an equitable and acceptable price be paid to producers.

To work a pool scheme successfully, it would be necessary to control and fix prices for the buying of pigs and the selling of bacon and pork. Price-cutting and over-trading might quite easily jeopardize the success of an export scheme. It is not considered that such a form of control would increase the price of local pig products; in fact, the reverse might be the case.

It would be necessary to make some such recommendations as the following:—

- A.—That Government institute legislation to deal with pigs on similar lines to wheat and dairy products (co-operative basis).
- B.—Appoint a Pig Control Board.
- C.—Appoint agents to carry out the duties entailed under this scheme.
- D.—Make arrangements for the erection of freezing works to deal with 250 pigs per month (3,000 per annum), but capable of rapid extension once the needs of the industry warrant additional facilities.

A. and B. need no amplification here, but some of the duties which the agents would be called upon to perform are as follows:—

- (1) Administration of the pool.
- (2) Control of production with a view to ensuring a regular flow of pigs to the freezing works.
- (3) Advising producers on matters relating to herd management, breeding and feeding. Inspection of breeding stock on farms, and generally advising farmers as to the best methods of production in order to achieve uniformity of output. This is most important, and is given constant attention by those countries already catering for the London market.
- (4) Maintenance of breeding centres for the production of pedigree stock for sale to farmers.

Freezing Works.

On the assumption that pork and pig products can best be dealt with as a separate issue from beef and mutton, and that a start can be made in the near future, it is submitted for the consideration of the Committee that this scheme, as

outlined, could be linked up with an existing trading concern, already in possession of the necessary organization and trained personnel to carry out the work.

I think the Directors of the Uplands Bacon Factory might be prepared to enter into negotiations on the basis set out in this memorandum, and furthermore to discuss plans whereby the pig industry could be placed *on a co-operative basis* at a comparatively early date. I do *not* suggest that this scheme is one that could be satisfactorily undertaken by private enterprise.

At this stage I draw attention to the following schedules herewith attached:—

Schedule No. I.—Estimated cost of handling 3,000 porkers. The factory costs are on the assumption that the frozen pork trade can be linked up with the Uplands Bacon Factory. The freight charges as set out amount to not less than 0.136 per lb. These charges are decidedly high, but it is felt that too much stress should not be laid on this point, because every other colony has had to face up to and overcome these high charges during the pioneer stage of export.

Schedule No. II.—The approximate pool prices that feeders might expect to receive for their pigs on the assumption that for the local market bacon pigs and porkers are worth 40 cents per lb. and for export respectively 25 cents and 20 cents per lb.

Schedule No. III.—This relates to cost of local production of pigs. My conclusion is that, provided (a) freight charges from Kenya can eventually be brought into line with those prevailing elsewhere; (b) London prices continue to average out at about 6d. per lb.; and (c) the quality of our pigs is such as to command a ready sale at top prices, then a net return to the pool in the region of 25 cents per lb. for the export of frozen pork could reasonably be expected, which, when grouped with the local trade, should yield to producers some such pool price as 35 cents per lb. dead weight.

F. J. BICKNELL.

8th April, 1936.

SCHEDULE I

ESTIMATED COST OF HANDLING 3,000 PORKERS FROM FEEDERS' STATION TO LONDON MARKET, BASED ON PORKERS AT 70 LB. DEAD WEIGHT

		Shillings Per lb.
Factory Costs	..	·067
Packing Material	..	·013
Freight Inwards to Factory	·029	
Freight to Kilindini	·027	
		·056
Coast Charges	..	·014
Sea Freight	·080	
Insurance, London Charges (Sh. 35/25 per ton), Selling Commission (4 per cent)	·043	
		·123
	Sh.	·273

SCHEDULE II

ESTIMATED APPROXIMATE RETURN TO PRODUCERS FOR PIGS CALCULATED ON

(1) A Pool Basis.	} Taking (1), (2) and (4) as set out, and assuming (3) only yields 20 cents per lb.
(2) Pigs being worth 40 cents per lb. for the Local Trade.	
(3) Export Porkers Returning 25 cents per lb.	
(4) The Local Market Absorbing 7,000 Bacon Pigs and 3,000 Porkers per annum, or 10,000 in all.	

	Average Net Price per lb.	Average Net Price per lb.
By Maintaining Local Trade as in (4), and Exporting—	<i>Cents</i>	<i>Cents</i>
1,000 Porkers	39	39
2,500 „	38	37
5,000 „	37	35
7,500 „	35	33
10,000 „	34	32

SCHEDULE III

KENYA COSTS OF PIG PRODUCTION

As a result of a recent exchange of views with representative pig suppliers in this country, the conclusions arrived at were as follows :

- (1) A fair *average* cost figure to-day may be taken as 26½ cents dead weight.
- (2) Feeders with unlimited supplies of skim milk together with facilities for growing other required foodstuffs should produce pigs at 2½ cents less, or 24 cents per lb. dead weight.
- (3) One feeder put the figure as high as 30 cents, while two others went as low as 21 cents.
- (4) At Uplands where all foodstuffs have to be bought and where the milk supply is negligible, careful records over a long period indicate 27 cents per lb. inclusive of full depreciation, farm manager's salary and every other known expense.

APPENDIX F

REPORT ON AN EXPERIMENTAL SHIPMENT OF
FROZEN BEEF TO PALESTINE.*By R. Daubney, Chief Veterinary Research Officer.*

THE PALESTINE IMPORT TRADE.

The rapid post-war expansion of the Palestine import trade in live stock for slaughter has attracted a good deal of attention in Africa, and the Department has been approached on several occasions for assistance in attempts to arrange shipments to the Mandated Territory. Negotiations of a similar nature have also been undertaken by the Government of Northern Rhodesia on behalf of commercial interests in that country, and the suggestion has been made that Kenya and Northern Rhodesia should pool resources in an attempt to capture a share of the Palestine meat trade.

A semi-official estimate of the imports in head of live animals for slaughter during the years 1933-34 and 1934-35 is:—

		1933-34.		1934-35.
Cattle	... ..	22,300	...	27,600
Sheep and goats	...	258,800	...	333,100
Poultry	... ..	423,000	...	1,032,000

The imports of live animals are chiefly from Roumania, Bulgaria, Latvia, and other Eastern European countries.

The prices realized by slaughter live stock are fairly high, 22 mils per kilo live weight for well-finished cattle, and 70-80 mils per kilo live weight for sheep and goats (975 mils to the £ sterling). In the case of beef this is equivalent to roughly 50/- per 100 lb. carcass weight; and the retail price of meat is stated to be 100 mils per kilo, or nearly 14d. per lb.

Live animals are landed at Haifa and held in a quarantine station until killed, and it is stated that weekly consignments are required in order to avoid congestion of the quarantine slaughter lairs, and to reduce the cost of feeding before slaughter. Large cattle, weighing about 600 kilos live weight, are said to be preferred by the importers.

The chief reason for importing live cattle is of course that meat for the Jewish community must be Kosher killed; and the fees derived by local authorities and the Rabbinical

Council from slaughtering form part of the general revenue of the local authorities and the means of subsistence of the ritual slaughterers.

The importation of live cattle from Southern Rhodesia and the East African territories is prohibited for the following reasons:—

It is considered that there is a possibility that stock from Southern Rhodesia or East Africa might be carriers of African coast fever and heartwater, as well as of other tick-borne diseases, such as blue-tongue.

In addition, however, to the import trade in live stock there is a rising trade in frozen meat, imported from Australia, of which the value in 1934 is stated to have been £15,786.

Frozen meat is landed and stored at Port Said, and transported by rail in refrigerated trucks to Jerusalem and Tel Aviv. It is largely consumed by the British and Arab communities; but there is a possibility that a useful trade might be developed in the victualling of ships, and, in addition, there are certain Government meat contracts disposing of some 75,000 lb. of beef per month.

It is pertinent to note at this stage that by this route Palestine is within the range for shipments of chilled beef from Mombasa.

THE EXPERIMENTAL CONSIGNMENT.

In February, 1936, the Government of Kenya agreed that a sample shipment of frozen beef should be forwarded to Palestine, for report as to quality and suitability for the Palestine market. The carcasses selected for the shipment were all of native breeds. The group included two Boran steers from the Ngong Veterinary Training Depot, four Masai steers received in payment for rinderpest vaccinations and held at Ngong, and eight Masai steers purchased for slaughter at the Ngong open market at a cost of Sh. 35 each. It is certain that a much higher price was paid for these eight steers than would have been given by the Indian and Somali butchers ordinarily engaged in this trade.

The fourteen cattle were walked to Nairobi, rested at the lairages overnight, and slaughtered on the morning of the 6th March, 1936. Four carcasses out of the eight bought at the market were condemned for infestation with measles, an unusually high percentage; and of the remaining ten, two were damaged by incisions made in search of cysticerci, and were

sold to the Stockbreeders' Co-operative Association for disposal as contract beef. The remaining eight animals made up the trial consignment. Their origin and carcass weights were as follows:—

(1) MASAI—Vaccine Payment Animal	..	288 lb. without shins.
(2) MASAI—Native Market	.. ..	281 lb. " "
(3) BORAN—Ngong Depot	.. ..	642 lb. " "
(4) BORAN—Ngong Depot	.. ..	572 lb. " "
(5) MASAI—Vaccine Payment Animal	..	431 lb. " "
(6) MASAI—Native Market	.. ..	322 lb. " "
(7) MASAI—Vaccine Payment Animal	..	256 lb. " "
(8) MASAI—Native Market	.. ..	290 lb. " "

The weights of the six Masai cattle work out at an average of 294 lb. per carcass. This average compares quite favourably with Mr. French's average weight of 204 full-mouthed native cattle killed at the Nairobi Abattoir, which was 308.5 lb. dead weight. If one adds 10 lb. for the shins, which were removed prior to weighing, the average weight of the Masai cattle in this shipment is 304 lb., and it can therefore be claimed quite fairly that this consignment represented the average native type.

The two Boran cattle were included as an indication of the potentialities of this very much better developed breed. They were a little on the large side, for the average weight of well-finished five- or six-year old carcasses of this breed is about 555-560 lb., but they were all that was obtainable at the time.

The shins were removed from the carcasses, because under our present method of meat inspection the shin is damaged by the statutory incisions made in the search for measles, and it was feared that the cuts, in addition to being unsightly, might occasion difficulty in cold storage.

FREEZING AND TRANSPORT.

After inspection and weighing, the carcasses were chilled at 32° F., as sides, for forty-eight hours, and then divided into quarters in the normal way. They were then bagged in stockinette and hessian and transported to the coast in an ice-bunkered insulated truck. The truck was not adequately pre-cooled, and although a considerable quantity of ice and salt remained in the bunker on arrival at Mombasa, the temperature of the quarters had risen, in the case of the hinds to 42° F., and in the case of the forequarters to 46° F., with consequent softening of the tissues and staining of the bags.

On arrival at the Government Cool Store, Mombasa, they were hung in a room at 22° F., and the temperature of the chamber was lowered as rapidly as possible to 15° F., the process taking 14½ hours. During the following night the temperature of the chamber rose to 18° F., but during a seventeen-hour run it was again reduced to 14° F. There was a rise of 2° during the following night and a further run sufficed to bring the chamber to 10.5° F. The meat was then held for a further period of forty-eight hours at a temperature between 7.5° and 11.5° F.

On removal from the cool store the quarters were quite dry and hard. They were taken by van to the ship's side and stowed in the ship's cool chamber, the transfer and storage occupying exactly one hour. During the loading the meat was exposed to high temperatures, since it had to be stacked against the engine-room casing, and there was some softening of the external fat.

The temperature in the ship's cool chamber was 16° F. at the time of loading, and it was stated that the meat would be carried at from 14° to 16° F. during the voyage to Port Said.

The s.s. *Llanstephan Castle* sailed from Mombasa on the 14th March, and arrived at Port Said on the 24th March. The shipment was unloaded at Port Said, and held in cool store for a few days until it could be sent with a consignment of butter by refrigerated truck to Tel Aviv. On arrival at Tel Aviv the meat was placed in the cold store of the Palestine Cold Storage and Supply Co., Ltd., and held at a temperature of 21-27° F.

REPORTS ON THE CONSIGNMENT.

Unfortunately the arrival of the shipment coincided with an exacerbation of the civil disturbances, and conditions generally became so unsettled that several prospective buyers were unable to visit Tel Aviv to inspect the meat.

The Chief Veterinary Officer, Palestine (Major J. M. Smith), who throughout displayed the greatest interest in the experiment, reports:—

“I have now examined the eight carcasses which you forwarded to the Palestine Cold Storage and Supply Co., Ltd., Tel Aviv. They are well finished and in good condition; but, so far as I can ascertain, do not come up to the first quality Australian frozen beef, but a good second.

"There does not seem to be much chance for Kenya meat to be supplied to His Majesty's Forces unless you can get the specified contract weight of carcasses reduced, and possibly the acceptance of a slightly lower quality of beef. As to the supply of the local markets, owing to ritual slaughter difficulties, the custom of the inhabitants to consume only fresh meat, and the vested interest of municipal authorities, importers and traders, there is no chance of putting a frozen or chilled meat on the market at present or in the immediate future. A representative of the Nile Cold Storage and Supply Co., Ltd., who inspected the consignment, informed me that his company might be able to deal in Kenya meat, particularly if it comes somewhere near the Australian quality, not for His Majesty's Forces, but for supplying vessels at Port Said and Alexandria, and their chain of butcher shops in Egypt. He suggested that it might be possible for them to take 100 tons a year.

"He further stated that his company would probably wish for a trial consignment of carcasses to be shipped to them. The size of the Boran carcasses, 500 to 600 lb. in weight, would be preferable for their purposes, but the consignment might consist of Masai and Boran carcasses. If the meat could be supplied chilled so much the better, since their difficulty was to get a chilled carcass, which, if procurable, might have a better chance on the market.

"Personally, I hope there is an opening for Kenya meat with this firm, and I would strongly advise you to get into communication with them and arrange for a small mixed trial consignment to be forwarded to them at Port Said. If you can, at this stage, supply a chilled carcass, I would advise you to do so at the same time."

The Palestine Cold Storage and Supply Co., Ltd., reports as follows:—

"The beef was inspected twice by Major Smith, the Chief Veterinary Officer, who also brought with him a representative of the Army, and an expert. You will, no doubt, have Major Smith's opinion directly from him.

"Other visitors included Mr. Branitzki, who also came twice, the second time bringing with him an expert interested in the supplying of steamers in the Haifa port. We also had a representative of another firm of ship suppliers and a group of butchers who are the biggest dealers in non-Kosher meat.

"In every case we received favourable reports. Mr. Brantitzki promised us another visit, but owing to a certain unrest in the country he was unable to come from Haifa.

"The butchers are interested in the importation of frozen beef, provided the price is suitable. Non-Kosher fresh meat is sold in Palestine in summer for 8 piastres per rottel, which is equivalent to about 6½d. per kg. In winter the price is somewhat higher. This price, however, includes the offals, which are given free with the carcass, and a 5 per cent allowance for loss of weight.

"Their offer for frozen beef ex our Stores was 5d. per kg., and at that price they might consider importing 20 to 25 tons per month. They prefer lean meat, and if possible a larger proportion of hinds than forequarters."

In a later communication the Palestine Cold Storage and Supply Co., Ltd., write:—

"We now have pleasure in giving you a full account of the trial shipment of frozen beef received by us.

"It was unfortunate that soon after the beef arrived here disturbances broke out throughout the country, which prevented us from obtaining additional opinions from interested parties outside of Tel Aviv. The result was that, after keeping the beef for a long period in the hope that things would become quieter, we had to sell it for what it would fetch; and even then we could not sell the whole quantity owing to the fact that the Jewish population only use Kosher meat. We therefore had to sell the meat for consumption by Arabs, which was very difficult in view of the situation referred to above. It seems a pity that the trial should have taken such a trend after the promising start before the riots.

"It is our opinion that considerable trade could be done in supplying the Military Forces who are present in the country in large numbers. It seems, however, that the Army is supplied directly from the War Department through Army contractors, and local people find it impossible at the moment to get in. Perhaps you could use your influence, to our mutual advantage, to obtain for us a contract for Kenya meat, which we are certain could be offered locally at a lower price than Australian frozen meat at present supplied to the Army.

"As we informed you, Major Smith, of the Department of Agriculture in Jerusalem, was here with a representative

of the Army and inspected the quality of the meat, which is therefore known to the Military Authorities.

"Apart from the above suggestion, the only alternate consumption of frozen meat would be the supplying of ships in the Haifa Harbour, but, as stated above, the disturbances prevented us from taking further steps in the matter, and the quantities concerned would hardly justify a special import of frozen meat unless combined with other consumption."

Later, they state:—

"It is perfectly true that the riots were largely responsible for our inability to sell the total quantity as well as obtaining a suitable price. It was not due, however, to any boycott on the part of the Arab tradesmen, but to the impossibility of reaching the Arab tradesmen in order to sell them the meat.

"At the time the meat arrived we could have sold the total quantity at a price which would have, at least, covered your expenses. As it happened, however, we had to keep the meat for about two months in order to enable those interested to have a proper inspection of the meat after that period. The meat was, in fact, sold to the same man who in the beginning offered us the price of 5d. per kilogram and was interested in quantities of 20 to 25 tons a month.

"As you are aware, however, it is nearly five months since the riots started, and as yet they show no sign of abating. The result is that trade between Jews and Arabs is almost at a standstill, and hence the impossibility, at present, of entering into any negotiations with that section of the population which is most interested in the consumption of frozen meat.

"As to the remarks on the quality, the mere fact that the meat was kept on show for more than two months and so constantly handled and inspected, was sufficient to cause a deterioration in the quality. The meat keeps better, of course, if it is stored and taken out as required."

Mr. Simeon Branitzki reports:—

"The carcasses arrived in very fine condition, although they had been transhipped from the boat to the Nile Cold Storage at Port Said, and thence by railway refrigerator truck to Tel Aviv. I went down to inspect it two days after its arrival; the Chief Veterinary Officer, Major Smith, had been a day before to inspect the meat and found it in good condition. I was told by the Palestine Cold Storage and Supply Company that Major Smith wished to inspect the consignment

again in a week's time with an expert of Messrs. Spinneys, Ltd. This firm is representing the Nile Cold Storage of Port Said, and is selling Australian meat. I was interested to learn what were the views of this expert, and I therefore waited until I had all the information. I also took down the Manager of the Palestine Baltic Ship Supply, who is an expert on frozen beef, and whom I know well, and this is the result of the expert's examination.

"Spinneys' expert found it very good; the Palestine Baltic Ship Supply also found it excellent, and are prepared to sign a contract for 20 to 25 tons per month, but wish to obtain the sole representation for Palestine, with an undertaking to increase the amount of beef taken within three to six months to 50 to 100 tons per month.

"I have not mentioned anything yet with reference to prices; I only wish to advise you that this consignment has arrived in good condition, and that there are very good chances of our being able to develop a trade on our local markets; although we shall meet with many difficulties at the beginning, and there will have to be a little sacrifice from both sides.

"I am proceeding to Tel Aviv again on the 20th to meet a group of butchers who are interested in non-Kosher meat, and who wish to treat with me for a supply of 25 to 30 tons per month. On my return I will at once communicate with you."

Later, Mr. Branitzki writes:—

"I am very sorry to inform you that the present riots in Palestine, and the impossibility of travelling, have prevented me from advancing with the question of frozen meat. Business to a certain extent is at a standstill, and it is for the moment impossible to negotiate about non-Kosher meat sales. Until the situation is once normal again I cannot advance in this matter, but in any event I may tell you that there is a good chance to develop this business, as explained in my previous letters to you, when order is restored."

COST OF THE EXPERIMENT.

The expenses incurred on the consignment, and the returns derived from the sale of meat, hides and offal, are tabulated below. The table is included solely to indicate the cost of the experiment to Government; and the figures bear little or no relation to the actual costs of making shipments

on a commercial scale. It has already been stated that too high a price was paid in the first place for the cattle purchased at the Ngong market. The item for hessian and american bags is also extremely high, and the railage to Mombasa is at the rate of 5.827 cents per lb. Sea freight at approximately 5 cents per lb. is a fairly normal charge, but the railage from Port Said to Tel Aviv works out at 6.79 cents per lb., whereas the normal charge for full truck-loads is equivalent to 2.135 cents per lb.

Assuming that in the ordinary course animals would be slaughtered at Mombasa, the total expense on a consignment from Mombasa to Tel Aviv would be:—

	<i>Cents per lb.</i>
Sea freight	5.0
Railage, Port Said to Tel Aviv, 20-ton lots ...	2.135
plus transshipment and agency costs at Port Said, pitching and portorage at Tel Aviv, and port dues at Mombasa; all of which should not amount to more than 2.5 cents per lb., bringing the total cost of shipment up to something less than 10 cents per lb.	

DISCUSSION AND CONCLUSIONS.

The object of the experiment was to ascertain whether frozen beef derived from ordinary native animals in average condition would be acceptable on the Palestine market. There was no intention to call for an expert report on the quality of the beef, with recommendations as to the steps that should be taken to improve its quality; and the reports furnished by Major Smith, the Palestine Cold Storage and Supply Co., Ltd., and Mr. S. Branitzki are quite adequate for the purpose of this sample experiment. They indicate that up to the capacity of the market the beef would find a ready sale in Palestine to the British and Arab communities, and that it is suitable for the victualling of ships. An offer of 5d. per kilogram, or 18.8 cents per lb., was made for the whole consignment soon after its arrival. If one calculates the total expense from Mombasa to Tel Aviv at 10 cents per lb., this means a net return at Mombasa of 8.88 cents per lb., which is hardly enough. It is however sufficiently close to a profitable figure to stimulate further investigation by any commercial company that is engaged in the export of frozen or chilled meat from Kenya.

Further encouragement is derived from the interest displayed in the consignment by the representative of the Nile Cold Storage Company of Egypt. It seems probable that a

market could be found in Egypt for quantities of chilled beef from Kenya, and no doubt this potential market will be investigated at a later stage by whatever company finally takes up the cold storage business in Kenya. The company would no doubt examine also the possibilities of supplying chilled and frozen meat to naval and military garrisons in the Mediterranean.

ACKNOWLEDGMENTS.

It is a pleasure to acknowledge the assistance that was freely given by all who were concerned in the experiment.

Mr. R. C. Yates, Superintendent of the Municipal Abattoir, personally supervised the slaughtering, dressing, quartering, and bagging of the carcasses, and without his invaluable help it would have been impossible to have shipped the carcasses in such good condition. Mr. C. L. Silvester and Mr. D. F. Sargent, of the Department of Agriculture, took entire charge of the freezing and storage of the carcasses at Mombasa, and Mr. L. Shoolman arranged all details connected with loading, shipping and forwarding from Port Said.

Government is also greatly indebted to Major J. M. Smith, Chief Veterinary Officer, Palestine, for the interest he took in the experiment, and for reporting on the consignment.

	Sh.	cts.
To Purchase of 8 Cattle at Ngong Market at Sh. 35 each	280	00
„ Municipal Slaughtering Fees	24	00
„ Municipal Weighing Fees	2	00
„ Hessian and Americani Bags	91	20
„ Ice for Bunkering	112	00
„ Rail Freight Nairobi- Mombasa, 3,000 lb. ..	174	80
„ Transport from Government Cool Store to Ship, and Loading	9	70
„ Sea Freight Mombasa-Port Said.. .. .	153	50
„ Railage Port Said-Tel Aviv	203	90
„ Customs Clearing at Port Said	5	20
„ Cold Storage Fees at Tel Aviv	500	00
„ Travelling and Subsistence, C.V.R.O.	238	10
„ Balance Carried Down	383	73
	<u>Sh. 2,178</u>	<u>13</u>

	Sh.	cts.
By Special Warrant. Agricultural Department, Extraordinary—Meat Export	1,600	00
„ Sale of Hides at Abattoir	122	00
„ „ 8 Ox Offals and 7 Heads	16	00
„ „ 7 Tongues	7	00
„ „ 16 Kidneys	2	00
„ „ 6 Livers	3	00
„ „ 6 Hearts and 6 Lungs	1	00
„ „ 8 Tails	2	00
„ „ 8 Fats and 16 Shins	8	00
„ „ 2 Carcasses to Stockbreeder's Co-op. Society, 4th Grade 542 lb. Dead Weight	41	53
„ „ Frozen Meat at Tel Aviv	375	60
	<u>Sh. 2,178</u>	<u>13</u>
„ Balance Brought Down	383	73

Net Cost of Consignment to Government—£60/16/27



COLONY AND PROTECTORATE OF KENYA

Report of the Committee on the Control and Development of Fishing in Kenya

(WITH MAP)

Price 2/-

1938
PRINTED BY THE GOVERNMENT PRINTER
NAIROBI

NOTE

It is regretted that the publication of this Report has been delayed on account of difficulties connected with the reproduction of the map originally submitted. The map was consequently redrawn in the form of the two maps now accompanying the Report. The opportunity was taken also to include items of interest to visiting anglers and tourists generally. Mileages are shown in Appendix 5.

The text of the Report should, therefore, be considered as being modified accordingly.

HIS EXCELLENCY SIR ROBERT BROOKE-POPHAM,
G.C.V.O., K.C.B., C.M.G., D.S.O., A.F.C.,
Nairobi.

YOUR EXCELLENCY,

Under Gazette Notice No. 393 of 11th May, 1937, a committee was appointed as follows:—

Personnel—

Major A. W. Sutcliffe, D.S.O., M.C. (*Chairman*),

Capt. R. E. Dent,

Major C. Luxford,

Mr. T. P. Robeson,

Mr. Hugh Copley (*Secretary*),

in terms of reference as follows:—

- (a) to submit detailed recommendations for the control and development of fishing in every river in the Colony that holds or might hold trout;
- (b) to make recommendations as to whether local authorities or associations can co-operate with Government for the better organization, control and development of river fishing in the Colony;
- (c) to make recommendations for the prosecution and recording of research into the ecology of trout streams, the improvement, development and better feeding of the fish, the reasons for deterioration, the speed of growth, spawning habits and natural enemies.

1. An invitation to give evidence or to submit written memoranda was extended to all anglers, angling clubs and associations, Provincial and District Commissioners, the Forest Department, Game Department, Honorary Trout Wardens and persons who have shown interest in the care of our trout streams, and Appendix I shows the response thereto.

We take this opportunity of acknowledging our indebtedness to all who have responded to this appeal.

INTRODUCTION

2. The first European pioneers to this Colony were struck with the appearance of rivers in the higher altitudes which seemed comparable with, if not superior to, those in Britain which carried trout, offering ideal sporting conditions under which trout fishing might be enjoyed and providing another of those many attractions of the Colony to Europeans with which it had already appeared so full.

History,
Brown Trout.

3. There appears to be some doubt as to whom should be given the very great credit for the introduction of trout into Kenya; for the purposes of this report it suffices to say that of, if not the earliest and most successful stocking, was that of the Gura in 1905. This was carried out with fry hatched locally from ova obtained by Major Grogan and others from the Howietown Fisheries, Dumfries, Scotland. Like all the other streams, this river appeared to carry no indigenous fish above a line where a water temperature below 60° F. is normal, yet its crystal clear, sparkling waters contained a profusion of subaqueous insect life generally, together with innumerable crabs, tadpoles, frogs, etc., such as to provide indeed gargantuan feed for the fish introduced.

History,
Rainbow Trout.

4. The stocking proved a complete and enormous success and from this mother of rivers were stocked a number of others suitable for the accommodation of Brown trout. Subsequently Rainbow trout were introduced to the Colony in 1912 by Commander Barry in the Amboni and Nairobi Rivers; their success and development were more rapid and spectacular so that now numerous rivers have been stocked with either Brown trout or Rainbow trout which are firmly established in some of the most charming and delightful areas of the Colony, and increasingly provide sport and diversion, not only to residents in the country but also a great attraction to sportsmen visitors.

Formation
Kenya Angling
Association.

5. A hatchery was established on the Gura, but all work ceased on the outbreak of war, and the fish were left to themselves. After the war in 1919, a public meeting was held and a large sum of money was raised to push forward this introduction of trout and a private Association was formed. In 1926 this Association found the work too large for it and Government agreed to take over the control of trout fishing whilst Capt. R. E. Dent, a prominent member of it, joined the Game Department as the first Fish Warden.

During the past few years it has been generally felt that the rapid growth of angling interest had proceeded at a greater pace than that of Government activity through the Game Department to develop and control it.

6. In 1932 the first Conference of Angling Associations was held in Nairobi, convened by Mr. Dacre A. Shaw on behalf of the Kenya Angling Association. The result of that Conference, followed by a highly successful Anglers' Dinner at which His Excellency the Governor was present, was such that the Conference became an annual affair repeatedly and increasingly urging upon Government the necessity for greater interest being taken in trout fishing in particular and river angling generally.

Kenya Angling Association.

7. The Pim Report, unfortunately however, suggested that a Fish Warden was of little use and that as a curtailment of expenditure this office should be considered for deletion from the Game Department. This recommendation was carried into effect last year, 1936. The East African Conference Committee took action as they were perturbed as to the position of trout fishing in the Colony and approached the Game Warden, Capt. A. T. A. Ritchie, M.C., about the prospects. Capt. Ritchie drew up a memorandum on his views of the future and this was considered by the East African Angling Conference Committee who were not in favour of all the views expressed by the Game Warden. A sub-committee was formed and a memorandum was drawn up and submitted to Government. It was mutually agreed that a General Angling Conference should be held and the two memoranda threshed out at such a Conference. This was held on March 30th in Nairobi and the Acting Governor (Sir Armigel de Vins Wade) opened it in person and laid before the Conference what lines he considered future action might follow. After a long debate the Conference passed a resolution making the following proposals:—

Pim Report, Recommendation, Sec. 305.

Game Warden's Proposals.

- (a) the appointment of a fishery officer;
- (b) the appointment of an advisory board for the Colony;
- (c) a small committee to examine and report on the future district organization to run the trout fishing of the Colony.

Angling Conference recommendations and resolutions.

These resolutions were accepted by Government and the East African Angling Conference Committee was asked to submit the names of suitable gentlemen who would form such a committee. This was done at a meeting on the 2nd April and were approved by Government in due course.

Value of angling.

8. The importance of Kenya as an attractive Colony to the angler cannot be exaggerated. There is abundant evidence to show that, certainly as far as the resident and also the sportsman visitor is concerned, the big game shooter and trophy hunter is rapidly being superseded by the big game photographer, the bird shot and the angler. This is illustrated by the graphs shown in Appendix 2.

Local value.

9. As regards the local resident, this change is a natural result of the evolutionary progress which has taken place since the early pioneering days. The logical outcome has been that more delicate and aesthetic sports have stronger appeal, and the double barrel heavy big game rifle has been replaced by the light, artistic wand of the angler.

First steps.

10. Our first steps taken were to accumulate and co-ordinate the vast amount of evidence on the various aspects involved under our terms of reference and the appendices show the success which the Secretary achieved in collecting such from innumerable widespread sources. Before passing to the detailed consideration of these, however, it would appear appropriate to consider certain matters generally.

Map of stocked rivers.

11. The map accompanying this report shows the rivers which are stocked with trout and shows the distribution of streams by districts giving the names of the rivers and the respective mileages and forest areas, native areas, alienated and Crown land respectively, together with the variety of trout, Brown or Rainbow, and the date of stocking. It will be appreciated, of course, that these mileages are merely approximate but they form a working basis on which to formulate our recommendations.

Distribution of trout.

12. Summarized the position is: The Brown trout are distributed in 457 miles of river of which 231 miles are in forest areas, 121 in native areas and 105 miles in alienated areas, while Rainbow trout cover a total mileage of 1,564 miles of which 966 miles are in forest areas, 191 in native areas, 384 in alienated and 22 in Crown land. In other words there are roughly in the Colony 2,021 miles of trout-carrying water of which 1,197 miles are in forest areas, 312 in native areas, 489 in alienated land and 22 in Crown land.

Licences taken out.

13. Appendix 3 shows that in 1936, 563 yearly licences were taken out, 282 fortnightly licences and 792 24-hourly licences, giving a grand total of 1,636 licences. The revenue

from these licences amounted to £968 of which £665 was contributed as follows (*see* Appendix 4):—

				£	Sh.
Nairobi	...	...	...	301	0
Kitale	...	...	...	20	13
South Nyeri	...	...	...	34	3
Meru	...	...	...	67	8
Kericho	...	...	...	49	5
North Nyeri	...	...	...	101	14
Nanyuki	...	...	...	82	9
Thomson's Falls	...	...	...	8	13

14. It will be apparent at once that considering the very large number of streams stocked in the various districts, the number of anglers to streams as represented by licences taken out is very small. The Committee is of the opinion that, for a number of reasons, by no means all anglers who fish the streams take out licences and moreover a very, very small proportion of the mileage of these streams which carry trout is available to anglers whether on private land, native reserves or forest areas. Generally, however, it may be said that the rivers which flow through native areas hold the greatest amount of physically accessible water with alienated land and forest areas offering considerably less.

CHAPTER II

Access to Rivers and Legal Rights of the Public

Access to
rivers.

15. Intimately bound up with the recommendations which the Committee may make in accordance with their terms of reference is the question of access to rivers (*a*) by individuals carrying out their official duties under authority, and (*b*) anglers in pursuit of sport.

16. The question of physical access by means of roads, paths and cleared river banks is one which will be dealt with later, but a more serious, far-reaching one is that of legal right of access by the public, or alternatively, what legal rights are conferred upon a landowner by his land title to trout in a river flowing through land covered by such land title. At the present moment generally speaking the difficulty is more apparent than real whether it be in forest, native or alienated land areas, but it is by no means clear under what legal rights, if any such access is permitted to the public or could be insisted upon. Cases have been brought to the notice of the

members of the Committee where native landholders have raised objections to anglers passing over their land, and similarly in the case of alienated land.

Pronouncement of legal right of access.

17. There appears to be an urgent necessity for an official pronouncement as to what rights anglers possess to have such access, and to consider what steps should be taken to guarantee to them access in the future.

Native land titles and claims.

18. Land consciousness and detailed land right conceptions are rapidly developing among the natives. In the Kiambu areas it is claimed that practically the whole of the reserve is individually owned. The natives are showing rapid progress in all directions basing and modelling their development in every way upon European principles. Instances have already occurred where they have expressed the opinion that their rights and titles are no less exclusive than those in settled areas. Individuals in pursuit of birds and game as well as fish have, in isolated instances, had their progress barred and representations made that they are trespassing. Even the late Game Warden in charge of fish himself experienced this opposition to his access over native land. Moreover, a case is on record of a native having put up a notice board—"Trespassers will be prosecuted" on the bank of the river adjacent to his land.

Present position.

19. In actual practice these instances are extremely rare and on the other hand anglers are readily and freely welcomed both on private land and in native reserves, but this state of affairs will not necessarily continue indefinitely and it would be well to define the position now rather than be faced with it later as a major problem.

Alienated land and stocked rivers.

20. It has been shown already that Rainbow trout were introduced into the Colony in the year 1912: it has been further shown that all rivers in alienated land with two exceptions, i.e. 12 miles of the Thika-Chania on the Kinangop, and the Orimutia—a headwater stream of the Thomson's Falls-Narok, contain Rainbow trout only; rivers, therefore, flowing through land alienated before 1912 have been stocked since alienation by the activity in a few cases by private individuals but mainly by Government, and with very few exceptions not by the individual landowners. Equally, in most cases of course, the fish have come down from the higher reaches following the natural process, and trout stocking of rivers almost entirely has taken place in forest areas on Government land. It would seem reasonable, therefore, to

inquire to what extent this benefit conferred should be upon the landowner solely and exclusively or to what extent and under what circumstances it should be shared by the public.

21. A variety of means suggest themselves:—

Proposals.

(a) In the first place the rateable value per mile of fishing water could be fixed, the owner to pay such rate for the exclusive fishing rights over the water. There is no unfairness in this proposal for, as an example of rise of land values from Government fish stocking, the result of Government stocking of Lake Naivasha with Tilapia and Black Bass was to raise the land value on the lake shore from £15 to £45 per acre. In the event of the landowner not desiring to reserve such exclusive rights to himself, the fishing rights could become a public possession with due safeguards to the landholder. This proposal might create difficulties in native areas where individual land rights are claimed, if indeed such are accepted.

**Rating of
river mileage.**

(b) A second possibility is the adoption of the New Zealand principle of establishing along every river bank a "right of way" for the purpose of fishing.

Right of way.

(c) The third possibility would be the excision from all land titles in surveyed areas, whether alienated or not, and in all native reserves, of a narrow strip of land, possibly a minimum of 6 feet and maximum of 20 feet, bordering on each bank of a river establishing riparian reserves in a similar manner to which road reserves are established. Such riparian reserves would, of course, be open to all members of the public for their lawful occasions whether fishing or otherwise. This proposal would coincide with the suggestion which has already been made as an anti-erosion and re-afforestation measure that cultivation within a specified distance of any river bank throughout the Colony should be prohibited by law. By so making it Crown land, its control could be assured and it could be devoted to purely public purposes.

**Establishment
of riparian
reserves.**

22. Such anti-erosion proposals are heartily and strongly supported by this Committee not solely because of the assistance it would give in solving the question of access to rivers for fishing, but also, apart from the obvious benefit of preventing erosion as desirable in itself, for the general welfare of the country, but equally because such erosion produces a form of pollution of the rivers with silt and mud and alters the river bed itself, cutting away portions of the river bank and transforming the whole physical condition, features and course of the river.

**Anti-erosion
measures,
non-cultiva-
tion of river
banks.**

**Exemptions
in special
cases.**

23. It may be urged, and indeed it has been represented, that one of the obstacles to these proposals is that gardens and lawns or permanent crops have been planted right down to the river bank in certain cases, but these isolated examples of difficulty could be overcome by treating them as special exceptions and the general principle would not be affected thereby. Crops could no doubt at small expense be moved back and irrigated by means of a furrow, and, where lawns, gardens and other amenities of a similar nature have been established, these could by regulation be excised and remain unaffected by any laws or regulations introduced. Consideration in this respect would require to be given to the prevention of wholesale development on river banks with the object of obtaining unreasonable reservation by exemption.

**Ultimate
object.**

24. Finally, it would appear that the time must eventually come, if Kenya progresses as it is the hope and expectation that it will, and the population so greatly increases, when the solution in connexion with access rights will be found in establishing on every fishable river an angling association with provision for membership to be open to the public on payment of specified fees for tickets of daily, weekly, etc., duration; and, in certain cases, for continuance of private clubs with selected membership in accordance with usual club practice where such at present exist.

The above recommendations have been made after very deep consideration from every aspect.

25. In the first place we feel that it is in the interests of landowners themselves as much as it is to anglers that the legal position as it exists at present and as it is expedient that it should be established in the future, should be made quite clear. Land rights and titles in settled areas and native reserves alike, the law of trespass or the right of access affecting all communities must be considered equally and dispassionately. Free access to one class of land should imply equally free access to another unless legal provision exists to the contrary.

26. We feel, therefore, that our recommendations embrace the possibilities than an equitable arrangement be arrived at in view of all the circumstances, and must be regarded in this light only. Once the existing legal position is defined consideration naturally will be given to its suitability and what modifications, if any, of the law may be generally deemed advisable to apply everywhere in the Colony. We regard it

as axiomatic that everywhere trout fishing exists, it must be controlled, improved and developed, while deterioration by neglect and indifference or both cannot be contemplated because of the far reaching results on the general welfare of the assets of the Colony.

CHAPTER III

Licences to Catch Trout

27. The question of licences has already been touched upon and this subject has probably been one on which more suggestions have been received than any other. Taking the broad view and having regard to the peculiar circumstances obtaining in this country, we feel that the cost of licences should remain as at present and we are unable to favour any suggestion towards reduction.

28. The quantity of the fishing in this country once it becomes reasonably accessible, which at present it cannot be considered to be, is relatively very much greater than in most other countries and superior in quality. It should be added that our licence fees are comparable with those of Natal, the Cape Province of South Africa, New Zealand, New South Wales and many parts of Canada. We feel, however, that there is a distinct hardship at present on young persons of both sexes who, under existing conditions, are required to take out a full licence and pay therefor the sum of Sh. 25. We have considered carefully the question of recommending that provision might be made for such cases by the introduction of a juvenile licence. This proposal has been made before but the Game Department found there were such objections to it that they could not see their way to recommend its adoption. As an alternative we, therefore, suggest that consideration be given to the provision being made for a Family Licence which would cover both parents and all their children under 16 years of age resident under one roof, the fee for such licence to be Sh. 40 per annum. The administration of this licence could be effected by similar means to that adopted in the case of arms licences, namely a master licence with other free licences issued under the master licence, so that each individual could be in possession of the necessary document.

Juvenile
licences.

29. Facilities, however, for the issue of licences should be as widespread as possible through the medium of District Commissioners' offices, Post Offices, hotels, fishing tackle shops, Honorary Game Wardens, etc., etc., and separate licences should be either of characteristic colour, shape or

Facilities
to obtain
licences.

marking as to make clear even to a native scout the period of its currency and its validity. Further we strongly recommend that all licence issuers should forward a return monthly to the Fish Warden and a list of licences of each kind together with the names of those individuals who have been issued with them during the month should be published in the Official Gazette, and a copy of the list should be published in every centre where licences are issued.

**24-Hourly
licence.**

30. It has been represented that there is difficulty in obtaining a licence covering a period of 24 hours in sufficient time or in such circumstances as would enable the angler to enjoy a full day's fishing; we suggest that the fee for this licence should remain as at present but that the period of its duration should be made 48 hours. We feel that such provision would enable the angler to enjoy one full day's fishing over a week-end or a public holiday and would prevent, what we are satisfied at present is the case, considerable evasion of the law by such licence not being taken out at all.

**Question of
free fishing
of private
waters.**

31. Suggestions were made to the Committee that land-owners might be permitted to fish their own waters either without licences or by the possession of a licence at a reduced fee. In view of the opinion expressed above that the property in the trout rivers should rest with the public, we are unable to make any recommendations in this direction.

**Duration of
licences.**

32. The question of the duration of licences has also been the subject of consideration. There would appear to be no good reason, however, why residents in the Colony should not be required to hold a licence expiring on the 31st December. The position as regards a visitor is somewhat different and superficially it might appear that there was something to be said for 12 monthly licences as opposed to an annual one. After full consideration of the matter, however, we do not feel that we can recommend this change. Sh. 25 is a very small sum to pay and is an infinitesimal part of the expense which a visitor incurs in coming to the Colony. Moreover, very few visitors come to the Colony for more than a few months in any one year. Having regard to all the circumstances and the general administrative difficulties involved we do not feel justified in recommending that any change should be made to the existing practice that licences should be annual ones expiring on the 31st December.

**Booklet of
Regulations.**

33. We recommend the preparation as cheaply as possible of a small pamphlet giving the essential details which it is considered that the holder of a fishing licence should know,

i.e. the clauses under the Ordinance relating to its duration, production on demand, etc., together with a list of all rivers open to the general public, with possibly a sketch map. This pamphlet would be offered free to every person making application for a fishing licence. Alternatively brief information might be printed on the back of the licence.

34. We further recommend the preparation of another booklet containing fuller details such as might reasonably be expected to assist a visitor to the Colony; this booklet should be sold as cheaply as possible, we suggest a sum which would cover the cost of production. Details to be included in this booklet could be compiled by the Fish Warden and would include information on roads, hotels, etc.

Guide booklet
for visitors.

CHAPTER IV

Overstocking of the Trout Rivers

35. One main danger and difficulty with our trout streams is that both Brown and Rainbow trout prove so prolific in the breeding areas that they outstrip the food supply. The number of anglers, natural enemies and other factors which might make for some form of control of such prolificness, is so small as to be negligible. We are of the opinion that one of the most important factors affecting deterioration and the quality and size of fish in rivers is over stocking from intense breeding, particularly in the higher reaches of the river. Bi-annual floods help to a certain extent to force small fish below the line at which natural breeding takes place but the capriciousness of such floods accounts to a great extent for striking variation in the numbers of fish in the lower reaches.

Control of
fish.

36. The improvement of the holding capacity of the upper and middle reaches of our rivers between the altitudes of say 8,000 ft. and 5,000 ft. should be carried out by means of weirs of whatever kind the nature of the water and local materials permit with a view to converting the rapid running shallow water into a stream of alternate rapid water, runs and pools of which undoubtedly runs are the most important since it is in these areas not only the fish themselves prefer to live but their food supplies most actively prosper and propagate.

Stream
improvement.

37. A temperature of 56° F. is the highest at which effective natural spawning takes place; below an altitude where this temperature is normal, our rivers contain long stretches of water in which trout thrive and wax fat. In such stretches the fish are seldom numerous and it is probable that the larger ones take heavy toll of the smaller ones washed down. This

Spawning
areas.

should not be regarded as a proof of cannibalism, since the Committee are not of the opinion that such large fish confine their diet exclusively to small fish, thereby becoming a trout cannibal.

Big fish.

37. Many of the largest fish which have been caught in the Colony have been taken on medium sized salmon flies down to very small "Black Palmers" and other normal trout flies. One rather unexpected feature is that such large fish have not infrequently been taken about midday with a bright sun in clear water.

Big fish reaches.

38. Such stretches of river bear comparison with some of the finest trout water reaches in the world and are worthy of thorough, careful attention by way of improvement and by means of stocking with fish mechanically transported from the over-populated reaches above. Experience of the Kenya Fly Fishers Club shows that for this purpose fish of anything from $\frac{1}{2}$ lb. to $\frac{3}{4}$ lb. are most suitable. Steps such as these which are recommended will be found to be one of the most effective and satisfactory ways of improvement of the trout fishing in any Colony river and can be carried out without much scientific knowledge, the only requisites being a moderate skill with which to catch the fish, a few clean drums or *ndebbis*, a motor car preferably of the box-body type of which owing to its age one does not require to be too careful, or a lorry, and a good smattering of thought and common sense.

CHAPTER V

Recommendation for Future Control of Trout Rivers

Detailed information.

39. The Secretary, after a vast amount of labour and research, has accumulated and recorded most valuable information regarding every stream in the Colony which has been stocked with trout, and has prepared maps and schedules showing proposed sub-divisions of the country into what it is hoped will prove effective units of organization. A descriptive account of these units is given together with a proposed organization for control.

Divisions by watersheds.

40. The Colony may be divided into five zones for this purpose. These zones are:—

- (1) Mount Kenya.
- (2) Eastern Aberdares.
- (3) Western Aberdares.
- (4) Kericho.
- (5) Mount Elgon.

The Mount Kenya zone would include the Mount Kenya group of rivers in the districts of Meru, Embu and North Nyeri.

The Eastern Aberdares would include the Eastern Aberdares group of rivers in South Nyeri, Fort Hall, Kiambu, Nairobi and Laikipia.

The Western Aberdares zone would include the Western Aberdare group of rivers in Naivasha, Nakuru, Baringo, Londiani and Elgeyo areas.

The Kericho zone would include those rivers in Kericho, Sotik and Narok areas.

The Mount Elgon zone would include the rivers in the group Trans Nzoia, Uasin Gishu, North Kavirondo and Nandi.

The remaining areas of the Colony do not possess trout rivers or waters which are likely to be capable of being stocked with trout. Details of the various rivers in each district which have been stocked or are suitable for stocking with trout follow and we shall proceed later to consider them by districts and make our recommendations for their control and development.

41. Before proceeding to do so, it is necessary that we should give in broad outline the system we recommend. Briefly, it is that all those portions of the Colony containing trout streams should be sub-divided into areas, each constituting an effective unit for control purposes. This consists of ten sub-divisions as shown on the attached map.

System
recom-
mended.

42. In the detailed recommendations which follow it is recommended that there should be established in each area an Area Advisory Committee and the constitution of such Committee is given. The functions of the Area Advisory Committees recommended are to co-ordinate policy and advise generally in the interests of increased fishing amenities but not to enter into detailed administration where clubs and associations are already established.

Area
Advisory
Committees.

43. Their activities primarily would be to review the whole of the rivers within their area and select therefrom the extent of fishing water available to the public at present. Their recommendations would be directed to making the whole of such public water practically accessible to the angler by means of roads and paths, camping places, etc., and by clearing.

Functions of
Area
Advisory
Committees.

Recommendations re expenditure.

44. Their considerations in this respect would no doubt involve recommendations through the Central Board to Government as to what expenditure from public funds should be incurred for this purpose, and suggest means of supervision, and give an estimate of any increase of revenue which might accrue. Simultaneously they would consider to what extent the activities of local angling associations could be extended to embrace a wide membership and permit to the access to their waters.

Increased availability of rivers to public.

Again they would give consideration as to what means could be adopted to make private water in their area more widely available to anglers by means, for example, of associations or public water under control.

Advisory not executive powers.

45. It is not visualized that such committees should become the executive controlling bodies, but that such as exist should be advised and co-ordinated through the functioning of such Area Committees in their advisory capacity and in no case would these committees take on the direct management of rivers. This would only be possible by the formation of an association on their recommendation.

Object.

46. Their prime aim and object should be increasingly to render available to the general public angling in the rivers of their areas until every practical accessible stretch of water so becomes available, controlled, managed and developed to the full extent of their abilities with due regard to financial considerations, whether such water is in forest reserve, alienated or unalienated land, public land or native reserve.

Nairobi anglers.

47. We have given careful consideration to the interests of anglers resident in Nairobi and considered the possibility of the establishment of an area advisory committee for them. We feel, however, that the interests of the Nairobi angling community would be best served by the area advisory committees we have recommended who are actually resident within the areas affected.

Connexion with Area Advisory Committees.

48. Most Nairobi anglers have their favourite fishing fields, their interest in which is directly proportional to their keenness; they are thus naturally attached to one or other of the areas over which we have suggested the establishment of advisory committees. There would appear to be no reason why they should not associate themselves, therefore, with such area advisory committee or, indeed, become members of such committees as general circumstances seem advisable and beneficial.

49. We recommend that all members of such committees should hold the office of honorary trout wardens for the period of their appointments to the committees. Area Advisory Committees would make recommendations to a Central Advisory Board established we suggest in Nairobi. This Central Advisory Board should consist of a small number, possibly five or six, who, by virtue of their knowledge and experience of angling and of the country, should be in a position to make recommendations to Government on broad lines of policy, organization and administration.

Committee
Members,
Hon. Trout
Wardens.

Central
Advisory
Board.

50. We recommend that the members of such Board should be nominated by His Excellency the Governor and should hold the appointment for three years. The Trout Warden would be *ex officio* a member of this Board, which might in the first instance meet quarterly and once organization is thoroughly established, half yearly. Provision would require to be made by Government for carrying out secretarial duties of this Board. The Board would elect its own chairman annually.

CHAPTER VI

Details of the Various Rivers in each District Stocked or Suitable for Stocking with Trout, District by District

51. For the purpose of describing the Trout waters of the Colony, it would be best to firstly divide them into groups and then again each group into its Advisory Area.

The trout rivers can be grouped as follows:—

1. MOUNT KENYA GROUP :
Sub-division Meru, Embu, North Nyeri.
2. EAST ABERDARE GROUP :
Sub-division South Nyeri, Fort Hall, Kiambu, Nairobi, Laikipia.
3. WEST ABERDARE GROUP :
Sub-division Naivasha, Nakuru, Elgeyo, Londiani.
4. KERICHO GROUP :
Sub-division Kericho, Sotik, Narok.
5. MOUNT ELGON GROUP :
Sub-division Trans Nzoia, Uasin Gishu, North Kavirondo, Nandi.

NOTE.—There are no suitable streams in Central Baringo, Samburu and South Kavirondo or Machakos Advisory Area.

Revenue from Licences.

52. The following is the revenue from Trout Licences for Meru District:—

	£	Sh.
1934 ...	60	10
1935 ...	52	4
1936 ...	67	8
1937 ...	16	13 up to the end of May.

MOUNT KENYA GROUP

Advisory Area—Meru

53. Within this sub-division are the following rivers which have all been stocked with Rainbow trout with the approximate mileage in different owned land:—

	Forest Area	Native Area	Alienated	Crown
	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>
(a) Githika (or Gazita)	17	20	—	—
(b) Mariana* ..	15	7	—	—
(c) Thingishu . .	20	7	—	—
(d) Iraru	10	7	—	—
TOTAL ..	62	41	—	—

*Should be stocked again, was stocked but fish died.

54. The main physical characteristics of all four rivers are very similar. They all rise high on the slopes of Mount Kenya and flow through dense forest, generally in deep ravines. Before reaching the forest edge all rivers have a series of high waterfalls with a quieter stretch of water which varies from one to three miles long. At present there has been practically no penetration of the trout above the second waterfall from the forest line. Stocking has generally taken place just above the first waterfall above the forest line and in the case of the Gazita, above the second waterfall.

The river below the forest line is generally a series of steps with falls varying from 10 to 30 ft. high until below the Meru-Chuku-Embu road the water is much quieter and their are long, deep, quiet stretches.

The Gazita was first stocked in 1929, and again in 1931; the Mariana, Thingishu in 1931 and the Iraru in 1932. There are two other rivers, not yet stocked, which would carry trout; they are the Mara and the Mutonga. Trout have moved down the stocked rivers at a rate of one mile per year until the water below the Meru Township now carries a head of trout from 1 lb. to 4 lb. in weight. The April floods of this year have also moved down smaller fish of $\frac{1}{2}$ lb. each.

The same conditions are gradually taking place in the Iraru and the Thingishu. The fish of the Thingishu should be about the Meru-Chuka road bridge this year.

All water below the forest line is in the Meru Native Reserve, and at present the relations with native cultivators are good. Cases of poaching by Mission boys have come to light but so far the general cultivator has not taken to a fish diet.

Accessibility.

55. The Gazita is accessible by a good fair-weather road running up nearly to the forest line, and there is a good road running from the township downstream. At present the upper waters of the other rivers are only accessible to the young and vigorous angler.

European Population.

56. Meru is the station headquarters of the Administration, also of a game and forest officer and a number of officers of the King's African Rifles. There is also a Mission station and an hotel, the proprietor of which is a very keen fisherman who has done a great deal for the rivers. The resident white population would vary from 28 to 30 Europeans, but there is a considerable number of visitors at certain times of the year.

Present Control.

57. The present control is vested in the Game Officer who has a certain number of game scouts under his control and there was an Honorary Trout Warden, Mr. Davey. The Game Officer, at the request of the Honorary Trout Warden would detach a game ranger from game duties for a short period, but the main duties of the scouts are for game. At present there is no honorary fish warden in the Advisory Area.

Suggested Future Control.

58. The Committee suggests that this district should cover the area No. 1 on the map attached to this report, and that control should be exercised by a small committee consisting of the District Commissioner, Meru, with three others who might be the Game Officer, a representative of the King's African Rifles and one local resident.

Advisory Area—Embu

59. Within this sub-division the only rivers which have been stocked with trout are the Rupingazi and the Nyamindi, whilst the lower waters of the Thiba (stocked with trout) flow through this sub-division.

The following are the mileages of the trout waters :—

	Forest Area	Native Area	Alienated	Crown
	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>
Rupengazi	7	—	—	—

Nyamindi—Stocked twice, but no fish reported.

The main physical characteristics are those of the Meru District, there generally being a high waterfall upstream from the forest line. The present District Commissioner (Mr. I. R. Gillespie) of Embu considers the Rupengazi requires re-stocking and has offered to do this. With the Nyamindi the question as to whether this river is stocked or not requires investigation.

Revenue.

60. No figures are available for the income from trout licences, but it would not be more than £8 per annum at an outside figure.

Accessibility.

61. Both rivers are accessible by road up to the forest line.

European Population.

62. This is practically confined to about five Europeans only. There is no reason why these officials should not have trout fishing and good trout fishing and to this end the Rupengazi and the Nyamindi should be stocked after a proper examination.

There are a number of other rivers all tributaries of the Ena and the Thiba of which the most suitable for stocking are the Kapingazi and the Itambogo which could be stocked in the future, but this matter should not be taken up until a thorough examination has been made of each, and the results of the stocking of the Rupenzagi and Nyamindi are definitely known and proved one way or the other.

Present Control.

63. There is none. Whatever is done is through the interest of visiting District Officers.

Suggested Future Control.

64. The area we suggest is No. 2 on the map accompanying this report, and includes the Embu Administrative district and the Thiba river.

This area could be looked after by a small committee consisting of the District Commissioner and two others which might be an Agricultural Officer and a Missionary.

NORTH KENYA GROUP

Advisory Area—North Nyeri

65. This advisory area can be considered in two portions, the eastern and the western group.

The eastern rivers all rise in the high slopes of Mount Kenya and those to the south (East Nyeri Group) flow into the Sagana, the Thiba, etc., and then into the Tana. Those to the north (Nanyuki Group) flow into the Northern Uaso Nyiro which finally loses itself in the Lorian Swamp.

66. The rivers of the Eastern Group (East Nyeri and Nanyuki) are as follows going northerly from the Embu District border:—

	Forest Area	Native Area	Alienated	Crown
	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>
Thego	20	6	—	—
Meri	25	—	—	—
Nairobi	22	7	—	—
Rongai	27	—	12	—
Naro Moru	12	—	13	—
Burguret	16	—	17	—
Nanyuki	28	—	22	—
Liki	24	—	12	—
Ontalili	9	—	7	—
Siramon	11	—	7	—
Timau Stream ..	4	—	7	—
TOTAL ..	198	13	97	—

67. *Revenue from Trout Licences:—*

	£	Sh.
1934 ...	100	13
1935 ...	90	2
1936 ...	101	14
1937 ...	105	15 up to the end of May.

68. The main physical characteristics of these rivers are similar to those of Meru, but there is a considerable variation in water levels especially in the rainy season. The river beds are rocky, generally lying in steep clefts and are inaccessible to even the most active person.

From the forest line towards the mountain very few of these rivers have been mapped and none has been done from the point of view of trout. Generally there are not so many high falls as on the Meru side, some even have no high falls

at all but only a continuous incline. One striking feature about these rivers is the fact that they rise high up a snow-capped mountain and one would look for an increased volume of cold water in the hot weather, similar to the rivers of the Punjab (such as the Beas, etc.) due to melting snow, but in fact the rivers behave as other Kenya rivers—have high, violent, quick running away floods in the rains and then a continuous shrinking of water during the hot weather.

Several of these rivers have sawmills on their courses, but so far there has been no complaint of pollution or any cases of fish poisoning. Further downstream there have been one or two instances of wholesale poisoning of fish which can be put down to accidental discharge of a sheep dipping solution into the river.

68. The rivers of the Western Group are as follows proceeding north from the Fort Hall District border:—

Nyeri-Chania.—Only portion of the lower waters of river from the forest line to Nyeri town is in North Nyeri Advisory Area, and this river will be treated more fully in the Advisory Area South Nyeri.

Amboni.—Only the lower portions from the forest line to its junction with the Rongai River are in the district of North Nyeri.

Moya.—From the forest line downstream is in this area.

Uaso Nyiro.—From the forest line downstream is in this area.

Ngobit.—The same.

Above the forest line all these rivers are in the South Nyeri Advisory area, and any proposals for future control must take into account this fact.

69. The total mileages of the trout fishing of these rivers taking the whole of their courses are as follows:—

	Forest	Native	Alien- ated	Crown	Trout
	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	
Nyeri-Chania ..	30	—	20	—	Brown and Rainbow Rainbow
Amboni	14	—	16	—	"
Moya	12	—	7	—	"
Uaso Nyiro ...	10	—	7	—	"
Ngobit	14	—	14	—	"
TOTAL ..	80	—	64	—	

All the rivers in the North Nyeri Advisory Area after leaving the forest line flow through alienated lands.

Stocking.

70. All the rivers in the area have been stocked at various times by various persons, of which no records appear to exist. At present all streams are stocked with Rainbow trout. The Nyeri-Chania was a Brown trout stream until 1931 when it was stocked with Rainbow, and now the lower portion below the forest line is practically a Rainbow river. The Nanyuki and the Liki were also originally stocked with Brown trout but are now Rainbow rivers.

The first stockings of Rainbow trout go back to as far as 1912. Wherever Rainbow have been put into these Brown trout rivers, there has been a steady deterioration of the Brown trout with a final disappearance.

Accessibility.

71. The total length of water on which trout fishing could be obtained is 439 miles or a fifth of the total trout fishing in the Colony. Of this, 278 miles are in forest and 161 miles in alienated land, including townships. The upper waters have no road of access at all in the forest reaches, and permission would have to be obtained to pass over private roads. These rivers are the Ngobit, Siramon, Outulili, Uaso Nyiro, Rongai, Moya, Nairobi and the Timau Stream.

The following rivers have stretches available to the public: The Naro Moru, Burguret, Liki, Nanyuki, Nyeri-Chania, Thego and the Meri, the total mileage of which is about 60 miles, whilst about 379 miles are in alienated land or forest areas.

Present Control.

72. According to the latest Game Department report available, 1935, there are in this Advisory Area the following Honorary Game and Trout Wardens:—

Nyeri District:—

Hon. Trout Wardens—3 in 1937.

Hon. Game Wardens—4.

Nanyuki, Naro Moru District:—

Hon. Trout Wardens—5.

Hon. Game Wardens—7.

The Game Officer stationed at Meru has also control over the whole of this district with a number of game scouts under

him. At Nanyuki, there are two scouts or river watchers under the control of Major Younghusband, an Honorary Trout Warden of Nanyuki, and there are two river watchers on the Nyeri-Chania.

Considerable improvements and developments have taken place in this area, including clearing of banks on the public water. In consequence, this is a popular resort for fishing by visitors for whom there is hotel accommodation available.

MOUNT KENYA GROUP

Advisory Area—South Nyeri

74. Within this area are the following rivers with their approximate mileage through different owned lands:—

	Forest	Native	Alien- ated	Crown	Trout
	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	
Thiba	14	4	—	—	Rainbow
Mukendu	12	—	—	—	"
Rururu	10	—	—	—	"
Ragati	7	—	—	—	"
Sagana	7	24	—	—	"
Gura	36	14	—	—	and Brown
Chania	30	—	—	—	Brown
Zuti	10	2	—	—	Rainbow
Gikira	5	—	—	—	and Brown
Amboni	14	—	16	—	Brown
Moya	8	—	—	—	"
Uaso Nyiro ..	6	—	—	—	"
TOTAL ..	159	44	16	—	

Revenue from Licences:—

	£	Sh.
1934 ...	7	10
1935 ...	£18	4
1936 ...	£34	3
1937 ...	£26	7 up to the end of May.

75. Of these rivers the Uaso Nyiro, Moya, Amboni and Chania have been dealt with under Advisory Area North Nyeri, whilst the Northern Mathioya is part of the river system rented by the Kenya Fly Fishers Club and will be dealt with under Advisory Area Fort Hall. The Zuti and Gikira are tributaries of the Gura. All rivers finally flow into the Tana.

The physical characteristics of the rivers vary considerably and no general remarks can be made. Hence they will be taken separately.

76. *The Gura*.—The feeder streams which form the headwaters of this river flow from off the high slopes of the mountain Kinangop of the Aberdares Range (12,815 ft.) and also from the point Shinanga (10,097 ft.). The whole of the country at the foot of these two peaks is a coarse spongy tussock bog, and the various streams and rivulets collect into two main arms which join at the northern foot of Sinanga. The river then flows through giant heather and bracken until it reaches the Bamboo area, and then through the forest to its emergence into the native reserve. Its course is in a deep cleft; most inaccessible. There are two known high falls, one not far from the forest line and the other higher up. For the course of the river from the junction of the headwater feeder streams to the forest line, there are no maps and very few persons have been down the stream. From the forest line to the junction of the Sagana there are no falls and the river is a succession of fast stony runs and deep pools with open banks, dotted with most extensive native cultivation.

77. *The Zuti* is a small stream running parallel to the Gura and falls into it below the lower camp. Still further down the Gikira which rises well up in the forest area, and unmapped, flows in. Both have Brown trout and the Zuti is believed to have been stocked in 1926 from a basket of 50 fish being carried away by a flood while in transit between the Gura and the Northern Mathioya.

Stocking.

78. The Gura was originally stocked through the efforts of Major Ewart Grogan in 1905, and the last stocking of fingerlings (4,250 in number) took place on April 10th, 1934.

Accessibility.

79. On the Gura, there is at present a lower camp consisting of two well built thatched huts with a division in each, and also a crudely fenced area which is used for camping. Fees are charged at one shilling per night. Going upstream there is a camp site called "Martin's Camp", whilst just inside the forest line there used to be Governor's Camp. This latter has fallen completely into disrepair and disuse. To the lower camp there is a good motor road from Nyeri, and also a branch into the Nyeri-Fort Hall road joining near Karatina. From the lower camp there is a rough road upstream to

Martin's Camp only passable in dry weather. There is another means of access from Nyeri which follows the old Nyeri-Naivasha track.

Present Control.

80. The water is divided up into three beats and each is in charge of a river watcher who is supplied with a book in which fishing particulars are entered. Every month this book is taken to the District Commissioner, South Nyeri, checked and initialled and a record of the persons fishing is made. This is sent to the Game Department, Nairobi, to check licences. These three fish scouts are under the jurisdiction of the District Commissioner, South Nyeri, who has power to take on or dismiss any of them. From the forest line upwards to the source the river is closed for fishing, a regulation which is only obeyed in the abstract.

81. The Ragati with its tributary, the Rururu, has been stocked with Brown trout. There is a high fall near the forest nursery and stocking took place below this fall. Above the fall the forest is almost impenetrable, but it has often been suggested that another stocking should take place above this fall. An expedition to the Rururu failed to find any fish and both those rivers would need stocking in the future. The Ragati is accessible under dry weather conditions. The Ragati flows into the Sagana near Sagana Railway Station. It may be noticed here that Rainbow trout have been taken near the junction but an expedition collecting fish for the British Museum last March failed to take any trout in the Ragati either with rod and line fishing or with nets. It was thought that Rainbows might have run upstream from the junction.

82. *The Thiba* rises in the high slopes of Mount Kenya, and is a typical Mount Kenya stream. The fish in the forest area are small and numerous, whilst below in the Native Reserve they are larger. There is a limit length of 10 inches in this river and it is suggested this should apply to the water below the forest line only. There is a road of access up to the forest line.

83. *The Sagana*.—This river rises up in the Mount Kenya forest, and from the forest line to the North Nyeri-South Nyeri district boundary flows through alienated land. In the South Nyeri Advisory Area the river is in Native Reserve giving four miles of good accessible fishing which could be improved at a very little cost. There are plenty of Rainbow of a good average weight.

On the Ragati, Rururu, Sagana, there is no control, but a boy with a book has been placed on the Thiba.

Future Control.

84. It is suggested that this large district could be conveniently divided into two portions, i.e. Nanyuki and Nyeri.

The Nanyuki area (see No. 3 on the map) would cover three small groups of rivers, the Timau area, Nanyuki area and the Naro Moru area.

For the control of this area we suggest a small committee be appointed consisting of the District Commissioner, Forest Officer and three local residents. We also suggest that these three local residents should be drawn one each from Timau, Nanyuki and the Naro Moru areas.

85. The Nyeri area would cover the whole of the area No. 4 on the map attached to this report, and for control we suggest a committee consisting of the District Commissioner, Forest Officer and five local residents. The five local residents should not only cover the whole of the district but also business interests such as hotels.

EASTERN ABERDARE GROUP

Advisory Area—Fort Hall

86. Starting from the South Nyeri Advisory Area this district includes the following rivers:—

	Forest	Native	Alien- ated	Crown	Trout
<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	
Northern Mathioya	14	13	—	—	Brown
Southern Mathioya	25	15	—	—	"
Maragua	17	17	—	—	"
Irati	7	2	—	—	"
Thika	11	15	—	—	"
Kyama	7	2	—	—	"
Thika-Chania ..	45	7	7	—	"
TOTAL ..	126	71	7	—	

Revenue from Licences.

No figures are available.

87. All these rivers vary in their characteristics and will therefore be considered separately.

The Northern Mathioya rises on the northern slopes of Mount Kinangop from the same stretch of boggy land as the Gura, but from its source it has never been mapped until it emerges from the forest line. It is a fast flowing river, the bed being strewn with large boulders. As far as is known there are no large falls in the high watershed.

88. *The Southern Mathioya* flows parallel to the Northern Mathioya, but interspaced with more good holding pools than the Northern Mathioya.

89. *The Maragua* rises from the high slopes of the Mountain called the Elephant and another point (11,600 ft.) just south of it, in four main streams which join close above where the southern Naivasha-Tuso-Fort Hall track crosses the river. From the forest it flows through the Fort Hall reserve, and in its lower course there are two high falls. The Thaba and the Thara join in and it then flows into the Sagana some 14 miles below Fort Hall. Its course through the Native Reserve is also in a two terraced valley like the Gura but narrower.

90. *The Irati River* rises in a minor ridge south of that in which the Maragua rises, and is supposed to have been stocked in 1935. There is a track right up which joins the Naivasha-Tuso-Fort Hall main track. It is very doubtful if there are any fish in it, and it would be worth while to settle this question in the future.

91. *The Thika River* rises in the same ridge mentioned in connexion with the Irati, but takes a more southerly course. It is a fast, overgrown river in the forest zone, but is a succession of steps in the native area. Improvement work was carried out on this river with a grant from the Game Department some two years ago, and the river should have a proper annual grant. It joins the Chania at the Blue Posts Hotel, Thika, and is, with the Chania, the most southerly tributary of the Tana. It has a large tributary, the Kyama, which was stocked with trout and is still supposed to hold some, but very little proof has been produced as yet.

92. *The Chania* is the longest river of the Eastern Aberdares. It rises high up the slopes of the Mountain Kinangop, rather to the western edge of its southern end. It flows south and then, near Njabini, flows south-easterly through a small number of European farms and then plunges into the Bamboo Forests where it receives two large tributaries. The largest is the Kiburu which drains the whole of the southern part of the Aberdare Forest Reserve.

The main river in the bamboo area, turns more easterly and finally emerges from dense forest to form the northern boundary of the Kiambu Native Reserve.

In the forest section it flows at the bottom of a narrow gorge heavily overgrown, and most difficult of access but full of big Brown trout. In the upper reaches this river is overcrowded with fingerlings whilst in the Native Reserves the pools carry one or two monsters only.

There are few high falls in the forest section and generally few pools, but in the lower reaches there are shelves with long still reaches.

Stocking.

93. Various attempts were made to stock the Southern Mathioya and success came after two stockings with Brown trout in the year 1926-1927. The Northern Mathioya was also stocked about this time. The tributary Tusu river was stocked but the trout have never done well in this stream.

The Chania has been stocked in the Njabini area for many years, and as stated before, these reaches are completely overcrowded.

Accessibility.

94. All rivers are accessible by Native Reserve roads up to the forest line, and from there run tracks which mean foot work. The Chania, Thika and Maragua should be made accessible in the forest sections.

Present Control.

95. The Northern and Southern Mathioya are the waters of the Kenya Fly Fishers Club (late Kenya Angling Association) who very effectively supervise their area.

The Maragua has two boys stationed on it, but owing to lack of supervision precious little is done.

The Thika has one boy on it who has a book and a certain amount of supervision from one or two local keen fishermen.

Where the Chania flows through alienated land, the riparian owners jealously guard their waters. On the lower portion there is a scout with a book whose duties range from elephant to Colobus monkeys, with fishing tacked on when he has nothing better to do.

Future Control.

96. The area we propose under the Fort Hall control is shown as No. 5 on the attached map, and it will be seen that the Northern and Southern Mathioya with their tributaries are shown separately in this area, as they are under lease to the Kenya Fly Fishers Club, and thus are only included in the proposed control for broad policy.

Of the remaining rivers, the Maragua to the Thika-Chania inclusive, should be placed under the control of a committee consisting of the District Commissioner, Fort Hall, and/or the District Commissioner, Thika, and three local residents drawn from the districts of Makuyu, Maragua and Thika.

EASTERN ABERDARE GROUP

Advisory Area—Kiambu

97. In this area are the following rivers:—

	Forest	Native	Alien- ated	Crown	Trout
	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	
Ndarugu	11	14	—	—	Rainbow
Katungu	6	5	—	—	"
Thiririki	10	11	—	—	"
Katamayo	9	7	—	—	"
Ruiru	4	—	2	—	"
TOTAL ..	40	37	2	—	

Revenue from Licences.

As this is so near Nairobi, we are giving the Nairobi figures:—

	£
1934 ...	272
1935 ...	255
1936 ...	301
1937 ...	202 up to the 20th May, 1937.

98. The characteristics of these rivers are all alike. They rise just above or in the bamboo area of the Kikuyu Escarpment Forest Reserve and reach the forest line in a series of waterfalls which are the edge, as it were, of shelves. After leaving the forest line they flow through the Kiambu Native Reserve and finally join up with the Athi River. Even in the Native Reserves, they flow over a series of shelves, some of

the falls (as on the Ndarugu) being over 50 feet high. None of these rivers are large, and some, like the Katamayo, are no more than goodish brooks, but it is amazing the head of trout they will support and the good condition of the fish.

Stocking.

99. The Katamayo has been stocked for many years, and the others were stocked in 1925 from this river. At one time, there was a hatchery on the Katamayo, but this disappeared a number of years ago.

On the Ruiru there is being built a new Reservoir for the Nairobi Municipality, and when finished there will be a sheet of water of 117 acres with a depth of 24 feet at the dam. There is no doubt that when properly stocked this will give excellent fishing and the site is accessible by three good all-weather roads from Nairobi and Ruiru.

100. *The Katamayo.*—As this river is the nearest trout stream to Nairobi and is the heaviest fished river in the Colony, it deserves a few words to itself.

The river has two major and one minor headwater just above the bamboo line in open park-like country. The three join and just below their junction is a fall of 20 feet and a largish pool. In the water of this short moorland stretch various stockings have taken place. A mile below the pool, the river enters the forest and from there to Dent's Bridge, it is very overgrown with tree ferns, creepers and trees, both alive and dead.

From Dent's Bridge (to which there is a good fair-weather motor road, and good camping sites) downstream to the forest edge, there is a path which is cleared periodically but could be improved greatly with a little attention.

From Dent's Bridge to the forest line, there are four major falls none of which can be negotiated by trout up or down under average conditions of water, although a four foot rise is high enough to bring fish downstream over the falls. No fish can go upstream over any of the falls. On emergence from the forest line the whole of the course of the river until it joins the Ruiru, is in the Kiambu Forest Reserve.

Just below the main road bridge, there is a high fall and below this the Mwariza brook joins in with another high fall half a mile below it. From then on there are falls every mile but between them there are good pools and fish-holding stretches. Common belief is that they hold some very big fish.

This is an ideal river for building small weirs and other protective works, and these should certainly be put in hand.

It would make a most valuable trial and experimental station, as it is near enough to Nairobi and could be under the personal control of the Trout Warden.

101. *The Basi*.—This is a small stream once stocked from the Katamayo, but so far as is known there are no fish in it at present. This river should be surveyed and another attempt made at a proper stocking. There are also several small streams in the Limuru highlands to which the same applies.

Accessibility.

102. All rivers are most accessible by roads which run from the main Nairobi-Thika road up to the forest line, but above that the rivers are badly bushed.

The Katamayo is the best known of these streams to the Nairobi public, but the Ndarugu and the Thiririki have also facilities for giving sport. Lack of knowledge of access to the fishing of the Thiririki and the Ndarugu has led to the over-fishing of the Katamayo.

Present Control.

103. On the Katamayo there have been two boys, one of whom was furnished with a book. This was brought into the Game Department office every Monday for a check to be made of licences. These boys are under the orders of the Game Department.

The Ndarugu has consistently been poached for the last three years and the trout sold to various stations in the Kikuyu Reserve. No attempt has ever been made to deal with the receivers of these fish. The poaching has been so open that trout have been offered for sale on Uplands Railway Station.

Future Control.

104. This area is shown as No. 6 on the attached map, and the suggested control might be a small committee consisting of the District Commissioner, Kiambu, the Forest Officer, Lari, and three local residents.

When the reservoir for Nairobi is completed and stocked, this again will only come under the control for broad policy, being the property of the Nairobi Municipality.

WESTERN ABERDARE GROUP

Advisory Area—Nakuru (including Naivasha, Elgeyo and Baringo)

105. This is so large an area that it will be best to consider the rivers in groups as follows:—

- (a) The Melawa-Morandat Group.
- (b) The Thomson's Falls Group.
- (c) the Njoro-Nakuru Group.
- (d) The Molo, Londiani, Eldama Ravine Group.
- (e) Elgeyo.
- (f) Baringo.

The mileages of the rivers are as follows:—

MELAWA-MORANDAT GROUP

	Forest	Native	Alien-ated	Crown	Trout
	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	
Melawa-Morandat.	—	—	45	—	Rainbow and Brown
Oleondo	—	—	17	—	Rainbow
Gantami	5	—	3	—	"
Maunga	5	—	3	—	"
Kinja	5	—	8	—	"
Mogatu	3	—	3	—	"
Katima	3	—	5	—	"
Kanyani (Tarasha)	3	—	15	—	"
Kitiri	5	—	15	—	"
Lake Naivasha ..	—	—	—	—	"
TOTAL ..	29	—	114	—	

THOMSON'S FALLS GROUP

	Forest	Native	Alien-ated	Crown	Trout
	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	
Sugeroi	15	—	7	—	Rainbow
Little Pesi ..	5	—	5	—	"
Greater Pesi ..	24	—	14	—	"
Narok and Equator Stream	15	—	12	—	"
TOTAL ..	59	—	38	—	

106. The Melawa-Morandat Group consists of the Morandat and the Melawa with all their numerous tributaries and Lake Naivasha.

The whole of the headwater of these two rivers extends in a fan shape from Mount Kinangop (12,816 ft.) to slightly north of Mount Sattima (12,715 ft.). The Melawa is known by that name until it is joined by the Tarasha (or Tulaga) and the combined water is known by the Masai name Morandat until it finds an entry into Lake Naivasha.

Starting from the south and going north, the headwaters of the Tarasha are the Murwaki, the Mogotiu with its tributary the Katini, the Sane and the Kaharia, then the Kitira with its tributaries the Kinja, the Karishura and a number of tiny brooks. There is also a series of headwater streams rising on the south side of Kipipiri (10,987 ft.) the principal one being the M'Kungo.

The headwaters of the Melawa are the Geta and the Wanjoni rising from the western slopes of Kipipiri the Melawa itself rising from the north-north-eastern slopes of Mount Kipipiri. All these headwaters rise in forest land but also drain a more open grass and heath country. There are other streams which drain a cattle country between Gilgil and Thomson's Falls, the principal one being the Oleondo.

These latter streams, however, are generally dry water courses in the hot weather and raging torrents in the rains.

In the forests the streams are typical clear, fast-flowing forest brooks, several of which have good-sized falls. On leaving the forest areas, all tributaries and the main river flow through alienated land and consequently are not available for public fishing. A conservative estimate would give the total mileage of trout water as 100 miles in alienated and 29 miles in forest lands.

Before the Melawa becomes the Morandat, there are two falls, Duffer's Pool and Daphne's Pool, over which trout can safely pass on a three foot flood. Duffer's Pool can be ascended by a side stream upwards during a flood, and during a count it was found that three fish per hour could get up in the daylight. One believes more must go up during the hours of darkness. From the Duffer's Pool downwards there are long deep stretches as the river has worn itself out a deep cleft in the old Kamasian lake alluvials.

Stocking.

107. From the beginnings of stocking in the Colony, attempts have been made on this river. First Brown, then Rainbow, and Brown again has been the history but now the

whole of the watershed is principally Rainbow trout although some Brown still survive in the Kitiri, and frightfully degenerate specimens sometimes come to hand from the neighbourhood of the Creamery near the main Naivasha-Gilgil road (Morandat).

The upper waters are greatly overstocked. From above Daphne's Pool to Portman's Bridge this stretch holds a good head of free rising fish from 1 lb. to 3½ lb. in weight. Below this stretch there are much larger fish rather dour in the day-time but rising in the late evening.

From the Naivasha-Gilgil main road the river is a succession of long, slow, deep stretches with a fast run between and some very large specimens have been taken. Towards the exit into the Lake the river gets choked with papyrus until finally the water filters through a barrage of papyrus into Lake Naivasha.

The trout population of the river below Lion Corner and Kitiri-Tarasha junction depends on floods. Given good rains there is a continuous movement of fish downstream and by means of scale readings one year old fish can be followed having moved downstream in an endeavour to find more abundant food.

Migration.

108. No mention can be made of this river system without drawing attention to the migratory habits developed by the Rainbow of this watershed as it has not been described from any other watershed as yet.

As mentioned before, the Morandat finally empties its waters into Lake Naivasha by filtration through a barrage of papyrus. When high floods occur, however, the water submerges this barrage and fish pass over and into Lake Naivasha where there is practically unlimited food.

From the lower, still reaches of the Morandat, the stimulus of a flood causes the big fish to make an upstream movement to the spawning beds in or near the forest line. This movement can be made with average water in the river until the fall at the head of the Duffer's Pool is reached and here the fish cannot proceed any further, unless a big flood comes and they then can run the main fall. In ordinary water the migratory instinct is so strong that fish try a small trickle of water on Sir John Ramsden's side of the fall. This run also occurs up the Tarasha, but is soon stopped by a fall. Should the fish successfully run the fall of the Duffer's Pool, there

is a clear run until the neighbourhood of Daphne's Pool is reached where progress is stopped until a high rise in water level takes place. *Only in exceptionally high water years* can these fish reach the high spawning ground.

In the year 1933, fish, results of the 1930 floods, congregated in great numbers in the Duffer's Pool. They ran from $2\frac{1}{2}$ to $8\frac{1}{2}$ lb. and were fish with organs of reproduction actively developed. They did not ascend the falls and consequently a great number were caught (one bag of 15 fish— $73\frac{3}{4}$ lb.) and the others shed their ova and milt in water hopelessly too warm for fertility. This occurs every year.

In other words, since 1930 the few Rainbow of the Morandat have not been able to get into Lake Naivasha with its unlimited food and also neither have they been able to get up to the proper spawning beds on the Kinangop.

With these facts before us, it seems that a complete survey should be made of the mouth of the Morandat into Lake Naivasha, and also the falls of the Duffer's Pool and Daphne's Pool with a view to clearing the mouth and making the falls passable for the trout. One can visualize that if these obstructions were removed a big race of Rainbow trout would be fed up in Lake Naivasha, which would run the river, spawn and then run back to the Lake. Judging from experiments in Australia, the death age of these fish would be $4\frac{1}{2}$ years, but a magnificent race would be bred.

The objection might be raised that if the barrage were cleared, Black Bass, at present in the Lake would run the trout stream and deplete its waters. The large mouthed Black Bass is a warm water fish, and the temperature of Lake Naivasha is just about its lowest temperature limit. The waters of the Morandat are colder than Lake Naivasha and this lower temperature would deter any running up the rivers. The evidence shows that Rainbow can and have got into the Lake on high waters, but the Black Bass have not run the other way.

Present Control.

109. As the whole of the water outside the forest area is alienated land, there is no Government control. Each landowner is more or less a law unto himself, although there are a certain number of Honorary Fish Wardens resident on the Kinangop and in the Melawa Valley.

In the forest area no control is attempted, and these waters are fished by anyone who feels inclined—often, one fears, with a grasshopper. On the Kinangop the right of entry to the land on the banks of the Tarasha and the Kitiri belonging to Naivasha Lands, Ltd., is rented by a small syndicate of private subscribers under the name of the Tulaga Angling Club. They police their waters, and carry out improvements to the water. As this is a purely private syndicate, there are no tickets or facilities for the public to fish these waters. The Gilgil Country Club also have a fishing section; this section has permission to fish over 40 miles belonging to private owners; visitors public tickets are available for this water at Sh. 5 per day each. A river watcher is kept also who has a book and a recording book is also kept at the club house.

Generally speaking very little attention has been paid to improving the water.

110. *Gilgil River*.—Flowing into Lake Naivasha and draining a hinterland behind Gilgil town is the Gilgil river. It flows in a deep rut which in many cases can be jumped across, but the river is 12 to 16 feet under one's feet. Trout have been introduced into the headwaters, but it is believed none has survived. It is doubtful if the stream is suitable or worth while stocking with trout.

111. *Lake Naivasha*.—Under the heading of the Melawa-Morandat Drainage Area, much has been mentioned about Lake Naivasha.

With a survey of the mouth of the Morandat, if it was decided to open out the barrage, Lake Naivasha would definitely come into the trout waters of the Colony.

A great rise in the level of this Lake this year (already over 4 feet) has led to an enormous spawning of the Black Bass and the Tilapia. These fry would act as food for the big trout as well as for the big Black Bass.

THOMSON'S FALLS GROUP

112. *The Suberoi*.—This stream has its source in the North Aberdare Forest Reserve, and after leaving this area flows in a northerly direction until it joins the Guaso Nyiro. Practically the whole of its lower reaches are in alienated lands. Very little is known of its waters as it is only fished by a few people. Its banks, we believe, are very much over-bushed.

113. *Greater and Little Pesi.*—The information herein was kindly supplied by General Wainewright, H. Smith, A. Kincaid Lennox, E. Blatherwick and E. V. Hart to whom the Committee are indebted.

There are *three* branches on the Pesi and confusion arises out of their names.

In the upper reaches, there are the Greater Pesi and the Lesser Pesi and the latter is the larger and better stream of the two. The Greater Pesi flows from the Forest Reserve (3 miles) through Trent (2 miles), Van Blerk ($\frac{1}{2}$ mile), Wilson ($1\frac{1}{4}$ miles), Ryan (1 mile), Blain (1 mile), Wainewright (1 mile), and again into the Forest Reserve where it is met by the Lesser Pesi which has come from Forest Reserve (4 miles) through Wainewright ($1\frac{1}{2}$ miles), Blain (2 miles) and Wainewright ($2\frac{1}{2}$ miles).

After this junction of the Greater and Lesser Pesi, the river flows through Forest Reserve ($4\frac{1}{2}$ miles) and through Ndaragwa (6 miles) and is met by the Little Pesi, a small stream of some five miles which flows through Forest Reserve, Ward, Daniels and Lennox. The river then flows through Smith, and information on the lower reaches has not been obtained.

The river is liable to frequent floods of small dimensions and occasional floods (once in five or six years) of four or five feet.

General Wainewright mentions a day's temperature of 44 degrees at 10.15 a.m. and 51 degrees at mid-day. Otters are present on the rivers.

Stocking.

1928.—The late Mr. Ryan put in about 8 or 9 Rainbow trout in the Greater Pesi. These have been caught up to $3\frac{1}{2}$ lb. Mrs. Trent has also put in some fry into the Greater Pesi, but they were all washed down.

1932.—Wainewright and Blain put nine Rainbow trout into the Lesser Pesi. H. Smith put in 8 trout low down below Lennox.

1933.—Smith again put in a few in the same place. None of these have ever been seen.

1934.—In April, General Wainewright and Blain put in 600 Brown trout fry in the Lesser Pesi. For 18 months small ones were seen.

The Hon. J. R. Ward put in 500 Brown trout fry in the Little Pesi in Forest Reserve just above his farm.

A. K. Lennox put in 500 Brown trout fry in Greater Pesi on Ndaragwa (Augeraud's and Ryder's Drift).

1936.—In April, Lennox put in 480 Rainbow fry in the Greater Pesi, downstream of Augeraud's Drift. Also 20 Rainbow fry in the Little Pesi, one mile above the junction on his farm.

114. *The Narok and Equator Stream.*—The greater part of the Narok River is under the control of the Narok Angling Club, whose headquarters are Thomson's Falls.

The upper Narok and the Equator stream join above the township of Thomson's Falls, and after passing over a high fall enter the Forest Reserve. It then flows through a small portion of alienated land and into the Rumuruti Forest Reserve. After that its course is through alienated land to the big swamp near Rumuruti.

Rainbow were stocked in 1925, a club formed in 1927 and 1,000 Brown trout were introduced below the falls in 1928. The latter all disappeared.

The Narok Angling Club have 15 miles of forest water and an arrangement to fish over 12 miles of alienated land water.

An application has been put in for controlling the Equator stream in the township area.

The water is well looked after and is patrolled by Club Fish Scouts.

Future Control.

115. The Melawa-Morandat area is shown as No. 7 on the map accompanying this report, and we suggest that the control of this area be left in abeyance, as these rivers are affected by recommendations concerning private land. Their control will depend upon the system adopted, as all fishable water is in alienated land, and only the breeding grounds are in Crown land, i.e. a closed Forest Area.

Laikipia area is shown as No. 8 on the map accompanying this report, and we suggest a committee consisting of the District Commissioner and/or the Forest Officer, two representatives of the Narok Angling Club, with one member representing the public.

The Narok at present is controlled by the Narok Angling Club, but we recommend and anticipate that this control now proposed by us, will very soon result in the formation of an association controlling the waters of the rivers of the Thomson's Falls Group.

WEST ABERDARE GROUP

Advisory Area—Nakuru. Group "C"

116. *The Ngare-Rongai River.*—The following are the particulars:—

	Forest	Native	Alien- ated	Crown	Trout
	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	
Ngare-Rongai ..	13	—	12	—	Rainbow and Brown

This river rises in the Mau Forest Reserve and runs due north, passing through the Lord Delamere Estates under the Kenya and Uganda Railway near Rongai Station, finally losing itself a few miles below Kampi-ya-Moto, its total course not being more than 25 miles as the crow flies. In size it is not more than a large brook, but for all that there appears to be plenty of food, as a 6½ pounder has been taken.

This river is rocky with falls and pools. Gravel is in the pools but absent from the main bed. The seepage of water is great, which points to faults in the rock bed.

Accessibility.

117. Inaccessible in the forest stretch, but accessible in the alienated lands.

Stocking.

118. The river was stocked in 1928 by Capt. Dent with Brown trout, 8½ miles above the railway at Rongai Station, whilst at some subsequent time, believed 1934, Rainbow were put in—500 in the forest and another lot 2½ miles above the railway.

Present Control.

119. The river flows half its course through forest areas, these are the higher reaches, whilst all its lower reaches are in alienated lands.

There is no control in the forest reaches whilst the water in alienated land is reserved by the riparian owners. As far as one can judge, very little interest is taken in the river by anyone.

Future Control.

120. For this river we recommend that the position remains as at present.

WEST ABERDARE GROUP

Advisory Area—Nakuru

121. This group comprises a number of small streams as follows:—

The Enarosura or Narosarra.

The Eldama.

The Lelgel or Oroma, and other tiny feeder streams.

The following are particulars with the total mileages:—

	Forest	Native	Alien- ated	Crown	Trout
	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	
Enarosura ..	12	36	15	3	Rainbow
Eldama ..					
Lelgel ..					
Pergerra ..					

General Features.

122. All these rivers rise in dense forest near Timboroa Railway Station and flow in heavily bushed gorges. From the forests they enter the alienated land round Eldama Ravine and then the Native Reserves. They are fast little streams of the nature of mountain brooks with a series of falls and holding pools. The Pergerra, Lelgel and the Eldama form the Tiggeri. The Enarosura flows into the Esageri and all the rivers join and form the Pirakira.

Accessibility.

123. The Enarosura is accessible and to a greater extent the Lelgel, but the others are most inaccessible.

Stocking.

124. These rivers were stocked in 1931 and until 1934 no fish were taken, but since then the Lelgel has been fairly well fished and a fair number of fish caught in good condition, the largest being 1½ lb.

The Enarosura was repeatedly fished with no success and in May, 1936, 400 fry were put in. In June of 1937 a trout of 1 lb. 6 oz. in beautiful condition was thrown out on to the bank by a water wheel, so one hopes the last stocking was a success.

Present Control.

125. All these rivers are under the control of the Ravine Fishing Club. They are cutting paths and trying to make the Lelgel accessible, whilst the Enarosura has also been cleared, otherwise there is no policing or control.

Future Control.

126. We recommend that the position remains as at present.

WESTERN ABERDARE GROUP

Advisory Area—Nakuru, Group "C"

127. *The Masaita and Kipchoriet.*

	Forest	Native	Alien- ated	Crown	Trout
	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	
Masaita	3	—	1	3/4 Town- ship	Rainbow

General Remarks.

128. The Masaita rises in forest and very soon receives a tributary, the Marani. In the course of three or four miles, it crosses the main Uganda road near Londiani Station and receives another tributary which rises in the forest at an altitude of 9,000 ft. The river keeps close to the Railway until Lumbwa Station is reached, being known then as the Kipchoriet. Near Fort Ternan it receives the Tugenon, and these form the headwaters of the Nyando which flows into Lake Victoria.

Stocking.

129. The first attempts at stocking the Masaita, as well as the Molo and Lumbwa streams was made by Mr. Eustace Atkinson as long ago as 1919, but in 1923 Rainbow were stocked again. Stocking also took place in 1936. These fish are supposed to have moved down and possibly there are trout

in the Kipchoriet near and below Lumbwa Station. The largest fish taken is one of 7 lb., but the average would be 3-4 lb.

Accessibility.

130. The Masaita has been made accessible with paths, etc., but below Londiani nothing has been done.

Present Control.

131. There is no control over the Kipchoriet, but the Masaita is in the hands of a small club, the Masaita Fishing Club, P.O. Londiani.

Owing to the enthusiasm of the Hon. Secretary, Mr. H. B. Atkinson, clearing has been done, dams built, weeds planted and a small brook turned into quite a good fishery.

Future Control.

132. We recommend that the position remains as at present.

WEST ABERDARE GROUP

Advisory Area—Elgeyo

133. There is only one river in this area, the Aroor, which is wholly in Native Reserves except its headwaters in forest area.

It flows out of the forest on the Elgeyo Escarpment and drops 2,500 ft. in a matter of about 12 miles into the River Ndo. Although it rises at about 8,000 ft. yet the Ndo Valley is far too hot to support trout.

It was stocked with Rainbow from the Moiben River about 1934 and according to all reports these trout have done well and there is quite good fishing in the Aroor.

Spawning must have occurred on quite a large scale, for the original trout were few in number. The stocking of this river is an amenity to Government officers stationed at Marakwet.

Present Control.

134. Rests on officers of the District Headquarters.

Future Control.

135. This should be left entirely to the District Commissioner, Tambach, and he can always receive advice or aid from the Trout Warden.

WEST ABERDARE GROUP

Advisory Area—Nakuru

136. *The Molo District.*—Particulars of the rivers are as follows:—

	Forest	Native	Alien- ated	Crown	Trout
	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	
Molo River ..	10	—	5	—	Brown and Rainbow Rainbow
Abraham's River..	5	—	5	—	
TOTAL ..	15	—	10	—	

Revenue from Licences.

Not known.

General Features.

137. *Molo River.*—Rises on the easterly side of the Mau Escarpment in heavy forest, and after leaving the forest flows through alienated land until it passes under the Railway near Rongai Railway Station. It finally joins the Tigerri and flows into Lake Baringo. It is a typical Kenya forest brook of falls and pools heavily bushed.

Abraham's River.—This is the largest of a number of brooks which rise in alienated land on the westward side of the Mau. Soon after leaving the alienated land, they plunge into dense forest and are the headwaters of the Kericho rivers. As their path has never been mapped in the Mau Forests, it is not known what rivers they finally become, so the term Abraham's River has arisen because it flows on his land.

Stocking.

138. The Molo River was first stocked by Major E. Grogan in 1925 with Brown trout. These did not do well, so the river was stocked with Rainbow in 1931 and Mr. E. R. Davies again stocked the river in 1936.

Abraham's River was stocked with Rainbow in 1933 and now carries a very large head of smallish fish. The other small headwater streams were stocked with Rainbow in 1936.

Accessibility.

139. The Molo River is very inaccessible, but the head-water streams are open and on private land.

Present Control.

140. The Molo River is under the control of the Mau Angling Association, which practically became defunct, but efforts are now being made to revive it.

There is no control except on water on alienated land.

Poaching.

141. It is believed that considerable fishing without licence goes on in this area.

Future Control.

142. We suggest that the position should remain as at present.

WEST ABERDARE GROUP

Advisory Area

143. *The Sabukia District.*—Particulars of the rivers are as follows:—

	Forest	Native	Alien- ated	Crown	Trout
	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	
Ol Momoi . . .	10	—	8	—	Rainbow

Revenue from Licences.

Not known.

General Features.

144. These waters are controlled by the Sabukia Fishing Club and consist of waters of a small stream—the Ol Momoi—with several smaller tributaries. Fish were taken from other streams and put into the forest area. Generally speaking the whole of the water is in the Sabukia Valley.

From the forest line the stream flows through farms, the owners of which form the Fishing Club.

Although the water was declared open for fishing on the 14th day of October, 1936, we have no information as to how the trout have progressed.

Future Control.

145. We suggest that the position should remain as at present.

KERICHO GROUP

146. This Group covers the districts of Kericho, Sotik, and Narok. Kericho district will be taken firstly.

Advisory Area—Kericho

147. Within this area flow the following rivers starting from the township of Kericho and going towards Sotik:—

	Forest	Native	Alien- ated	Crown	Trout
	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	
Kimigun	20	—	7	—	Rainbow
Kimuga	15	—	7	—	"
Dimbilile	30	—	9	—	"
Saosa	20	—	9	—	"
Kipitget and Tributaries ..	30	5	—	—	"
Kipsondi and Tributaries ..	35	5	—	—	
TOTAL ..	150	10	32	—	

NOTE.—Mileage is very approximate as rivers have never been charted in the Forest Areas.

Revenue from Licences.

These are as follows:—

	£	Sh.
1934 ...	35	8
1935 ...	47	9
1936 ...	49	5
1937 ...	37	10 up to the end of May.

148. The Kimigun, Kimuga, Dimbilile, Saosa and the Kipitget form the River Yurith. The Yurith and the Kipsondi join and form the river Sondu which falls into the Kavirondo Gulf of Lake Victoria.

All these rivers undoubtedly rise on the Molo side of the Mau Forest area, principally on European farm lands. Through the forest their course is unknown and very few are accessible to the angler. All were stocked, high up in the forest by Captain R. E. Dent between 1927 and 1931, whilst many local stockings have been made since then.

This district has two of the finest trout streams of the future with good fish and big water.

The courses of these rivers are fast and rocky with numerous falls spaced along them, but none so high as those of the Mount Kenya Group.

Owing to the heavy rainfall of the Kericho area, there is seldom the low water as understood by the angler of the Aberdare, for instance, and from the forest line downwards food is ample.

Accessibility.

149. The most accessible parts of the water below the forest line are in alienated lands, principally that belonging to big tea companies.

There is one road up the Kimigun into the forest which was built from money collected in the district, and a grant from the Game Department. Outside that there is practically speaking no means of access to the higher portion of the rivers.

European Population.

150. For the district is large, something approaching 200, all of whom with the exception of the Administration staff at Kericho, are employed by the tea companies or engaged in tea growing.

Advisory Area—Sotik and Narok

151. For the purpose of administration, it would be best to take these two areas as one, as the rivers are very small and it is most doubtful if the stockings have been successful.

The following are the rivers upon which attempts have been made:—

	Forest	Native	Alien- ated	Crown	Trout
	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	
SOTIK—					
Myangoris ..	—	8	—	—	Rainbow
NAROK—					
Ngare Narok					
(Two rivers) ..	—	20	—	—	"
Seybey ..	—	7	—	—	"
TOTAL ..	—	35	—	—	

The mileages given are very approximate and should be considered as potential mileages.

152. All rivers rise from the range known collectively as the Mau. All are small fast rivers and it is feared that there is little food in these waters.

None are accessible, except on foot and few people ever make the attempt.

They should be carefully surveyed by the Trout Warden to see the food contents and if the stockings have been a success or otherwise.

Future Control.

153 The Committee recommends that the Sotik and Kericho area should be controlled together, and the area is shown as No. 9 on the attached map.

The Amala headwaters are first class trout streams not yet stocked, and there is no reason why they should not come under proper control as soon as possible.

We propose a small committee consisting of the District Commissioner, the Forest Officer, Londiani, and two local residents from each of the Kericho and Sotik districts.

MOUNT ELGON GROUP

Advisory Area—Trans Nzoia

154. This area covers the waters of the Swam and its tributaries. They are as follows:—

	Forest	Native	Alien- ated	Crown	Trout
	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	
Kwoitoboss ..	14	—	10	—	Rainbow
Kaptega ..	15	—	3	—	"
Swam (or Suam)..	17	—	9	—	"
Marun ..	—	—	5	—	"
TOTAL ..	46	—	27	—	

Of these rivers, the rivers Kwoitoboss, Kaptega and the Suam are under angling clubs, whilst the Marun is wholly in alienated lands.

Revenue from Licences.

The revenue collected at Kitale is as follows:—

	£	Sh.
1934 ...	37	8
1935 ...	28	14
1936 ...	20	13
1937 ...	23	15 up to the end of May.

General Features.

155. The Suam is the largest river that rises on Mount Elgon, and drains practically the whole of the caldera of this ancient volcano which contains a number of swamps and marshes. The river cuts through the eastern wall of the caldera, flows on a north-eastern direction past Kacheliba and finally empties itself in Lake Rudolf under the name of the Turkwell river. In its higher reaches there is water all the year round, but when it gets to the great plains of Lake Rudolf it is a dry watercourse subjected to violent and swift floods. These floods, along the whole course of the river, are very high with a rapid rise and generally a rapid fall. After leaving the caldera of Mount Elgon near Maji ya Moto (where there are hot springs) the river flows down a deep gorge with precipitous banks. It then receives a small tributary which rises on the slopes of Mount Kwoitoboss.

In this gorge there is a very high waterfall above which there are no trout. Its course is then through forest where the river is a series of falls, rapids and pools.

A short distance outside the forest line, the Kaptega joins the river on the Kenya side. The headwaters of this stream rise in the north-east side of Mount Kwoitoboss.

Farther down still the Bukwa falls in. This river rises on the Uganda side of the slopes of Mount Elgon, flows through heavy forest and then through the Sabei Reserve, and being wholly in Uganda is not considered in this report. It has been stocked with trout.

The Kwoitoboss river rises off the slopes of Mount Kwoitoboss, flows in an easterly direction and joins the Uaso Rongai which finally joins the Nzoia River and flows into Lake Victoria.

The Marun is a small sparkling river north of Kitale which flows into the Wewe and finally into the Suam.

Stocking.

156. The Suam and Kaptega were originally stocked in 1927 with Rainbow trout and opened for fishing by a notice in the Gazette dated 13-6-1929. In 1931 2,000 fry were purchased from the Game Department and liberated in the river.

The Bukwa was gazetted open by the Uganda Government on 22-2-37 and believed stocked in 1931.

The Kwoitoboss was also stocked in 1927 with Rainbow trout.

When the Marun was stocked, the Committee has been unable to ascertain but believe it was stocked privately, perhaps with fish from the Suam.

Accessibility.

157. *The Suam.*—The trout areas of this river are fairly accessible by a road from Kitale to the Saw Mills. From there runs a forest road of approximately 4 miles to a fishing hut. To the lower waters there is a road to the Karamoja Drift and then on to the Bukwa.

The Kaptega.—This river is accessible from Kitale-Saw Mill road and there is a cleared track up the river.

The Marun.—The whole of the water containing trout is in alienated land, and therefore closed to the general fishing public.

The Kwoitoboss.—There is a fishing hut with cleared paths up this river.

Present Control.

158. The Suam and the Kaptega are in the hands of the Suam and Kaptega Angling Club, P.O. Kitale, and they make every effort to police their waters. One side of the Suam is in Uganda and also one of their rivers, the Bukwa. On the Uganda side is the Sabei Reserve, the inhabitants of which are rather a lawless lot and give the Club a lot of trouble.

The Angling Club has proposed to the Uganda Government that the native rights be recognized by payment to the local chiefs of a proportion of the revenue collected. In the case of the Bukwa, this has been suggested as £10 per annum. In return the native chiefs will stop poaching and damage to Club property. Payment to depend on these duties being carried out.

The Kwoitoboss.—These waters are under the control of the Kwoitoboss Fishing Club, P.O. Kitale, whom we believe employ river watchers and try to police their waters.

MOUNT ELGON GROUP

*Advisory Area—Trans Nzoia*159. *Other Small Streams.*

	Forest	Native	Alien- ated	Crown	Trout
	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	
Kabyon	12	—	—	—	Rainbow
Kaibe	10	—	5	—	"
Kabolet	—	—	12	—	"
Lisoma	—	—	7	—	"
TOTAL ..	22	—	24	—	

General Characteristics.

160. The Kabyon and the Kaibe flow from Mount Elgon and join up with the Nzoia River. They flow in deep ravines and are most inaccessible. The Kabolet and the Lisoma are tiny streams flowing off the Cherangani Hills.

Stocking.

161. The Kabyon or Kibyoiyam was stocked in 1930, but it is believed that the trout have not bred.

The Kaibe or Koibe was stocked in 1930, and it is believed that the trout have bred.

The Kabolet is a small tributary of the Noigamget or Noigumege, and was stocked in 1929, and contains a number of small fish.

The Lisoma or Itobbus is a stream flowing into the Nzoia at Hoey's Bridge; was stocked in 1927 and is now completely overstocked.

Accessibility.

162. The Kabyon is inaccessible. The Kaibe is accessible in alienated land. The same can be said for the Kabolet and Lisoma.

Present Control.

163. There is none except by the owners. It is believed that a private club is being formed to cover private owners' waters in the Kabolet.

MOUNT ELGON GROUP
Advisory Area—Uasin Gishu

164. Rivers:—

	Forest	Native	Alien- ated	Crown	Trout
	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	
Naiberi . . Ellergerine . }	25	20	—	—	Rainbow and Brown

General Remarks.

165. The Ellergerine and the Naiberi rivers rise in the South Elgeyo Forest Reserve in dense forest. They, with the Kabolet, form the headwaters of the Sosiani. From the Ellergerine is taken a water supply for Eldoret. The Sosiani and the Sergoit rivers flow into the Nzoia and to Lake Victoria. Both rivers are not much more than forest brooks, but with a succession of falls and pools.

Stocking.

166. These rivers were first stocked in 1931, and in 1934 the Naiberi was again stocked, by mistake, with brown trout. Whether these fish have done well is a moot point, and very little evidence was to hand as to actual success.

The Sosiani was stocked close to Eldoret, with what results is not known.

Accessibility.

167. Up in the forest there are a number of paths, and a certain amount of clearing has been made by the Uasin Gishu Angling Association.

Present Control.

168. The only control is exercised by the Uasin Gishu Angling Association, P.O. Eldoret.

MOUNT ELGON GROUP
Advisory Area—Uasin Gishu

169. Rivers:—

	Forest	Native	Alien- ated	Crown	Trout
	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	
Moiben and Tribu- taries	30	—	35	—	Rainbow

General Features.

170. The Moiben and tributaries form part of the headwaters of the Nzoia, which finally falls into Lake Victoria.

The headwaters of the Moiben are in the Marakwet Forests of the Elgeyo Escarpment. The river flows through forest due south and then in alienated land makes a right angle and flows west.

Stocking.

171. The river has received repeated stockings since 1931 with Rainbow trout, and is now overstocked with fingerlings.

Accessibility.

172. In the forest section, the Sergoit-Marakwet road runs alongside the river, but little has been done to make access from this road. The alienated land is not available to the ordinary angler.

Present Control.

173. There is none, although we believe a private angling club is in course of being formed. We understand that the Uasin Gishu Angling Association have fishing rights in the Moiben, but how much and the conditions of renting we have been unable to ascertain.

Future Control.

174. The Committee suggests that an area (see No. 10, attached map) could be administered by a small committee consisting of the District Commissioner, Kitale, and/or the District Commissioner, Eldoret, the Assistant Conservator of Forests, Londiani; one member from each of the clubs or angling associations in the Trans Nzoia and Uasin Gishu districts; one representative of the riparian owners, and one local resident.

It will be seen that the area No. 10 makes no provision for the Naiberi and the Ellergerine, but as these two rivers are under the control of the Uasin Gishu Angling Association these rivers are represented on the proposed area committee.

MOUNT ELGON GROUP

Advisory Area—North Kavirondo

175. The only river which has been stocked in this advisory area is the Sosiani. This river rises to the south of the point Kobovwa (8,220 feet) in the dense forest of the Mount Elgon Forest Reserve.

It joins the Kimilili and both fall into the Nzoia and then into Lake Victoria.

This river was supposed to have been stocked in 1925, but no information can be obtained as to what has happened to the trout.

We suggest a survey should be made to discover the true position.

Future Control.

176. Any suggestion for future control must be left until a proper survey has been made of the river.

CHAPTER VII

Research Officer

**Ecology
Research.**

177. With regard to the third term of reference, recommendations for the prosecution and recording of research into the ecology of trout streams, we have been guided in this matter largely by the result of Capt. Dent's experience. Capt. Dent is of the opinion that if any valuable, reliable, scientific results are to be achieved it would be necessary for an independent naturalist and botanist to devote a considerable period exclusively to this work. He does not consider that it could be carried out as part of the duties of a Trout Warden, and suggests that, for the work done to be of the value which it should, it would be necessary to import such a scientist from home for a specified period, working absolutely independently. Research of this kind could be undertaken by someone trained for example in the Freshwater Biological Association of the British Empire at Windermere.

**Available
Specialist**

178. Indeed we understand that such an individual could be obtained immediately. His researches would probably occupy two years at least: we therefore suggest an appointment be made for one tour. As his researches would have value in Tanganyika, Uganda and Nyasaland and furnish data for comparison with conditions in South Africa and Australia, we suggest that funds for this research might be obtained from the Colonial Development Fund.

**Enthusiastic
amateur
assistance.**

179. We feel that such specific scientific research would be of the utmost value and must inevitably be carried out sooner or later, and strongly recommend to Government that, as soon as finances permit, steps should be taken for such scientific work to be pursued. At the same time there is an enormous amount of work which could be carried out by laymen and co-ordinated by an unqualified but enthusiastic

worker or number of workers. It is an exception rather than a rule to find in this country much attention paid to the study of the entomology, biology or botany of our trout streams, particularly with a view to their improvement. Once it became known that the Trout Warden was anxious for information and to receive specimens of all kinds of aquatic, botanical and insect life, and to examine and report on normal and abnormal fish, trout scales and interesting specimens in connexion with fish and fishing, it would be possible by a process of identification and co-ordination to reveal much that is at present a closed book.

180. It is by no means necessary for these purposes that the individual collecting the specimens or even the Trout Warden receiving them should be an acknowledged expert in identification. Their and his role would be rather that of the collector, and the specimens would then be submitted to an undoubted expert for identification, and the information thus obtained would be correlated with that acquired previously. All that is required in the first instance is enthusiasm and vigour.

Collectors.

CHAPTER VIII

The Ecology and Improvement of Trout Rivers

181. As regards the improvement of our streams, an excellent booklet was published in 1936 by our Secretary, Mr. Hugh Copley, and if the suggestions in this book are carried out on any stream in Kenya we feel that most valuable development by way of improvement will have been accomplished. In almost every case the problem reduces itself into creating for the trout what Mr. W. Carter Platts, in his book *Trout Streams, Their Improvement and Management*, described as "comfortably furnished parlours". The construction of weirs wherever and as frequently as possible on our streams will have far-reaching effects, not only on the fish life but also on the surrounding country and on the water content of the river.

Stream improvement.

182. The Committee was favoured with a visit from the Hon. Acting Director of Public Works in order that any problems arising in connexion with the law relating to water might be discussed, particularly in respect of the provisions of the Water Ordinance, No. 35 of 1929, and Ordinance No. 11 of 1936. As a result it was agreed that a recommendation should be made to Government for an amendment clause to these Ordinances to be passed in order to permit of improve-

Water Ordinance and Water Board legislation.

ment works on rivers to be carried out without special permit where such were of a minor nature, would not involve any departure from the principles of the Ordinance, and were solely for improvement of fishing and fish culture.

It was recommended that the necessary amendment clause might read somewhat as follows:—

“Works constructed of local and/or temporary materials with the sole object of improving the fishing and fish life conditions of a stream or river, and with the effect of raising the water level to a height not greater than three feet above normal, or for the purpose of creating a fish ladder, and without obstructing the volume of flow of such stream or river, if approved by the landowner, officer of the Forest Department, or native authority concerned, and certified by the Fish Warden that such is the sole object and effect, and if finally approved by the Director of Public Works, shall be exempted from the provisions of Ordinance No. 35 of 1929.

“Any duly authorized inspecting officer finding such construction or work not complying with the above conditions shall be authorized to order the reduction or destruction of such obstruction or work to whatever degree is necessary to bring such obstruction or work within the provisions above laid down.”

**Bogs, springs
and marshes.**

183. It must also be remembered that the main insect and animal life, in its embryo or fully developed state, which furnishes the greatest part of trout food, finds ideal breeding conditions in swamps, bogs, marshes and springs, so that these should be cultivated and encouraged and not drained or cleaned when in the vicinity of the river bank. They form a food storehouse from which a steady supply goes to the river ordinarily, and, during heavy rains or abnormal floods, in enormous quantities.

**Importation of
exotic foods.**

184. Suggestions have been made at times that fish food in the shape of minnows, shrimps, crayfish, etc., should be imported into the Colony. We do not feel competent to be dogmatic on this subject but, from information which we have received, we believe that the lines to proceed along are those by way of increasing the indigenous food supplies of the fish by creating or developing their ideal breeding grounds rather than in the importation of exotic species, the ultimate result of which cannot be foreseen. To upset the balance of nature is simple—to restore it frequently impossible, the historic proof of which is the rabbit in Australia.

185. Further suggestions have been made to introduce non-indigenous fish, other than trout and Black Bass, to the inland waters of the Colony.

As far as the Committee is aware, there is no procedure under the Protection of Trout Ordinance which enables the Game Department to control such importations, which may, in some cases, cause a lot of harm to the waters of the Colony.

We hope that most careful consideration will be given before any importation is made.

CHAPTER IX

Angling Clubs and Associations and their relation with the Angling Public

186. Our recommendations for the organization and control of the varying rivers in various districts naturally depend on whether the rivers are to be regarded as being open to the public, all and sundry, and whether they should be exclusively club waters. Again, whether waters open to the public are merely generally controlled or controlled by an association with public membership tickets.

Regulation of
importation of
fish.

187. With regard to private club waters, there are four clubs in existence in Kenya to-day with exclusive rights. We feel that such clubs should be permitted to retain their rights of exclusion of membership as long as they elect to maintain themselves by funds from private sources, but should they accept or desire expenditure of public funds on their waters they should then become associations. In many cases these clubs have spent considerable sums of money on the approaches to their waters, the establishing of camps, the clearing of the paths and banks, the improvement of the water itself, and generally. It would not appear reasonable that public funds should be expended in the maintenance or improvement of such club waters, while they remain exclusive; and any activities undertaken in connexion with them would be mainly those of ensuring that the laws and regulations in force for the whole Colony were in fact being observed. At the same time, advice and assistance of a theoretical or scientific nature could be given, and such clubs, having amongst their members a great number of experienced and knowledgeable anglers, could, through their members, make valuable contributions to the researches which will be necessary to be pursued.

Private clubs.

**Co-operation
of clubs.**

188. Most valuable information could be furnished by members of such clubs through their secretaries by forwarding regularly scales for reading and by carrying out fish marking and recording of results obtained, and in other directions.

Associations.

189. As regards associations, it has already been suggested that this is probably the most suitable end and object to have in view for all streams, with the exceptions mentioned. A small number of enthusiastic anglers, working in conjunction with the Trout Warden, could carry out the improvement and development of waters allocated to them by means of Government funds furnished partly from licence revenue and partly from general revenue. The distinction between an association and a club would be that club waters would be open only to members and guests, members being elected by a committee who had the right also of rejection of applications for membership, while associations would be required to permit the taking of daily, weekly or other tickets by members of the general public, with the stipulation that they were to conform to the Associations' regulations, which regulations would have the approval of a central board.

Public waters.

190. Finally, public waters with neither club nor association privileges should be made accessible, developed and improved by Honorary Fish Wardens acting through the local Area Committee, who would confer with the Fish Warden and determine policy and action to be taken and who would assist in such action by supervision, etc. There would appear to be little doubt that such a body would speedily recognize the desirability of an association being formed, and advise accordingly.

**Methods and
objects.**

191. If the organization recommended can be and is adopted and established, we feel that the first object of such should be to select the most promising and accessible portion of one river under their purview and concentrate on road and track accessibility to the waterside, and then, by means of clearing bush and scrub, establish a reach of accessible good fishing. This would immediately result in an increase in the interest in angling and the number of residents engaging therein, and as these numbers swell, as inevitably they would, further reaches could be cleared or the process could be repeated on another river.

Camping sites would soon become established by custom and rest-houses should be erected there on much the same lines as have already been done at the Gura.

CHAPTER X

Natural Enemies

192. For a number of years it was believed that otters **Otters.** were not fish eaters, since there were no indigenous fish in rivers above 6,000 feet altitude, but otters were above this, and it is obvious that prior to the introduction of trout their normal diet must have consisted of something else. Sufficient evidence has been given before the Committee, however, to show that otters do eat trout and are rapidly becoming as great a menace to them as otters are in other countries. Equally important, however, is the fact that otters subsist largely on freshwater crabs, which provide possibly the finest trout food in the rivers. For this reason alone the otter must be considered a natural enemy of trout and should be treated accordingly.

193. There appears to be an impression that the Black **River duck.** River Duck consumes both spawn and alevins, but we have the assurance of Capt. Dent that the results of his experience and investigations are such that this should be discredited. The examinations which he has carried out on very many river duck crops show no signs or traces of such depredations.

194. Dabchicks take their toll of spawn and small fish, **Dabchicks.** tadpoles, etc., while the giant Kingfisher probably catches in the season as many fish as the average Kenya angler, although perhaps smaller in size. The depredations of these birds, **Herons.** herons, etc., however, probably do more good than harm by thinning out the fry.

195. The Cormorant and Pelican are not usually seen **Cormorant and pelican.** on river stretches, but may visit dams, weirs and larger open expanses of fishing water. They are notoriously voracious fish eaters and, like the otter, direct their attention to fish which are mature and in many cases large. They should be regarded as enemies and dealt with in the same way as the otter.

195. Eels are known to be particularly destructive to **Eels.** trout even up to a size of 5 lb. Unfortunately, eels prefer the warmer, lower reaches where the bigger fish predominate and are thus a serious menace. Eels up to a weight of 26 lb. have been caught in this country.

197. Silt from erosion, and especially the fine alluvial **Silt.** silt so common in this country, smothers and chokes the small fish in the middle reaches and encourages down-stream migra-

tion; hence the muddy condition of our rivers as a result of erosion must be regarded as a very real menace to the condition and improvement and development of our trout streams, and the prevention of erosion is therefore a very real step in the direction of improvement. Again we desire to stress how keenly and fully we associate ourselves with those organizations and individuals who are stressing the importance of this matter for the welfare of the Colony.

CHAPTER XI

Brown Trout versus Rainbow for Stocking Kenya Streams

Brown v. Rainbow controversy.

198. A subject of much controversy has been the respective advantages of Brown trout stocking as compared with Rainbow, and it is possible that unless a long view is taken the relative merits of the respective fish may easily be confused. The Brown trout of Kenya is identical in breed with that of the British Isles from which it was imported, and its characteristics, habits and environment are well known. The record Brown trout is believed to be one caught in Loch Awe by Mr. W. Muir in 1866, weighing 39½ lb. The record for Kenya so far is one of 10¼ lb. The fish was taken by Mr. J. Walker on the Nyeri-Chania. Brown trout are known to live for over twenty years.

Rainbow world records.

199. The record Rainbow trout for the world are (a) *Salmo Iridius*, 26½ lb., caught by A. A. Cass on 12th July, 1914, in the Skycomish River, Washington, U.S.A., and (b) *S. Gairdnerii* (Steelhead), 29 lb., caught by E. E. Ames on the Chehalis River, Washington, U.S.A., on 6th January, 1930. The record for Kenya is one caught by Mr. Kent in the Tulaga weighing 12 lb. 11 oz.

Kenya Rainbow.

200. The species of Rainbow trout in Kenya is that colloquially known in America as the Steelhead. This fish has definite migratory instincts, with a persistent and consistent tendency to work down-stream, and the Committee has evidence that a fish of this species was recently taken at the Barsaloi crossing on the Uaso Nyiro river which weighed approximately 13 lb. The altitude at this point is not above 3,600 feet.

Appetite of Rainbow.

201. It is an accepted scientific fact that a Rainbow trout consumes in the same period of time approximately three times the volume of food consumed by a Brown trout. As a result the introduction of Rainbow trout into virgin streams, full of trout food, is attended with spectacular results, and the rate

of growth of fish is remarkable. Such rapid growth results, of course, in prolific spawning, and the two rainy periods which are normally experienced in Kenya per annum, which correspond in each period to autumn conditions in Europe or America, conduce in many cases to two spawnings, particularly for male fish. This leads to a rate of increase, both in size and numbers of the fish, with which the reproduction of food supply cannot keep pace. The balance of nature is completely upset; the larger fish in search of better food supplies rapidly migrate down-stream, leaving behind in the upper reaches a mass of fingerlings and prospective future generations in the shape of spawn, alevins, etc., and in a very short period of years the stream becomes overstocked with a mass of deteriorated fish.

Rainbow characteristics.

202. Nature alone can remedy such a state of affairs by abnormal rainfall and flood conditions, adjusting to a certain extent the balance by destroying enormous quantities of the spawn, alevins, etc., washing down-stream a vast number of the smaller fry, or choking immature fish with mud, while at the same time filling up the springs, bogs and swamps in which the natural food of the trout normally lives, procreates and multiplies; but despite such natural agencies our experience and evidence all tend to show that while a successful Rainbow stocking of a river is soon followed by a striking production of monster fish, it is followed very quickly by a disastrous deterioration which persists, and so will persist, until a balance between fish and food supply is struck.

Natural regulating factors.

203. The maximum age to which a Rainbow trout has been known to attain in a Kenya river is not more than $4\frac{1}{2}$ years, and this corresponds to the age which they have been known to attain in other countries. In this connexion the 66th Annual Report of the Barrarat Fish Acclimatization Society for 1936 furnishes valuable data:—

Age of Rainbow.

"In Lake Purrumbete, a crater lake approximately 15 miles in circumference at an altitude of 546 feet, with plenty of aquatic growth, the average growth rate of the Rainbow is $12\frac{1}{2}$ lb. in three years, whereas in the Konguton Reservoir the growth was 8 lb. in the same period. All Rainbow trout females approaching the end of their fourth year of life became spawn-bound and died, whilst the milt of the male fish of the same age was useless for spawning and after extrusion thickened quickly, changed to a yellow colour, and appeared similar to custard."

Rainbow research—Australia.

Rainbows in
Lake Vyrnwy,
Wales.

204. In discussing the position regarding Rainbow in Lake Vyrnwy (in Wales), Mr. H. D. Turing in *The Field* on 27th March, 1937, records the experience as follows:—

“It raises an interesting question—this Rainbow trout growth. Why should *irideus* be able to make so much better use of the available food supply than the native fish? They are normally reckoned a quicker-growing species than the European trout, and it is possible that the slower-growing Brown trout fry provide the food which enables their competitors to thrive, but it is notable that in streams such as the Derbyshire Wye, where Rainbows have acclimatized themselves, they do not seem to grow appreciably quicker than the Brown trout; indeed it is this fact which is the most likely explanation of the fish having established themselves in the water instead of departing down stream after the distressing habit of so many early attempts at stocking with Rainbows.

“This last habit—the Rainbows’ vanishing act—seems at long last to be dying out. Vyrnwy at least has been stocked long enough for the habit to have shown itself if it was going to develop. An ingenious though probably quite fallacious explanation still seems to be current in some quarters. It was suggested many years ago that the early importations of Rainbow trout ova contained a certain percentage of sea-running Rainbow trout (Steelheads), and that the disappearing act was nothing but the natural sea-running instinct coming out in the next generation, just as it would do if one stocked a trout stream with sea-trout ova.

“There has even been a tendency to claim that *irideus* was a sea-running fish, and that the freshwater rainbow should be called *shasta*. This theory, which was exploded many years ago, was based on a mistake of the late Dr. Starr Jordan who, apparently under the impression that the earlier examples of Rainbow trout which had been described were salmon, proceeded to describe a trout from the McCloud River district and called it *S. shasta*. His mistake, however, has long since been recognized, and the established term for the Rainbow species is now the *S. gairdnerii*, just as *S. trutta* is the accepted scientific name for all European trout. When it is desired to differentiate between the sea-running and freshwater strains the correct term is *irideus*, which corresponds to *fario* for European trout; *shasta* has been dropped by scientists and should be dropped by anglers too.

"This theory of a sea-running strain being the cause of Rainbows dropping down-stream will not really bear investigation. When the species was first introduced into Ceylon the fish (which, I believe, came from Blagdon stock and could not therefore have been Steelheads) promptly went down-stream, but they left behind a few of the slower-growing fish which established themselves in the water and bred. Their progeny, curiously enough, showed no tendency to quit the water in which they had been hatched, and the same thing has happened in most streams where the fish bred; the native Rainbows do not disappear from the streams where their parents bred, and there seems no reason to doubt that this is the true explanation of the success over here with Rainbow trout since the War.

"The late F. G. Richmond was probably right when he attributed success with Rainbows primarily to the size of the egg. Big eggs produce quickly growing fish, and quickly growing fish will only stay in water which contains a sufficiency of food for their growth. Hence the 'disappearing act' when the fish find the food supply getting too meagre for their rapid growth. Brown trout do exactly the same, though their slower growth for the first year or two makes the custom of wholesale retreat comparatively rare. If Rainbows of sufficiently slow growth can be stocked to allow spawning age to be attained before the fish is too big, then the stocking experiment will be a success, always provided that spawning facilities are available, for the hen fish will grow eggs of a suitable size—and consequently of a suitable parr growth—for the water, and all will be well. It was imported ova from waters of a different character which were at the root of the trouble.

"In Vyrnwy, fingerling Rainbows have been caught and fish are reported to be spawning in the streams, which looks well for future stocks if they will still continue to grow better than the native Brown trout. If success continues and a native stock can be produced, it will certainly inspire further attempts at Rainbow culture for lakes in which Brown trout run small.

"In waters which contain a better food supply and better growing conditions, the advantage of Rainbow trout is not nearly so apparent. In Blagdon, for instance, the fish, though like all the Blagdon fish they thrive wonderfully, do not show any better growth than the Brown trout; rather less perhaps, though they may conceivably be younger fish."

**Comparisons
of facts.**

205. What are the established facts in Kenya with which the above points can be considered? Our Rainbows are—

- (1) the migratory variety (Steelhead, *Salmo Gairdnerii*);
- (2) short-lived;
- (3) rapid growing.

Conclusions.

206. All these considerations point to the conclusion that in the first instance consideration should be given to stocking new rivers which so far contain no trout with Brown trout. Should these efforts prove a failure or unsatisfactory, Rainbows might be introduced as a second best, but in all cases a detailed examination and much careful thought must be given beforehand prior to the stocking of any river. Rainbow trout must be given the credit for living happily at a higher water temperature than Brown, and in such special cases of rivers at these altitudes without headwaters at much higher ones, or with waterfalls or other special precluding features against Brown trout stocking, Rainbow stocking must be considered.

**Rainbow and
Brown trout
stockings of
Liki and
Nanyuki.**

207. The experience, moreover, of the respective stockings of the Liki and Nanyuki, one with Brown and the other with Rainbow, must not be forgotten. The Rainbow quickly established themselves, ran down to the confluence and up the other river, in which they established themselves to the virtual extinction of the Brown. Now both Liki and Nanyuki contain a tremendously large fish population of Rainbows of small size, the problem of improvement of which still awaits solution.

CHAPTER XII**Deterioration****Reasons for
Deterioration.**

208. The deterioration of trout streams in the Colony is undoubtedly in the first place due to the remarkably rapid increase in size and number of fish following a successful stocking. Putting trout in a virgin Kenya stream at a suitable altitude is like putting a class of schoolboys into a sweet shop. Not only are such virgin streams alive with all the most delectable food to which trout are partial but such life, having hitherto had no natural enemies permanently in the water, have nothing to fear and no instincts of self-preservation; the crab crawls slowly, the tadpole swims leisurely, and the frog lies dreamily on the sand—it is, indeed, “a Lord Mayor’s Banquet.” Under such conditions the rate of growth, development and the whole fecundity of the fish is such that the river rapidly becomes densely populated.

209. With the rapidity of increase of fish population follows the equally rapid decline in food supply conditions, and after a few years the aldermanic specimens are replaced by hosts of small fish. There are certain rivers in the Colony, however, in which it would appear other factors are at work and the problem is not solely one of food supply, and future investigation and research on such cases alone will reveal the true cause.

210. The topographical features of the country in which such conditions occur aggravate the position. Temperature conditions suitable for the natural propagation of trout in this country, i.e. 52° F. downwards in the case of Brown trout, and for Rainbow 55° F. downwards, occur in country that is rocky and hilly, and the mileage on most of the rivers is very short. Little or no research has been carried out to show the migratory movements of Brown trout in Kenya, but experience sufficiently illustrates that they spread down-stream by mechanical means to areas in which spawning is no longer possible.

211. Rivers in the Colony may roughly be divided into three zones:— River ones.

- (a) The higher reaches in which masses of small fish are to be found, even to the extent of 20, 30 and 40 in a pool;
- (b) A middle reach in which the numbers are fewer yet abundant, and in which spawning takes place; and
- (c) A third reach stretching down to an indeterminate point of altitude and temperature, in which the numbers of fish steadily diminish down to a few very large trout.

212. Undoubtedly one of the greatest problems is how to distribute the masses of fish in the upper reaches into the middle and lower, to even up the population and move to the greatest food supply the greatest number of fish. The bi-annual floods in the Colony as a result of the two rainy seasons help, but resource to mechanical means undoubtedly must be had. Either fish must be mechanically moved to the lower reaches or, alternatively, the reaches in which they are naturally populous should be improved by means of weirs to create larger areas of water and more suitable breeding grounds for food life, on lines already suggested. Fish distribution.

Reduction by dynamiting.

213. Various suggestions have been made and tested in the past to reduce the fish population in parts of the river which are definitely overstocked. Dynamiting is one method, but dynamiting unfortunately is most indiscriminating—it destroys not only the fish but also the insects, etc., which provide the food supply of the pool, and if anything the latter to a greater extent, so that the state of that pool is worse than the first and one has defeated one's own object.

Netting.

214. Netting may be suggested, but we are credibly informed that one of the most expert poachers who ever operated in Wales has tried his method on Kenya streams, actually with a view to obtaining fish for stocking purposes. His attempts proved futile and hopeless; the uneven surface and the rocky nature of the bed of the river, together with the absence in most cases of a sandy bank on which to draw the net, resulted in his complete failure.

Special considerations necessary.

215. These considerations lead us to suggest that the ordinary methods employed in certain other countries for the improvement of the size and condition of fish do not apply to Kenya. A close season would in all probability aggravate the position, as would the imposition of a size limit or a restriction of the daily bag per rod. We are convinced that improvements of our streams lie in their increased accessibility and the removal of as many fish as possible by lawful means. Stimulation of angling and the angler, together with the mechanical process as suggested will, it is felt, result in a vast and speedy improvement. Size limit restriction and the restriction of the daily bag in those portions of the river which are not overstocked, and where the fish have not deteriorated, should naturally be imposed as the situation demands, but the above remarks apply to where the river has either deteriorated in quality or has become overstocked or both.

Rainy seasons and spawning habits.

216. As there are two rainy seasons in Kenya corresponding to the spawning habits of the trout, so it has trout spawning takes place, i.e. the months of July and August and October and November. Such periods instead of annual periods must naturally interfere to a great extent with the instinct to spawn annually, in consequence of which fish are found to be spawning off and on throughout the year, with possibly greater intensity during the months mentioned. It is believed that in some cases the same trout, most frequently a male, has spawned within six months of a previous spawning, and such act, if general, cannot help but be a contributing

cause of deterioration not only to the parent fish itself but to its offspring. This is a matter on which much research and careful observation must be made.

217. Complaint has been made that the various rules and regulations issued under powers conferred by the Game Warden as regards size, bag limit, opening and closing certain waters, and similar regulations, are not widely published and adequately brought to the public notice. We suggest that such regulations should be published and kept up-to-date by being exhibited in a frame at all fishing camps and also possibly at post offices, district offices, fishing hotels and wherever fishing licences are sold. This might be done through Honorary Trout Wardens, District Commissioners, etc. Should our recommendations be adopted, this could be done through the Central Board and the Area Advisory Committees.

Public information re regulations.

CHAPTER XIII

Identification of Hon. Trout Wardens and Native Scouts

218. At the present time an Honorary Fish Warden can only prove his authority by the production of his letter confirming his appointment, and a Game or Fish Scout by the production of a letter which has been given him by the District Commissioner or the Game Department. This is often in a very dilapidated condition.

Identity discs for officials.

The Committee suggests that all Honorary Fish Wardens should be provided with some more durable form of identification, for example, a small metal badge to be worn in or under the lapel of the coat, and all Scouts should have a similar metal badge on a fine chain to be worn around the neck and tucked under the clothing. These should prove the identity of and be an authority for both officials if challenged when carrying out any part of their duties.

Native River Scouts should hold a separate and independent appointment from those held by Game Scouts, or alternatively separate financial provision should be made for the two branches.

219. We feel that the time has come for the appointment of a Fish Warden who would carry out his duties working through the organization proposed. Such duties would provide a whole-time occupation for a capable and energetic man. We therefore recommend the appointment of such an officer, who would co-operate and work in liaison with the Game Warden but would be independent of him. For general policy he would to a great extent be guided by the advice of the Central Board.

Appointment and status of Fish Warden.

**Game Warden's
duties to
include fish.**

220. In our opinion it should be recognized that all Game Wardens have an equal duty to perform towards game animals, game birds, and game fish, and any future appointments to the Game Department should be made having due regard to the inclinations and qualifications of applicants towards all three aspects.

Individuals appointed after such considerations would enable relief to be arranged departmentally when the Officer in Charge of Fish was absent on leave or indisposed, thereby ensuring continuity of policy or work.

CHAPTER XIV

Diseases of Trout

Fish diseases.

221. The Committee was anxious to obtain any evidence as to disease amongst trout. Although disease has been seen and has been prevalent during the low water years amongst the Tilapia and Black Bass of Lake Naivasha, no sign of any disease in trout has been reported by any witness. We conclude therefore that so far no contagious disease has appeared amongst the trout of Kenya.

**Rudimentary
third ovary.**

222. Cases have occurred, however, of dead fish due to the retention of ova in large females, both Brown and Rainbow. The formation of both a large and a rudimentary third ovary has been reported, and this phenomenon has been also reported from Australia. Work in Australia is leading to the conclusion that this is due to the incorrect pH content of the water, and this should certainly be a point of investigation when scientific research is undertaken.

Hatchery

**Capt. Dent's
experience.**

223. The experience of Capt. Dent leads him to suggest as follows: "That the establishment of a hatchery so as to make provision for the development of spawning fish, the stripping of them and breeding of fry therefrom is impracticable, the chief factors being that it would necessitate constant attention by a trained white man working every day of the year at a very high altitude and in a climate that can only be described as 'foul', being cold, wet, windy and isolated from all other human beings; this, in order to obtain a low enough temperature for the purpose. The fact that the trout, both Brown and Rainbow, do not spawn between certain dates as in Europe but spawn in penny numbers over two months or more, constitutes a very great difficulty. In a hatchery this

would be impossible to cope with as eggs in small numbers would be constantly coming in, each batch requiring a separate tray and the resultant fry a separate pond.

"In order to induce the cocks and hens to become ripe for stripping within a period of a week or so, artificial means would have to be adopted. The fish, each six in a separate pond, would have to be induced to ripen by the regulation of their food supply, which again means the use of artificial food manufactured for the purpose. As this food cannot be obtained here, it would probably have to be imported.

"Even when all these difficulties are overcome, where is the hatchery to be situated so that fry or eyed ova can be sent to any part of the country? This and many other things were worked out in the hatchery above the Governor's Camp on the Gura River in 1922-23. It showed how impossible it would be to establish a hatchery for Kenya rivers.

"Imported eggs cost £1 per 1,000 landed, and can be hatched in any district where the demand is greatest; they take up only six weeks of the Fish Warden's time, and no trained natives are required. Porters may be used for all the work and discharged at the end of the *safari*; this method has difficulties, too, but by using the latest design of hatching box most of the danger of floods and silting has been eliminated."

224. We therefore recommend that the provision of facilities for the hatching of imported eggs should be considered, but this is the greatest extent to which a hatchery could be carried.

Conclusion re hatchery.

Growth of Trout

225. The fry introduced into the Katamayo river grew at the rate of one inch per month, and in all cases maintained that rate of growth for the first nine months. Over 50 per cent maintained this rate of growth for the first 15 months; one exceptional fish grew 25 inches in 27 months. The first generation of these fish, bred in the same river, grew at the rate of three-quarters of an inch for the first nine months and then dropped to a maximum of half an inch per month for 14 months. This emphasizes and proves our contention that deterioration is to a large extent, if not almost entirely, due to the disproportion between the numbers of fish and their food supply. The above refers to Rainbow trout.

Observed rates of growth.

Rainbow trout growth.

Brown trout growth.

226. With regard to Brown trout, 900 fry one month old were placed in a stock pond on the Southern Mathioya in April, 1926. On 15th December of the same year they were removed to a lower part of the river, the average length being four inches. In nine months' time, nine fish were captured, each of which weighed 1 lb. 10 oz.

CHAPTER XV**Financial****Revenue and expenditure.**

227. The direct revenue to the Colony by districts has already been shown and is further given in Appendices 4 and 6; approximately £1,000 annually is paid for licences to the Government. From the information we have received, a further sum of £363 was paid in 1936 in respect of Customs duty on angling requisites. A large amount of revenue accrues indirectly from the use of motor cars which are essential in pursuit of the sport. This is only one example; the indirect revenue generally must be as large as it is obvious. Moreover, it is confidently expected that one result of the adoption of the recommendations contained in this report will be a very large increase in the amount of revenue accruing to Government from licences taken out. We consider that the whole of this revenue should be allocated directly to the improvement of fishing in the way we have suggested.

228. In view of the general public benefit of such increased activity a considerable sum of public money should also be allocated from central funds and devoted to the furthering of angling interests and development. Associations proposed would justifiably be supported by allocations made to them from these votes, so reducing the amount of revenue to be provided by means of subscription, which would obviously be very small, while benefits accruing to the individual would be out of all proportion to such charge, hence the increase in cost of his sport to the angler should be negligible or non-existent.

Disposal of finance.

229. We recommend that the whole of the sums allocated by Government should be at the disposal of the Trout Warden for allocation and expenditure after consultation with, and advice of, the Central Board. The Trout Warden and Central Board would, before making such allocations, give consideration to the proposals of Area Advisory Committees for expenditure in their areas, and allocations approved could then be made through such committees on satisfactory assurance being given as to the means proposed for such expenditure.

CHAPTER XVI

Conclusion

230. We wish finally to add to this report that we do not desire that it should be considered as authoritative or dogmatical in any way. We have recorded our beliefs, views and opinions, formed from our own experiences of the Colony as influenced by those who have furnished us with their information and knowledge. It should be clear from the foregoing that the necessity for this Committee was urgent and that the information hitherto available was scanty. If, as a result of this report and the recommendations of this Committee, sufficient interest is stimulated to criticize the report and institute some if not all of the recommendations we have made, we shall have achieved our object.

Summary

Briefly summarized, our recommendations in accordance with the terms of reference submitted to us are as follows:—

1. We recommend the appointment of a Trout Warden who shall be independent of but in close liaison with the Game Department. He should have control of a separate vote in connexion with his work, which vote should include a sum of money equivalent to the total amount of revenue derived from fishing licences, together with an additional sum provided from central revenue for expenditure on his departmental activities. Fish Scouts should be under his control and financial provision should be made separately for their employment.

2. A Central Advisory Board of possibly five or six knowledgeable and experienced anglers should be set up. This Board should, at first, meet quarterly in Nairobi to make recommendations to Government on broad lines of policy, organization and administration. Members should be nominated by His Excellency the Governor and hold appointment for three years. The Trout Warden would be *ex officio* a member of this Board. Government would make arrangements for its secretarial duties, and the Board would elect its chairman annually.

For the purpose of administration, we recommend that those areas of the Colony which contain trout streams should be divided into ten areas as shown on the attached map. Each of these areas would have its own Area Advisory Committee, the constitution of which in each case we have recommended in the body of the report. These committees would advise on local organization and control and development of

their rivers in collaboration with the Trout Warden. This organization is suggested in accordance with our second term of reference.

3. As regards our third term of reference, we recommend that early consideration be given to the advisability of obtaining the services of a skilled trained scientist to conduct research into the ecology, zoological and botanical conditions of our rivers.

We suggest this appointment should be for one tour, the cost to be borne by the Colonial Development Fund. A suitable candidate could in all probability be obtained through the Freshwater Biological Association of the British Empire at Windermere.

4. Our recommendations regarding improvement of rivers, development and better feeding of fish, reasons for deterioration, speed of growth, spawning habits and natural enemies will be found in the body of the report. We have given reasons why we consider that consideration should be given to the stocking of unstocked rivers with Brown trout preferably to Rainbow.

5. We have further considered at length the all-important question of the legal aspect of access to trout rivers for the purpose of fishing, and made suggestions of alternative means of dealing with the matter.

6. With reference to licences, we recommend that a slight alteration should be made to the Twenty-four Hour Licence and a Family Licence be brought into effect. In this connexion we also recommend a short pamphlet giving information a licence-holder should know, and also the compiling of a booklet giving particulars of fishing waters, available roads, etc.

We recommend an enlargement in the facilities for the public to purchase licences, and that all notices with reference to rivers, trout fishing, etc., be posted in every office where licences are issued.

7. We suggest that powers be given to the Trout Warden to control the importation of non-indigenous food or fish into the Colony.

8. The evidence laid before the Committee established the fact that a hatchery is not advisable, but we recommend that hatching from imported fry be continued.

9. From the evidence laid before us it seems that the maximum age of Rainbow trout in Kenya is not more than

4½ years, and as the Rainbows are the migratory variety (Steelheads, *Salmo Gairdnerii*) we recommend that ova imported in the future should be of the non-migratory strain.

We further suggest that all rivers, after examination as to suitability for stocking with Brown trout, should be stocked with these fish and that Rainbows should only be stocked after the Brown trout have proved a failure.

10. We suggest a simple procedure for works in connexion with improvement of the rivers to be authorized having regard to the provisions of the Water Ordinance.

11. We were convinced from the evidence before us that there is no contagious disease in connexion with Kenya trout, and trust this state of affairs will continue.

12. We suggest that all Honorary Trout Wardens and Fish Scouts should be provided with badges or discs for the purpose of identification when challenged.

ACKNOWLEDGMENT

We wish to record our appreciation of the zeal and energy shown by our Secretary in searching out and correlating the detailed information contained in this report, on which our recommendations have largely been based. The excellent map which he has compiled and drawn accompanies the report.

We have the honour to be
Your Excellency's obedient servants,

A. W. SUTCLIFFE, *Chairman.*

RICHARD E. DENT.

T. P. ROBESON.

C. LUXFORD.

HUGH COPLEY, *Secretary.*

27th October, 1937.

POSTSCRIPT

We wish to place on record our grateful appreciation of the ability and patience of our Chairman. The proceedings and also the investigations such as the work of a Committee of this nature requires have been expedited and our labours materially lightened by his unfailing courtesy and experienced guidance.

RICHARD E. DENT.

T. P. ROBESON.

C. LUXFORD.

HUGH COPLEY, *Secretary.*

APPENDIX I

Views from the following persons and bodies were received and considered:—

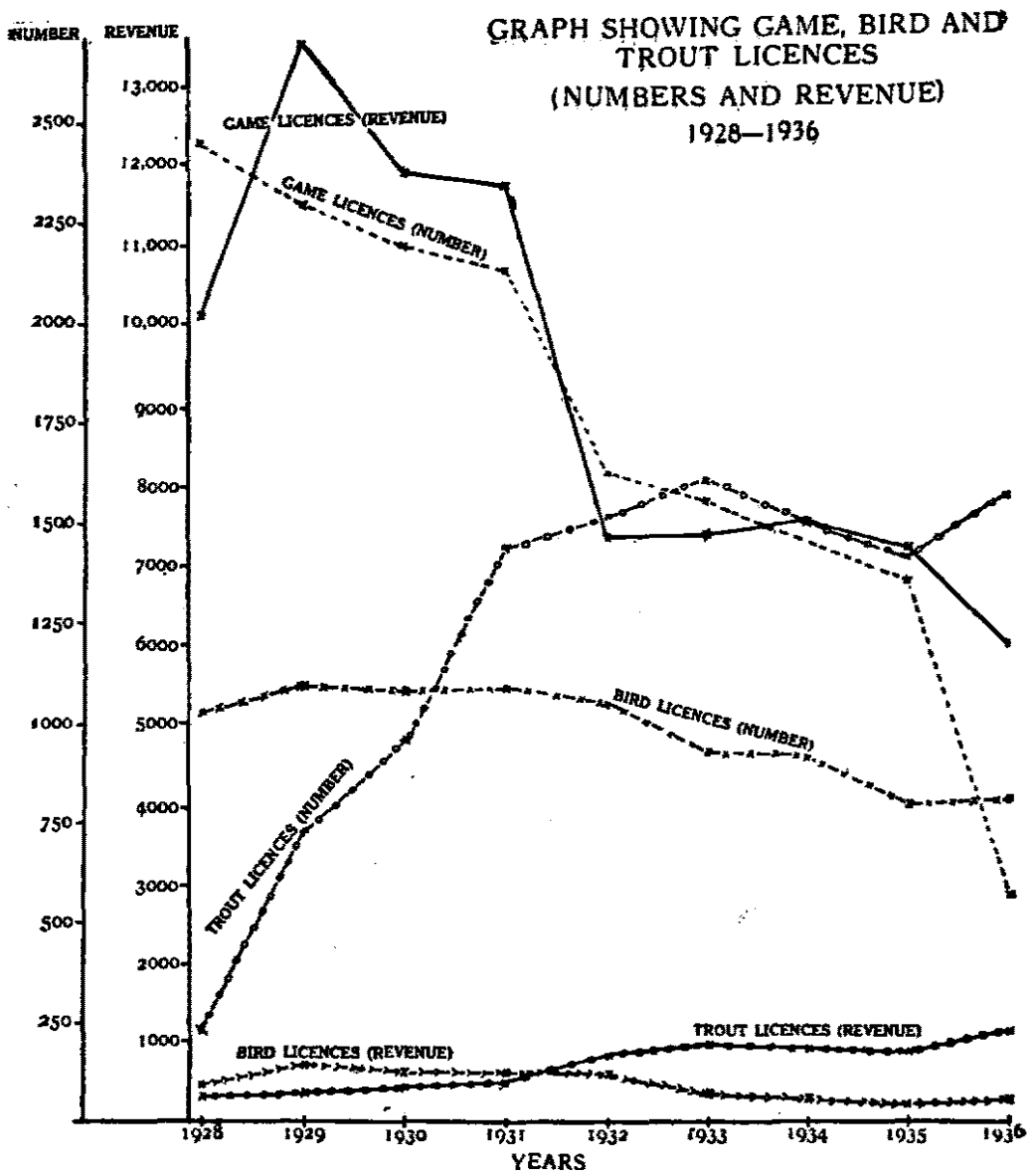
T. L. Hately, Esq., Nairobi.
 Major McMasters, Donyo Sabuk.
 V. F. C. Peto, Esq., Londiani.
 H. Williams, Esq., Kinangop.
 Capt. R. E. Dent, Mombasa.
 District Commissioner, Embu.
 District Commissioner, South Nyeri.
 District Commissioner, Uasin Gishu.
 District Commissioner, Tambach.
 District Commissioner, Laikipia.
 Provincial Commissioner, Nyanza Province.
 Provincial Commissioner, Central Province.
 Officer in Charge, Turkana.
 Resident Magistrate, Nakuru.
 Capt. J. G. P. Browne, Nanyuki.
 E.A. Professional Hunters Association, Nairobi.
 Capt. C. Pitman, Entebbe.
 A. Klein, Esq., Nairobi.
 J. Peach, Esq., Eldoret.
 S. J. Bosch, Esq., Nairobi.
 J. K. Hill, Esq., Gilgil.
 D. A. Kerr, Esq., Machakos.
 V. A. Ottaway, Esq., Machakos.
 A. Willford, Esq., Limuru.
 T. H. E. Jackson, Esq., Kapietiva.
 A. E. Smith, Esq., Eldama Ravine.
 H. Allen Turner, Esq., Naivasha.
 H. Sherwin, Esq., Naivasha.
 J. F. Lipscomb, Esq., Kinangop.
 J. Graham Dawson, Esq., Nairobi.
 A. Armstrong, Esq.
 A. Cooke, Esq., Nakuru.
 H. B. Atkinson, Esq., Londiani.
 R. Stuart-Wortley, Esq., Nairobi.
 Mervyn A. Ridley, Esq., Moiben.
 E. Parker, Esq., Nairobi.
 Kenya Fly Fishers Club, Nairobi.
 Gilgil Country Club, Gilgil.
 Uasin Gishu Angling Association, Eldoret.
 Suam and Kaptega Fishing Club, Kitale.
 Masaita Fishing Club, Londiani.
 Tulaga Fishing Club, Nairobi.

Kwoitoboss Angling Club, Kitale.
 Mau Angling Association, Molo.
 Ravine Fishing Club, Ravine.
 May & Co., Ltd., Nairobi.
 Humphrey Slade, Esq., Nairobi.
 Major C. Luxford, Thomson's Falls.
 The Hon. Arthur Bampfylde, Nyeri.
 Mervyn Ray, Esq., Tulaga.
 Sir C. G. Belcher, Kinangop.
 Kenya Arbor Society.
 Conway Harvey, Esq., Toro.
 Mrs. Parker.
 Dr. Van Someren, Coryndon Museum, Nairobi.
 Major J. Kingdon, Nyeri.
 Dr. Dundas, Eldoret.
 Major Thomson, Ol Kalou.
 Capt. W. P. Winters, Nyeri.

The Committee heard evidence from the following persons:—

Lord Hugh Kennedy, Nanyuki District.
 Major J. Soames, Nanyuki District.
 Capt. Browne, Nanyuki District.
 Capt. E. E. Cowling, Njoro.
 A. Cooke, Esq., Nakuru.
 The Chairman, Kenya Water Board.
 Major J. B. F. Adams, Eldoret.

APPENDIX 2



APPENDIX 3

ANALYSIS OF TROUT LICENCES

LICENCES	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937
VISITORS											
Yearly ..	—	—	—	2	1	2	—	—	—	—	—
Fortnightly	—	—	6	1	8	6	*	—	—	—	—
24-hours ..	—	—	1	3	10	15	—	—	—	—	—
RESIDENTS											
Yearly ..	74	93	354	388	550	641	612	606	537	562	†481
Fortnightly	154	83	126	146	199	193	195	218	242	282	†90
24-hours ..	—	72	256	376	641	651	616	638	669	792	†291
TOTALS..	228	248	745	916	1,409	1,508	1,625	1,507	1,448	1,636	862

NOTE.—*Year when distinction between Visitors and Residents Licence abolished.

†Up to and including the 31st May, 1937.

APPENDIX 4

ANALYSIS OF TROUT LICENCES

LICENCE	1927	1928	1928	1930	1931	1932	1933	1934	1935	1936	1937
	£	£	£	£	£	£	£	£	£	£	£
Yearly ..	222	94	334	390	551	643	612	606	537	562	*469
Fortnightly	154	83	134	147	207	199	193	218	241	282	*90
24-hourly ..	—	73	257	379	651	666	618	683	669	792	*291
TOTAL											
REVENUE £	376	370	570	632	910	1,010	985	973	893	968	680

*To the end of May.

DETAILS FOR DISTRICTS

TROUT LICENCES SOLD IN NAIROBI

	£	s.
1934	270	0
1935	255	0
1936	301	0
1937 Up to end of May..	202	0

TROUT LICENCES SOLD IN SOUTH NYERI

	£	s.
1934	7	10
1935	18	4
1936	34	3
1937 Up to end of May..	26	7

TROUT LICENCES SOLD IN KERicho

	£	s.
1934	35	8
1935	47	0
1936	49	5
1937 Up to end of May..	37	10

TROUT LICENCES SOLD IN NANYURI

	£	s.
1934	96	11
1935	88	0
1936	82	9
1937 Up to end of May..	51	4

TROUT LICENCES SOLD IN KITALE

	£	s.
1934	37	8
1935	28	14
1936	20	13
1937 Up to end of May..	23	15

TROUT LICENCES SOLD IN MERU

	£	s.
1934	80	13
1935	52	4
1936	67	8
1937 Up to end of May ..	16	13

TROUT LICENCES SOLD IN NORTH NYERI

	£	s.
1934	100	13
1935	90	2
1936	101	14
1937 Up to end of May ..	105	15

TROUT LICENCES SOLD IN THOMSONS' FALLS

	£	s.
1934	9	10
1935	10	10
1936	8	12
1937 Up to end of May ..	4	7

APPENDIX 5

DISTRIBUTION OF TROUT STREAMS

DISTRICTS	Rivers	Forest Areas	Native Areas	Alien- ated	Crown	Trout	Date of Stocking
		<i>Miles</i>	<i>Miles</i>	<i>Miles</i>	<i>Miles</i>		
MERU ..	Githika	17	20	—	—	Rainbow	1929
	Mariana	15	7	—	—	"	1931
	Thingishu	20	7	—	—	"	1931
	Iraru	10	7	—	—	"	1933
	TOTAL ..	62	41	—	—		
	NOTE.—Mariana. All fish have died out. Most suitable for stocking.						
EMBU ..	Rupingazi	7	—	—	—	Rainbow	1932-3
	Nyamindi—Stocked, but not fish reported yet.						
	TOTAL ..	7	—	—	—		
SOUTH NYERI ..	Thiba	14	4	—	—	Rainbow	1932
	Mukendu	12	—	—	—	"	1933
	Rururu	10	—	—	—	"	1933
	Ragati	7	—	—	—	"	1932-3
	Sagana	7	24	—	—	Rainbow and Brown	1925
	Gura	28	14	—	—	Brown	1905
	Chania	30	—	20	—	Rainbow and Brown	1905 & 1933
	Zuti	10	2	—	—	Brown	1927
	Gikira	5	—	—	—	"	1928
	Amboni	14	—	18	—	Rainbow and Brown	1910
	Moya	8	—	—	—	Rainbow	
	Uaso Nyiro	6	—	—	—	"	
	TOTAL ..	159	44	36	—		
FORT HALL	North Mathioya ..	14	13	—	—	Brown	1926
	South Mathioya ..	25	15	—	—	"	1926
	Maragua	17	17	—	—	"	1928
	TOTAL ..	56	45	—	—		
TEIKIA ..	Thika	11	15	—	—	Brown	1928
	Kyama	7	2	—	—	"	1928
	Chania	45	7	7	—	"	1910
	Ndarugu	11	14	—	—	Rainbow	1925
	TOTAL ..	74	38	7	—		
KIAMBU ..	Katungu	6	5	—	—	Rainbow	1925
	Thiririki	10	11	—	—	"	1925
	Katamayo	9	7	—	—	"	1925
	Ruiru	4	—	1	—	"	1921
	TOTAL ..	29	23	1	—		

APPENDIX 5—(Contd.)

DISTRIBUTION OF TROUT STREAMS

DISTRICTS	Rivers	Forest Areas	Native Areas	Alienated	Crown	Trout	Date of Stocking
		Miles	Miles	Miles	Miles		
NAKURU ..	Melawa-Morandat ..	—	—	45	—	Rainbow and Brown Rainbow	1910-27
	Oleondo	—	—	17	—	"	1927
	Gantani	5	—	3	—	"	1927
	Maungu	5	—	3	—	"	1927
	Kinja	5	—	8	—	"	1927
	Mogatu	3	—	3	—	"	1927
	Katima	3	—	5	—	"	1927
	Kanyam-Tarasha ..	3	—	15	—	"	1927
	Kitiri	5	—	15	—	"	1927
	Lake Naivasha ..	—	—	—	—	"	1934
	Narok	—	—	9	2	"	1924
	Equator Stream ..	6	—	4	—	"	"
	Olaginta and Tributaries	20	—	—	—	"	1932
	Njoro	6	—	5	—	"	1932
	Enarosura-Eldama	—	—	—	—	"	"
	Leigoi-Pergarra ..	36	12	15	3	"	1931
	Masaita	3	—	1	—	"	1919
NORTH NYERI ..	Molo	10	—	5	—	Rainbow and Brown Rainbow	1925
	Abrahams River ..	5	—	5	—	"	1932
	Rongai	13	—	12	—	"	1931
	TOTAL ..	128	12	170	5½		
	Thego	20	6	—	—	Rainbow	"
	Meri	25	—	—	—	"	"
	Nairobi	22	7	—	—	"	1910
	Rongai	27	—	12	—	"	"
	Moya	12	—	—	7	"	1931
	Uaso Nyiro	10	—	7	—	"	1932
LAKEPIA ..	Ngobit	14	—	14	—	"	1932
	Naro Moru	12	—	13	8	"	1931
	Burguret	16	—	17	6	"	1931
	Nanyuki	28	—	22	5	"	1919
	Liki	24	—	12	4	"	1919
	Ontolili	9	—	7	—	"	1925
	Sironmon	11	—	7	—	"	1925
	Timsu	4	—	7	—	"	1934
	TOTAL ..	234	13	125	23		
	Little Paci	10	—	10	—	Rainbow	1932
LAKEPIA ..	Greater Paci	24	—	4	—	"	1933
	Sugaroi	16	—	7	—	"	1934
	TOTAL ..	49	—	21	—		
MASAI ..	Myangoris and Tributaries ..	—	8	—	—	Rainbow	1933
	Ngare, Narok (2) ..	—	20	—	—	"	1934
	Seybay	—	7	—	—	"	"
	TOTAL ..	—	35	—	—		
NOTE.—Myangoris stocking very doubtful.							
ELGEYO ..	Aroor	—	7	—	—	Rainbow	1934

APPENDIX 5—(Contd).

DISTRIBUTION OF TROUT STREAMS

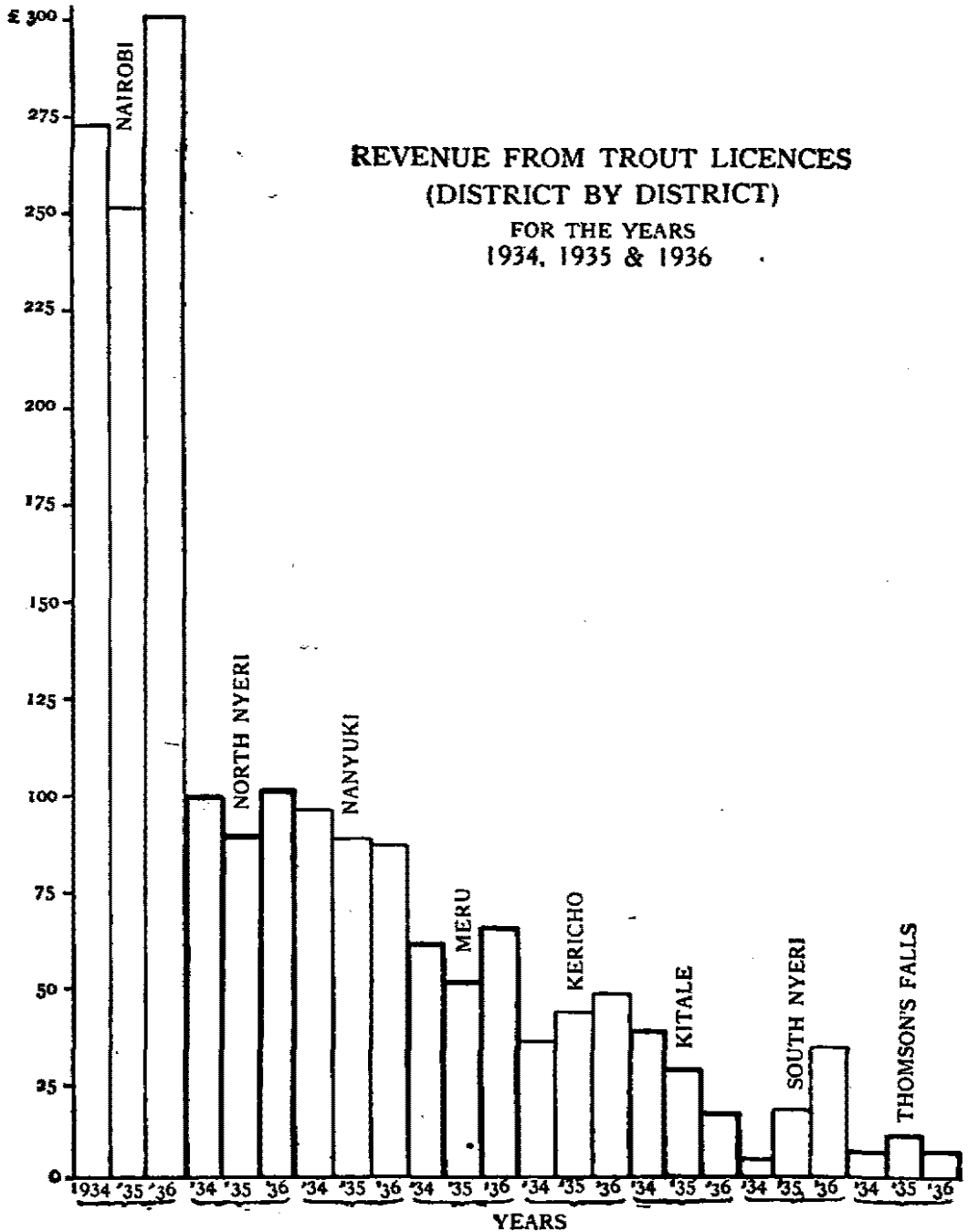
DISTRICTS	Rivers	Forest Areas	Native Areas	Alienated	Crown	Trout	Date of Stocking
		Miles	Miles	Miles	Miles		
KISUMU— LONDIANI	Kipchoret NOTE.—Stocking very doubtful.	—	—	7	—	Rainbow	1932
KERICHO ..	Kimigun	20	—	7	—	Rainbow	1927
	Kimuga	15	—	7	—	"	1931
	Dimbilili	30	—	9	—	"	1927
	Sacasa	20	5	9	—	"	1927
	Kiptigot and Tributaries	30	5	—	—	"	1931
	Kipsondi and Tributaries	35	5	—	—	"	1931
	TOTAL ..	150	15	32	—		
	NOTE.—Mileage is very approx. as rivers have not been mapped in the forest area.						
SOUTH KAVIRONDO	.. .. .	—	—	—	—		
NANDI ..	.. .. .	—	—	—	—		
CENTRAL KAVIRONDO	.. .. .	—	—	—	—		
NORTH KAVIRONDO	Sosain	14	7	—	—	Rainbow	1925
TRANS NZOIA ..	Kwoitoboss	14	—	10	—	Rainbow	1925
	Kaptaga	15	—	3	—	"	1925
	Swam	17	—	9	—	"	1925
	Marun	—	—	5	—	"	1932
	Kahyon	12	—	—	—	"	1930
	Kaibe	10	—	5	—	"	1930
	Kabolet	—	—	12	—	"	1929
	Lisoma	—	—	7	—	"	1927
	TOTAL ..	68	—	51	—		
UASIN GISHU ..	Moyben and Tributaries	30	—	35	—	Rainbow	1929
	Ellegerine	6	—	7	—	"	1929
	Naiberi	4	—	6	—	"	1929
	TOTAL ..	40	—	48	—		
SUMMARY						TOTAL MILEAGE	
MILEAGES—BROWN TROUT ..		231	121	105	—	457	
MILEAGES—RAINBOW TROUT ..		951	191	381½	22½	1,548½	

NOTE.—All mileages are only approximate and are the length of the rivers covering both banks.

All stocking dates are the original dates of the stocking.

APPENDIX 6

REVENUE FROM TROUT LICENCES
(DISTRICT BY DISTRICT)
FOR THE YEARS
1934, 1935 & 1936



APPENDIX 7

PARTICULARS OF ASSOCIATIONS AND CLUBS

NAME	Forest Areas	Native Areas	Alien-ated Lands	Crown Lands	Rivers	Officers	Trout	Number of Members	Tickets Sold	Date of Formation
1. Narok Angling Club, Thomson's Falls	Miles 12	Miles 0	Miles 8	Miles 0	Narok River	Pres., Major C. Luxford Hon. Sec., E. V. Hart	Rainbow, Brown stocked 1928 but have disappeared.	Fishing ..33 Non-fishing 25	—	23-10-1927
2. Masaita Fishing Club, Londiani	3	0	1	3/4	Masaita Stream	Pres., Major W. S. Belfield Hon. Sec., H. B. Atkinson	Rainbow stocked 1923	Fishing ..11	Daily 48 Weekly 2	1929
3. Uasin Gishu Angling Assoc., Eldoret	25	20	0	0	Moihen, Niberi, Elagerini	Pres., Dr. J. Dundas Hon. Sec., J. B. F. Adams	Rainbow	Fishing ..25	—	1931
4. Kwoitoboss Angling Club, Kitale	7	0	10	0	Kwoitoboss	Pres., S. H. Powles Hon. Sec., E. O. Welch	Rainbow	Fishing ..30 Non-fishing 5	—	October, 1931
5. Tulaga Fishing Club, Kinangop	—	—	Naivasha lands on lease expiring 4 miles.	—	Tulaga	Pres., H. J. Allen Turner, H. Morton Hon. Sec., R. G. Buckley	Rainbow	Fishing ..25 Hon. ..10	—	December, 1931
6. Gilgil Country Club, Gilgil	0	0	40	0	Melawa, Morand	Pres., G. Le Blanc Smith Hon. Sec., K. P. Balfour	Rainbow	Fishing ..50	—	About 1930
7. Suam and Kaptege Angling Club, Kitale	14	8	11	0	Suam, Kaptege, Bukwa (Uganda)	Pres., Capt. H. G. T. Howes, R.N. Hon. Sec., Mrs. H. G. T. Howes	Rainbow	Fishing ..40 Temp. ..10	—	1927
8. Ravine Fishing Club	36	12 (Uganda)	15	3	Narosarra and tributaries; Perkessa and tributaries.	Pres., Major A. E. Smith Hon. Sec., J. G. Cowling, Esq.	Rainbow	Fishing ..11	—	1931
9. Mau Angling Assoc., Molo	10	0	5	0	Molo and tributaries	Pres., E. C. Crake, Esq. Hon. Sec., E. R. Davies	Rainbow	Fishing ..10	—	1925
10. Kenya Fly Fisher's Club, Tusu	24	24	0	0	Northern and Southern Mathioya	Pres., J. E. Cockburn Hon. Sec., W. Rodway, Esq.	Brown	107	—	1926
*11. Sabukia Fishing Club, Sabukia										
*12. Njoro Country Club, Nakuru										

*No particulars received.



COLONY AND PROTECTORATE OF KENYA

REPORT
OF THE
EMPLOYMENT OF JUVENILES
COMMITTEE

1938

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MEMBERS OF THE COMMITTEE

THE HON. E. B. HOSKING, O.B.E., *Chairman.*

THE HON. S. V. COOKE.

THE HON. H. R. MONTGOMERY, C.M.G.

THE REV. R. G. M. CALDERWOOD.

The expenses incurred in connexion with the Committee were approximately £42-15-00, and the cost of printing and publishing this report is estimated by the Government Printer at £18. These figures take no account of the time spent by officers of Government not specially seconded for service with the Committee.

REPORT OF THE EMPLOYMENT OF JUVENILES COMMITTEE

YOUR EXCELLENCY,

On the 2nd July, 1938, you were pleased to appoint us members of a Committee with the following terms of reference:—

To review the legislation relating to the employment of juveniles in the Colony and to make recommendations as to what amendments are desirable with particular reference to the following matters:—

- (a) the minimum age below which employment should not be permitted;
- (b) the question whether penal sanctions for the enforcement of contracts of service entered into by juveniles should be abolished; and
- (c) the means by which an effective system of identification and control can best be established.

2. Mr. W. A. W. Clark was appointed Secretary.

To:

His Excellency,

Air Chief Marshal

Sir Robert Brooke-Popham, G.C.V.O., K.C.B., C.M.G.,
D.S.O., A.F.C.,

*Governor and Commander-in-Chief of
the Colony and Protectorate of Kenya.*

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CHAPTER I—INTRODUCTORY

3. We have confined our attention to juveniles as defined in the Employment of Servants Ordinance, 1937, namely:—

Interpretation
of terms of
reference.

“Juvenile means an Arab, a Baluchi born in Africa, a Comoro Islander, a Malagasy, a Somali or a native, who has not reached the apparent age of sixteen years”.

This was our interpretation of the terms of reference.

4. We met for the first time on the 5th July, 1938, and subsequently on the 4th, 22nd and 24th August, and the 21st September. The intervals between meetings were frequently occupied with informal discussions.

Meetings.

5. Although we did not travel as a Committee, we took every possible opportunity to visit individually and jointly places where juveniles are employed to any appreciable extent, and to investigate conditions on the spot. These visits included Nairobi, Limuru, Njoro, Kericho, Malindi, Kilifi, Kisumu and the Nyanza goldfields. Some of us have in addition had considerable acquaintance for many years with conditions of employment for natives throughout the Colony.

Visits and
investigations.

6. After our first meeting notices were published in the press inviting the public to offer evidence. Letters were also addressed to persons whose views we considered should be obtained. Most of the evidence was informal, given by persons and employers at estates and factories to which we paid visits. We also made it our concern to obtain the views of administrative and labour officers, missionaries and responsible natives including the native authorities.

Evidence.

7. We wish to express our appreciation of the assistance given to us in our deliberations by all these persons from whom we received every courtesy and facility, although their work must often have been interrupted by our unexpected arrival.

CHAPTER II—CURRENT LEGISLATION

8. Our first task was to review the legislation at present in force relating to the employment of juveniles in the Colony. This legislation consists of the Employment of Servants Ordinance, 1937, and the Employment of Women, Young Persons and Children Ordinance, 1933. It is not necessary for these Ordinances to be quoted in this report in full, but the

Relevant
legislation.

more important sections have been attached as an appendix for ease of reference; and certain sections will be quoted later in the text of the report.

Brief summary
of position under
that legislation.

9. It will be of advantage first to give a brief summary of the position regarding the regulation of juvenile employment. Under the provisions of the Ordinances mentioned above the employment of juveniles over the age of ten years, the minimum age at which a juvenile is allowed to enter into a contract of service, is permitted subject to certain restrictions and regulations. The Employment of Servants Ordinance provides that no juvenile under the age of ten years shall be allowed to enter into a contract of service, and that no juvenile shall be recruited or engaged without a certificate from a District Officer upon which it shall be stated that the consent of the parent or guardian has been obtained; a District Officer may withhold a certificate for any reason deemed by him to be sufficient. Under the provisions of the Employment of Women, Young Persons and Children Ordinance, 1933, no child under the age of twelve years may be employed in any industrial undertaking and no child under the age of fourteen years may be employed on attendance on any machinery or in any open-cast workings or sub-surface workings which are entered by means of a shaft or adit. Again under the Employment of Servants Ordinance, no juvenile under the age of sixteen years may be employed as a porter, fuel cutter, trolley or rickshaw boy or in any other class of labour for which in the opinion of a Government medical officer he is physically unsuitable. There are also restrictions on the employment of children on ships or at night.

10. The effect of these provisions is that while children over the age of ten years may be recruited or engaged and enter into contracts of service, children under twelve years of age cannot be employed on other than light work.

Power of
cancellation
of contracts.

11. District Officers and labour officers are empowered to cancel or terminate contracts of service entered into by juveniles on the grounds that the employer is an undesirable character or that the nature of the employment is dangerous or immoral or injurious to the health of such juveniles or for any other reasonable cause.

Medical
examination in
case of recruit-
ment.

12. Under the provisions of sections 40 and 42 of the Employment of Servants Ordinance all juveniles recruited or engaged for employment require to be examined by a medical officer at the place of recruitment or engagement or as near

to such place as may be convenient or, in cases where the Principal Labour Officer is satisfied that this procedure is impossible, on arrival at the place of employment.

13. Juveniles who enter into contracts of service come within the scope of the other provisions of the Employment of Servants Ordinance as, for example, the provisions regarding the care of servants by employers, repatriation, breaches of contracts and disputes between and offences by employers and servants and are liable to the penalties prescribed for offences. Section 56 of the Ordinance provides, however, that whenever any male person appears liable to be punished in any manner provided by the Ordinance, if he appears to be under the age of sixteen years and to require punishment in the way of discipline rather than in any other manner, the court may instead of any other punishment order him to be whipped with not more than twelve strokes. Other provisions.

14. There are also provisions regarding deeds of apprenticeship which may be executed for a term not exceeding five years. Under these provisions a child above the age of ten years and under the age of sixteen may, with the consent of his father or guardian, or in the case of a child without known relatives or a guardian, of a magistrate, be apprenticed to a trade or employment in which art or skill is required, or as a domestic servant. Deeds of apprenticeship.

15. It is appropriate here to remark that before the enactment of the Employment of Servants Ordinance, 1937, the only legislation relating to the employment of juveniles consisted of the Employment of Women, Young Persons and Children Ordinance, 1933, and the provisions regarding deeds of apprenticeship in the Employment of Natives Ordinance, Chapter 129 of the Revised Edition, now repealed. Sections 27 to 29 of the Employment of Servants Ordinance are new. We understand that these sections were introduced partly because experience here and elsewhere had shown that the control of juvenile employment was advisable, as without regulation it was liable to be abused, and partly to give effect to Article 6 of the International Convention concerning the regulation of certain special systems of recruiting workers, which reads:— Origin of these provisions.

“Article 6.—Non-adult persons shall not be recruited: provided that the competent authority may permit non-adults above a prescribed age to be recruited with the consent of their parents for employment upon light work subject to prescribed safeguards for their welfare.”

CHAPTER III—CONDITIONS OF EMPLOYMENT

Effect of
legislation
already reviewed.

16. We have reviewed above the current legislation relating to the employment of juveniles. Before making any recommendations regarding the necessity or desirability for amendment of that legislation, we wish first to give some account of the manner in which it operates and at the same time to attempt to draw a picture of the extent and effect of the employment of juvenile labour in the Colony.

Investigation
of actual
conditions of
employment.

17. We made it our especial concern to investigate on the spot the conditions under which juveniles are employed generally throughout the Colony and particularly, in view of statements made in the press and elsewhere, on the tea estates at Kericho and in connexion with gold-mining operations in the Nyanza Province.

Lack of
statistics.

18. We have been unable to obtain any accurate figures regarding the numbers of juveniles in employment, as the provisions of the Native Registration Ordinance, Chapter 127 of the Revised Edition, are not applied to persons under the age of sixteen except in the Nakuru District. Further reference will be made to this point later in connexion with the third of our particular terms of reference.

Estimate of
number of
juveniles in
employment.

19. It is, however, possible to give an approximate estimate of the number of juveniles in employment from information supplied to us by the Principal Labour Officer and Chief Registrar of Natives. From this information it is clear that at the most not more than thirty-five to thirty-six thousand juveniles are employed in the Colony in any one year. Not all—indeed, very few—of these juveniles work continuously for twelve months of the year; the majority work only for a brief period and return to their homes; and many work in close vicinity to their homes, proceeding to work for the day only, at irregular intervals upon occasions such as harvest-time. It has been calculated that the average period spent in employment by adult male natives who enter into contracts of service is only $4\frac{1}{2}$ months in a year. It is probable that most juveniles work for even shorter periods at a time; but, assuming that they too spend an average of $4\frac{1}{2}$ months in employment in the year, it follows that only approximately 14,000 of the 36,000 employed are at work at any one time.

20. In the special labour return for the Colony of October, 1936, the daily average number of juveniles reported as employed in the previous six months was returned at 8,769. Scrutiny shows that the returns were incomplete, particularly

in respect of juveniles. A generous allowance for failures to report and to allow for the inflated numbers employed at particular times of the year such as harvest- or picking-time would not increase this figure beyond 14,000.

21. The most recent estimate of the native population of the Colony is 3,253,689. Using Sir Arthur Newsholme's formula of 47.22 per cent males to 52.78 per cent females, a total of 1,536,392 males is obtained. Of these males it is estimated that 34 per cent or 523,193 are adult able-bodied males of between the ages of sixteen and forty years and 13.92 per cent or 213,865, or in round figures 214,000, are juveniles between the ages of ten and sixteen. Of these 214,000 juveniles we calculate that only 16 per cent to 17 per cent are employed, and less than 7 per cent at any one time. The employment of juveniles is therefore limited in extent. With few exceptions, these juveniles are males.

22. The largest employers of juvenile labour in the Colony are the tea estates at Kericho and Limuru. It is estimated from figures produced by the Kenya Tea Growers' Association that these estates employ approximately 5,500 juveniles per mensem. The Labour Officer, Nyanza Province, estimates that approximately 1,500 juveniles are employed in connexion with gold-mining operations in the Province. Other large employers of juvenile labour are sisal, coffee and pyrethrum estates and to a lesser extent building contractors. Such employment is often seasonal. Comparatively large numbers of juveniles are also employed in towns, particularly by Asians and natives, as domestic servants.

Distribution in various forms of employment.

23. We found no evidence of the employment of female juveniles away from their homes, excepting a few at work or in training as children's nurses. Domestic service is the only form of employment which native girls are likely to enter and is covered by the provisions for the registration of domestic servants which a committee is at present reviewing.

Female juveniles.

24. On the tea estates conditions are almost without exception good. The juveniles employed are almost all considerably over the age of twelve years. Recruiting does take place; one company possesses a recruiting agency with posts in the neighbouring reserves whose task it is to recruit, engage and forward labour to the company's estates at Kericho. Written or long-term contracts are not entered into with juveniles who are employed by the day or on thirty-day verbal

Tea estates.

contracts only. Juveniles are therefore free to leave employment as and when they please, upon completion of any day's task. In practice, they are in most cases paid monthly. Should they desire to be discharged before a month is completed, they usually receive a *quantum meruit*. The work upon which juveniles are employed consists of picking leaf and light tasks such as weeding. The pay is from Sh. 5 to Sh. 7 per mensem for the prescribed number of completed tasks; any work done in excess of these tasks entitles the worker to extra pay bringing the total pay earned in some cases to Sh. 9 to Sh. 15 per mensem. On at least one estate a bonus is granted upon completion of twelve months' work. Excellent quarters are provided, usually stone barracks divided into rooms containing four to six bunks, each room having a fireplace. Ample rations are given, but we consider that the diet could be more varied and better balanced. On the larger estates there are full and adequate medical and hospital facilities. A number of schools exist and most of the estates are considering building more and bigger schools as they appreciate that the provision of educational facilities is desirable. One difficulty which they have is to obtain suitable teachers. Quite a number of the juveniles and, indeed, of the younger adults too, appeared to be attracted to employment as much by the educational facilities offered as by the wages.

Gold mines.

25. Of the approximate number of 1,500 juveniles employed in connexion with gold-mining operations in the Nyanza Province, roughly half are employed on alluvial mines and the remainder on surface work on mines where shafts or adits exist.

26. On alluvial mines their work consists of carrying pans of mud weighing about 20 lb. each from the spot where it is dug out to the sluicing boxes, usually a distance of twenty-five to a hundred yards. The work is ordinarily task work, a task being the carrying of from sixty to a hundred and twenty pans according to size, completed in from five to six hours. A daily ration of food is issued and some employers provide, in addition, a hot drink midway through the task. Upon completion of the day's task, usually about midday, the majority of these juveniles return to their homes near by. Others come from further afield and live on the mining property; for these, accommodation, extra rations and facilities for education and recreation are provided.

27. On mines where shafts or adits exist, the work upon which juveniles are employed consists of sorting ore on the surface. The ore is sprayed with water and any pieces which

are unlikely to contain gold are removed before it is transported to the mill. The work is light as the ore is already broken into small pieces. In some other cases juveniles are employed in breaking small ore with a light hammer. As it is difficult to set a task for work of this nature, juveniles are employed for seven or eight hours a day.

28. Generally the conditions of employment appear quite attractive to juveniles who freely offer themselves for this work. Conditions do, however, vary, and the wages paid, namely Sh. 3 to Sh. 7 per mensem, are low.

29. We would point out that, while no child under the age of fourteen can be employed upon work underground in mines, in practice even young persons under the age of eighteen are not employed upon such work, which is always performed by adult male persons. We would, however, draw attention to the fact that some of the children employed in the manner described above appeared to be under the age of twelve. Although the work consists only of the breaking and sorting of ore and the carrying of pans of mud, we are of the opinion that the undertakings in connexion with which these children are employed are industrial undertakings in the light of the definition in the Schedule to the Employment of Women, Young Persons and Children Ordinance, which includes *inter alia* "mines, quarries and other works for the extraction of minerals from the earth". As the law stands, children under the age of twelve should not, we consider, be employed, especially as the actual conditions in which the work is performed are sometimes unpleasant in alluvial workings. As regards the general question of the employment of children between the ages of twelve and fourteen in connexion with industrial undertakings, we shall make a specific recommendation later in connexion with the first of our particular terms of reference.

30. Another class of labour in which juveniles are employed in the Nyanza Province is work in connexion with cotton ginneries. We found that action had been taken by officers of the Labour Section to ensure that the provisions of the Employment of Women, Young Persons and Children Ordinance, were not contravened by the employment of children under the age of fourteen on work in contact with machinery; but a certain number of juveniles are employed at low rates of pay on work at the ginneries of a light nature, such as sorting cotton in the open air. They work in close proximity to their homes and return home at night. We see

Cotton
ginneries.

little objection to this provided the provisions of the Employment of Women, Young Persons and Children Ordinance are enforced, and a recommendation regarding the minimum age for employment generally, which we shall make later, is implemented.

Sisal industry.

31. The sisal estates are almost the only concerns which recruit and transport juveniles long distances from their homes to work. The estates in the neighbourhood of Nairobi and Thika employ only a few juveniles, but the estates at Voi, Mwatate, and near the coast, employ larger numbers. Although the work performed by these juveniles is light, consisting of hanging sisal tow out to dry and weeding, this appears to be a case where the only reason for employment of juveniles is that such labour is cheap. In other forms of employment, this reason may be a consideration also, but in addition it is undoubtedly true that juveniles are more suited than adults to tasks like picking leaf on the tea estates and picking pyrethrum owing to the height of the crop and as their hands are more delicate and nimble than adults'; it is of interest, however, to note that juveniles under 4 ft. 9 in. in height are seldom employed on the tea estates as they cannot reach the centre of the bush. Wages on sisal estates are low, ranging from Sh. 4 to Sh. 7. Conditions are not so good as on the tea estates as regards housing, educational and other facilities. Here again, although recruiting is practised, written contracts of service are not entered into with juveniles.

**Light
agricultural
work.**

32. The majority of juveniles employed on light agricultural work in connexion with the growing of pyrethrum, coffee, cashew-nuts and other crops not already mentioned go to work by the day, usually in the company of adult relatives, and return to their homes at night. Some, indeed, are not even engaged by the day, but simply assist an adult relative in his or her task. Children are to be seen plucking the crop and putting the fruits of their work into their mothers' baskets. This form of daily employment calls for little comment; the position is generally satisfactory. A number of juveniles employed upon such work do, however, reside upon the farms for the period of employment, especially in connexion with the growing of pyrethrum. This crop is of recent introduction, but already conditions of employment are reasonably good, although the rate of pay is low. Employers are awake to the necessity of making conditions of employment attractive and are taking steps to provide facilities for education.

33. In the majority of industrial undertakings and factories, the provisions of existing legislation such as the minimum age for employment of juveniles and the guarding of machinery are carefully followed. The number of juveniles employed in such undertakings is limited and conditions are generally satisfactory.

Industrial
undertakings
and factories.

34. Conditions in these forms of employment are thus generally satisfactory and there is little, if any, real abuse of juvenile employment.

35. We would, however, draw attention to one question which presents serious difficulties. This is the problem presented by the large numbers of juveniles who drift or make their way into towns ostensibly to obtain employment. The employment which they do obtain in most cases is casual employment, often as domestic servants, at low rates of pay and under unsatisfactory and sometimes sordid conditions in the crowded bazaars. They receive no apparent advantages from such employment and are open to the dangers of acquiring bad or vicious habits, of consorting with undesirables, and eventually in many cases of becoming detribalized nonentities whose sole aim in life is to live as easily as possible by their wits. Much of such employment is by natives in the police lines, the medical depot, the railway service and in settlements such as Kibira. One difficulty is lack of accommodation for natives' servants. We consider that steps should be taken by Government and other employers to provide quarters for their native employees' servants. At a later stage in this report we shall return to this question and make recommendations for alleviation of the problem. Its solution is, however, difficult to see.

Employment of
juveniles in
towns.

CHAPTER IV—CONCLUSIONS REACHED FROM THE REVIEW OF CURRENT LEGISLATION AND EXISTING CONDITIONS OF EMPLOYMENT

36. In Kenya, as elsewhere, the general principle of employment of juveniles has already been accepted. Criticism has generally been aimed at the terms and conditions of employment rather than the principle. Under proper safeguards and stringent regulation we do not consider it to be harmful. Did the acceptance of the principle interfere with the education of the juvenile or adversely affect home life or the juvenile himself, we should not advise its continuance. But in the absence of provision for compulsory education of Africans,

we consider that considerable advantages accrue to juveniles, above a certain age and subject to precautions which we shall detail below, being allowed to enter into employment under the best conditions. Of course, changing social conditions under the impetus of the development of ideas and of civilization, particularly education, will lead to the disappearance of or require the abolition of juvenile employment up to a still higher age limit. Until that stage is reached and until sufficient facilities for universal education are provided, we see no reason why the employment of juveniles should not continue subject to regulation and control in the manner which we recommend. We also consider that meantime there is an obligation upon employers who employ juveniles in any appreciable numbers to provide educational facilities and upon the Government to assist, particularly by inspection and advice. The Education Department is already endeavouring to co-operate with employers.

37. It has been pointed out that the dangers of the use of juvenile labour lie in the absence of the juveniles from their homes and parental control, the possibility that they may pick up undesirable and bad habits with consequent demoralization of character, and probably eventual detribalization and often criminal instincts or tendencies. There are also other dangers, that of exploitation of juveniles by their parents to earn money for the parents' use no less than that of exploitation of juveniles by employers as a cheap form of labour.

In our opinion employment of the nature which we shall recommend below, preferably away from the towns, does not lead to these dangers.

38. It should not be forgotten that tribal sanctions and parental authority in many of the reserves are not so strong as they were. In these circumstances the discipline of carefully regulated employment which maintains on the larger estates, with the added advantages of good food, medical and educational facilities, may well be beneficial.

39. It is, however, true that children, and women, are being attracted to the towns to the prejudice of their own welfare; the possibility of obtaining employment is often the pretext or initial cause of such migration. The regulation of such employment and of this tendency must form a vital part of social policy.

40. In general the conclusions drawn from our investigations have been that conditions in most forms of employment

are satisfactory and that the only serious abuses which exist occur in the towns where children of tender years are often employed at low rates of pay in deplorable conditions and undesirable surroundings.

41. We investigated particularly allegations made that the drunkenness amongst juveniles in employment on the tea estates was scandalous and that through the specification of a low minimum age African children of tender years were passing through the "mill of tragic experience". As regard drunkenness we could find no evidence that the statements made are justified by the facts. Drinking does occur, but it is also to be found amongst children residing in their own homes in the reserves. It is not due to the employment of juveniles but to a weakening of the old sanctions. Its remedy lies in closer application of existing provisions of the law, viz. the Native Liquor Ordinance, which prohibits the sale of liquor to persons under the apparent age of eighteen, and the Native Authority Ordinance, in closer inspection, but above all in the spread of education. We would, however, point out the desirability of close control by employers of juveniles outside working hours and of the provision of adequate facilities for education and healthy recreation. We noted the willingness of most of the larger employers to do so.

42. The reference in the press to the "mill of tragic experience" is misleading and incorrect. It is true that conditions in the towns are far from ideal; and it is true that not all employers are good employers. We also consider that the present provisions for control are inadequate and that the minimum age for general employment is at present too low. But we are satisfied that there is only one abuse of juvenile labour of any magnitude; and that lies in the employment of children in towns.

CHAPTER V—GENERAL RECOMMENDATIONS

43. Our task in recommending amendment of the existing legislation has been agreeably lightened by the results of our investigations into existing conditions. As the existing practice leads to few abuses, we are able to recommend with the fullest confidence that in many respects it should be crystallized into law. Existing practice.

We found:—

(1) that juvenile labour is recruited only to a limited extent;

(2) that juvenile labour is in most cases engaged only upon its own unsolicited offer of service;

(3) that no written or long-term contracts of service are entered into with juveniles;

(4) that juvenile labour is employed only by the daily task or at the most on thirty-day verbal contracts;

(5) that, so far as we could ascertain, penal sanctions are not utilized in respect of juveniles; and

(6) that there is a general desire for some simple and effective system of identification and control.

Form of
contracts of
service.

44. The first question which requires consideration is the nature of the contracts of service into which juveniles should be allowed to enter. Long-term contract employment, usually on written contracts, subject as it is to careful and detailed regulation, affords a much greater degree of protection for workers than other forms of employment and it is possible to stipulate in the contract good conditions. In view of these obvious advantages we have been much exercised over this question. But we have come to the conclusion that long-term contract employment, involving as it does long service, absence from home, and special forms of discipline, is particularly undesirable in the case of juveniles. We feel that any loss of the protective measures which safeguard such employment will be more than balanced by the fact that juveniles will be free to leave employment almost whenever they wish and as they please; the protective measures can be achieved too in other ways.

45. From the review we have given above of current legislation, it is clear that while to date the regulation of particular forms of juvenile employment has been regarded as of importance, no restrictions have been made regarding the forms of contracts of service into which juveniles are allowed to enter. In practice, however, employers have made use of juvenile labour on short-term verbal contracts of service only with the result that juveniles have enjoyed the greatest possible freedom as regards entry into and discharge from work.

46. We have also noted that the "Grey Report" prepared by the International Labour Office on the regulation of contracts of employment for indigenous workers favoured the prohibition of juveniles from entering into long-term written contracts of service. The "Red Report" of the recent

International Labour Conference on the same subject, issued after we had reached our conclusions, further confirms this view.

We therefore have no hesitation in recommending:—

Recommendation.

I—That juveniles should be allowed only to enter into verbal contracts of service for a daily task or for the performance of thirty days' work within a period of forty-two days as provided under section 4 (d) of the Employment of Servants Ordinance.

47. The existing provisions regarding deeds of apprenticeship, which we consider fully satisfactory, should of course be retained.

Deeds of apprenticeship.

48. The next point is recruiting, which is defined in the Employment of Servants Ordinance as follows:—

Recruiting.

“‘to recruit’ means to obtain or attempt to obtain the supply of labour of Arabs, Baluchis born in Africa, Comoro Islanders, Malagasies, Somalis or natives who do not spontaneously offer their services at the place of employment or at the office of a labour agent and ‘recruiting’ includes all operations undertaken with that object in view.”

We have considered whether recruiting should not be abolished entirely, but foresee many practical difficulties in such a course, particularly the difficulty of enforcement. While we do not consider that juveniles should be solicited or procured to enter employment by professional recruiters, whose interest in the juveniles ceases immediately the process of engaging and forwarding has been completed, we see no objection to the activities of private recruiters who themselves, or by persons in their regular, permanent and exclusive employ, recruit for their own bona fide personal business or service exclusively.

We therefore recommend:—

Recommendation.

II—That the recruiting of juveniles should be confined to private recruiting and that the recruiting of juveniles by professional recruiters should be prohibited.

The facilities afforded by labour agents should not, of course, be denied to juveniles.

49. Next comes the necessity of ensuring that, without the protection afforded by long-term and written contracts, juveniles should enjoy good conditions of service. We considered a suggestion that, to avoid the entry of juveniles into service with bad employers or employers who do not trouble

Staff of the labour section.

to make the conditions attractive, employers should be licensed to employ juveniles, but in our opinion it is both impracticable and unnecessary. The surest safeguard of the worker's interests lies in an adequate and efficient inspectorate. The staff of the Labour Section of the Administration consists of a Principal Labour Officer and four Labour Officers, stationed at Nairobi, Nakuru, Eldoret and Kisumu. To enforce the provisions of legislation and our recommendations, if implemented, to ensure satisfactory conditions of employment and to control the employment of juveniles in towns, we consider this staff too small.

Recommendation.

We strongly recommend:—

III—That the staff of the Labour Section should be increased by the appointment of at least two more Labour Officers, one of whom should be stationed on the Coast and the other available for the extra work which will be inevitable if the closer regulation and control of juvenile labour which we recommend is to be effected.

50. Subject to the recommendations made above and those which we shall make in regard to our particular terms of reference, we consider that the remaining provisions of existing legislation are satisfactory.

Desirability of a comprehensive Ordinance.

We would, however, recommend:—

IV—That all the provisions in the Employment of Servants Ordinance and the Employment of Women, Young Persons and Children Ordinance which relate to juveniles should be grouped together in one comprehensive enactment concerning the employment of juveniles.

Recommendation.

CHAPTER VI—FIRST PARTICULAR TERM OF REFERENCE—THE MINIMUM AGE BELOW WHICH EMPLOYMENT SHOULD NOT BE PERMITTED

Minimum age for employment generally.

51. As a particular term of reference, we are asked to recommend the minimum age below which employment of juveniles should not be permitted. This age is at the moment ten years subject to numerous restrictions. Moreover this minimum age for general employment is a new provision inserted in the Employment of Servants Ordinance, 1937, and was modelled on Southern Rhodesian legislation. Before the enactment of this Ordinance there was no minimum age specified for the employment of juveniles generally; the only provisions were those regarding certain forms of employment in the Employment of Women, Young Persons and Children

Ordinance, 1933. Upon this we would lay particular stress, as it appears that there has been some confusion in the minds of the public resulting in the impression that the specification of this minimum age was in effect a reduction of some higher age limit previously in force.

52. It has also been stated that this minimum age of ten years is peculiar to Kenya and is lower than occurs in the rest of the Colonial Empire. We would point out that if the information given at pages 115-119 of the Grey Report on the Regulation of Contracts of Service for Indigenous Workers prepared by the International Labour Office is correct, and up-to-date, and if there have been no amendments to certain legislation in other territories which has been brought to our notice, this minimum age does exist elsewhere. To quote from the Grey Report:—

“In Southern Rhodesia the Native Juveniles Employment Act empowers a Government officer in the absence of a parent or guardian to contract any juvenile for a period not exceeding six months. This power has been limited to children over ten years of age.

In British Guiana there is a minimum contracting age of ten years under the Immigration Ordinance. This Ordinance, however, has no longer any practical effect. Under other laws minimum ages have been fixed of fourteen years for underground employment, twelve years for industry and sea, and nine years for other employments.”

We have drawn attention to this point not in defence of this minimum age, but simply to remove any impression that it is peculiar to this Colony.

53. We have already stated that in our opinion there is no harm resulting from the employment of juveniles under stringent regulation and control. One of the most important of these regulations is that concerning the minimum age. The present minimum age of ten years for general employment and previously the lack of any such minimum age limit have not led to abuses of any magnitude, except in the instance of juveniles employed in towns, mainly owing to absence amongst employers generally of any desire to exploit child labour.

54. After close consideration of the question we feel that this minimum age of ten years is too low, especially in view of the difficulties which beset determination of an African's age in the absence of vital statistics such as registration of

births. On the other hand there are, as yet in this Colony, insufficient facilities in the native reserve areas for universal education. Consequently there is nothing harmful in allowing juveniles to enter into properly controlled employment on light work with its attendant advantages of educational facilities, etc., at a slightly earlier age than in European countries.

Recommendation.

We therefore recommend :—

V—That, subject to the restrictions mentioned below regarding certain forms of employment, the minimum age at which juveniles should be allowed to enter into employment should be raised to the apparent age of twelve years.

55. In making this recommendation we have not lost sight of the difficulties which attend any attempt by the layman to determine the age of the African child. Facilities for the compulsory registration of native births are not provided and we appreciate that to attempt to provide these facilities for the whole Colony at once would entail an expenditure and an organization beyond the Colony's resources at the moment. But we wish to record our opinion that such facilities should be provided as early as possible. In this connexion we have noted with approbation the steps taken by the Kiambu, Fort Hall and South Nyeri Local Native Councils to legislate and provide for the registration of births and deaths, and the facilities provided in the baptismal registers in native churches. For an increasing number of natives, records of births are thus available.

Minimum age for employment in industry.

56. There is a further point in connexion with the minimum age which we wish to raise. Article 2 of the International Convention fixing the age for admission of children to industrial employment reads :—

“Children under the age of fourteen years shall not be employed or work in any public or private industrial undertaking or in any branch thereof, other than an undertaking in which only members of the same family are employed.”

Power was given, however, under the Convention, to modify its terms in their application to Colonies, which are not fully self-governing, for the purpose of making the Convention applicable to local conditions. When the Employment of Women, Young Persons and Children Ordinance, 1933, was enacted, advantage was taken of this power to modify the

application of Article 2 of the Convention to this Colony. Sections 4 (1), (2) and (3) of the Ordinance read:—

“4. (1) No child under the age of twelve shall be employed in any industrial undertaking.

(2) No child shall be employed in any industrial undertaking, in attendance on any machinery, or in any open-cast workings or sub-surface workings which are entered by means of a shaft or adit.

(3) Notwithstanding the provisions of sub-section (1) of this section the Governor in Council may by order prohibit the employment of any child in any specified trade or industrial undertaking.”

(Note.—Under the same Ordinance a child is defined as a “person under the age of fourteen years”.)

57. We understand that the modification was made in order *inter alia* to enable children to assist in certain operations in the goldfields and similar industrial undertakings which did not involve any essential or inherent danger to the child. In our opinion the modification can no longer be justified. Although the effect of our recommendation above is that juveniles over the age of twelve years should be allowed to enter into employment, we do not consider that any under the age of fourteen should be employed in any industrial undertaking. In other words we think that children between the ages of twelve and fourteen should be employed only on light agricultural and domestic work.

We therefore recommend:—

Recommendation.

VI—That sub-section (1) of section 4 of the Employment of Women, Young Persons and Children Ordinance should be deleted from the Ordinance so that no child, i.e. no person under the age of fourteen years, should be employed in any industrial undertaking.

VII—SECOND PARTICULAR TERM OF REFERENCE Penal sanctions. —PENAL SANCTIONS

58. Under this particular term of reference we are asked to make recommendations on the question whether penal sanctions for the enforcement of contracts of service entered into by juveniles should be abolished.

59. First we would point out and lay particular stress on the fact that so far as we have been able to ascertain, penal sanctions have never been utilized by employers in

connexion with juvenile labour. Moreover, it appears to be a general wish that they should be abolished in respect of juveniles. The discovery of these facts demolishes at one stroke any argument that penal sanctions have ever operated harshly against juveniles in this Colony. Besides provision is made in the Juveniles Ordinance, 1934, for special procedure to be followed in dealing with juvenile offenders.

60. The arguments for and against penal sanctions in labour legislation in the Colonial Empire are well known, and there is no necessity for us here to reiterate them. We would, however, in passing, point out that in the United Kingdom and in some other European countries, there is no need for penal sanctions as the fear of unemployment is sufficient deterrent in itself to ensure that the terms of a contract of service will almost invariably be honoured by the worker. In this Colony there is no such deterrent. The demand for labour almost always exceeds the supply. Moreover the native labourer is not dependent upon employment for his living, as except for some resident native labourers, he almost always possesses a holding and a home in his reserve where he will not lack the means of subsistence and comfort. This is marked by the fact that the average native labourer spends only $4\frac{1}{2}$ months out of 12 in employment.

61. In reaching a decision on this term of reference we have been greatly influenced by a desire to crystallize the existing practice whereby penal sanctions are not called into operation by employers against juveniles, probably because they are both repugnant and unnecessary. Moreover, while recommending that the employment of juveniles should be permitted under adequate control and subject to stringent restrictions we wish to make it clear that the juvenile himself should be left as free as possible to enter and leave employment as he pleases. It is true that the effect of our recommendation that juveniles should be allowed only to enter into contracts, other than deeds of apprenticeship, for a day's task or for thirty days' work will be the disappearance of a number of penal sanctions, i.e. those in respect of breaches of long-term and written contracts of service; but the remainder of the penal sanctions would nevertheless remain, i.e. those relating to other offences by servants. This we do not desire.

Recommendation.

We therefore recommend:—

VII—That juveniles should be removed completely from the scope of penal sanctions under the Employment of Servants Ordinance.

62. The effect of this recommendation will be that the contracts of service entered into by juveniles will be civil contracts only. The natural corollary of this is that penal sanctions against the employer in respect of contracts of service entered into with juveniles will also disappear. We see little or no reason to fear that juveniles' interests will suffer thereby. Under section 76 (f) (ii) of the Employment of Servants Ordinance, Labour Officers can institute and appear on behalf of any servant in civil proceedings.

VIII—THIRD PARTICULAR TERM OF REFERENCE —SYSTEM OF IDENTIFICATION AND CONTROL

63. It would have been easy for us to recommend some broad scheme for identification and control, but to be effective such a system must be simple and free from complications. We have therefore been much exercised to devise a system which would in practice be easy to operate, and to describe it in detail, so that difficulties may not later arise.

64. The necessity for such a system is undoubted; indeed, it is demanded by the persons most closely concerned, the tribal authorities and the native witnesses from whom we heard evidence. As we consider that the employment of juveniles should be permitted under certain conditions, we hold that as a corollary there is moral obligation upon the Government to keep track of juveniles who enter into employment, to ensure that they leave their homes only with their parent's or guardian's consent, and to provide means whereby juveniles upon discharge from employment shall not be allowed to develop into anonymous personalities wandering from place to place. A means of identification is therefore essential.

Need for a system of identification and control.

65. At the moment no adequate check is provided. The provisions of the Native Registration Ordinance are not applied to persons under the age of sixteen except in the Nakuru District. To give effect to the International Convention concerning the regulation of certain special systems of recruiting workers, provision has been made in the Employment of Servants Ordinance, as follows:—

Present provisions.

“28. (1) No labour agent shall engage, and no private or professional recruiter shall recruit, any juvenile unless such juvenile has obtained a certificate from a District Officer, which certificate shall be in the form set

out in the Schedule to this Ordinance and shall, if such be the case, state that the permission of the father or guardian of such juvenile has been obtained.

(2) A juvenile who has obtained such a certificate may, subject to the provisions of this Ordinance, enter into a contract of service.

(3) A District Officer may withhold such certificate for any reasons deemed by him to be sufficient:

Provided that:

- (a) when there is a parent or guardian of a juvenile living and when such parent or guardian is unwilling to grant permission to such juvenile to seek employment the District Officer shall withhold the certificate;
- (b) no juvenile who appears to be below the age of ten years shall be allowed to enter into a contract of service;
- (c) subject to the provisions of the Employment of Women, Young Persons and Children Ordinance, 1933, and subject to the provisions of paragraph (a) of this proviso, nothing in this section shall apply to any juvenile who is employed by the day only and who is accompanied throughout the duration of such employment by an adult relative."

This certificate, it should be noted, is for employment with a specific employer at a stated rate of pay. Moreover it does not apply to juveniles who enter employment without being recruited by a recruiter or engaged by a labour agent.

66. It is probable that these provisions, incomplete as they are, will present serious difficulties in operation. As the Ordinance has only recently been brought into operation, there has not yet been sufficient time to gain experience of its working. But we are sure that the present provisions will be extremely difficult to operate and enforce, and will in addition, frequently cause hardship to the juvenile and his parent or guardian, owing to the necessity of both having to make their way to a District Officer. Besides a juvenile can leave the employment for which he has been recruited and offer himself voluntarily to another employer, in which case no certificate at all is required at present.

67. We consider that in all cases other than that of juveniles who are employed by the day only and return to their homes each night, some certificate should be required. Essentials required in any system recommended.

We consider it essential that:—

- (1) the parent's or guardian's consent should be obtained before the juvenile leaves his home to seek employment;
- (2) a District Officer should endorse the certificate; and
- (3) the certificate should be a means whereby the juvenile can easily and rapidly be traced at any time.

68. The first essential, namely the parent's or guardian's consent, presents difficulties. Not every parent or guardian who agrees to his child leaving home to seek employment will be willing to make the journey to a distant Government station to notify his consent. But we can see no objection to this consent being recorded in writing before a Chief in council and given to the juvenile to take with him for production before the District Officer. (1) Parent's or guardian's consent.

69. As regards the second point, endorsement by a District Officer, we wish to stress the advantages which will result. The first and principal advantage will be the opportunity for scrutiny as regards a juvenile's fitness and age. Under sections 40 and 42 of the Employment of Servants Ordinance, medical examination before entry into employment is necessary in the case of juveniles recruited or engaged; in the case of juveniles who enter employment without being recruited or engaged by a labour agent, there is no statutory provision for medical examination. In the circumstances we consider it absolutely necessary that a juvenile should be required to present himself before a Government officer, and it will be most convenient that this should be a District Officer. Whenever a District Officer thinks it all necessary, he can have a juvenile medically examined before a certificate is issued. As regards medical examination, a further check is of course provided by section 27 of the Ordinance, which reads:— (2) Endorsement by District Officer.

“No person shall employ a juvenile or cause a juvenile to be employed as a porter, fuel cutter, trolley or rickshaw boy or in any other class of labour for which in the opinion of a Government medical officer he is physically unsuitable.”

(3) Identification.

70. The third essential, provision of means of tracing a juvenile easily and rapidly at any time, is of the greatest importance. Certain identification of an African is almost impossible of achievement, without recorded finger-prints. We are aware of the objections which are frequently raised to the recording of finger-prints in this manner, but it is our opinion that these objections can easily be discounted. The main objections, we feel, are not to the recording of finger-prints but to the detailed and, on occasion, onerous provisions of the Native Registration Ordinance. We hasten to state categorically that if finger-print identification of juveniles is to be introduced, such identification should not come within the application of the Native Registration Ordinance. All that is necessary is that the juvenile's finger-prints should be recorded, and that a certificate corresponding to a passport containing only the juvenile's name and tribal particulars, a note of the parent's or guardian's consent, the District Officer's signature and the serial number, should be issued.

71. We would quote from a memorandum received from Archdeacon Owen:—

"From the native's point of view there is no need for anything more than the equivalent of what appears on the ordinary British passport, but, as a matter of convenience, substituting finger-prints for the photograph. This should be a document concerned solely and only for identification, and with nothing else. I can see no valid objection to this from either side. Penalties concerning it, if imposed on the native, should be minimal."

And also from the evidence of a native witness, the Rev. E. Oyuwaya:—

"I consider identification of juveniles who leave their homes to go to work most important. It is essential that the parent's consent should be given before the chief and elders. The parent should also be able to find out at any time where his son is. I have no objection to the use of finger-prints; in fact, I know this is the only certain method of identification. But I would stress that the certificate or pass given to juveniles should be easily distinguishable from the registration certificate, possession of which is usually confused with liability to pay tax. Moreover juveniles should not be subject to the many provisions of the Registration Ordinance. The sole purpose of identification should be the protection of the

juvenile; in this way no objection can be raised. But it will be necessary for the Government to make the point clear."

These views were generally endorsed at meetings of the North and South Kavirondo Local Native Councils at their meetings held in July. These Councils represent the main areas from which juvenile labour comes in the Nyanza Province. With these views we wholeheartedly agree.

72. Several further small points arise; the parent or guardian will require to be provided with a note of the serial number of the juvenile's identity certificate; to provide means of tracing juveniles once they have left their home, a record of engagement and discharges will require to be furnished by employers; the employment of juveniles who are not in possession of certificates will require to be prohibited; if necessary, a juvenile's certificate may be endorsed for employment in a particular area only or for a limited period; generally, the possession of a certificate will entitle a juvenile to seek work anywhere away from his home.

Other requirements.

73. A scheme such as that detailed above would, we feel sure, result in 100 per cent efficiency; even though a juvenile destroyed his certificate and refused to disclose his identity, his particulars could always be traced and discovered from his recorded finger-prints. We do, however, see objections to such a system on the ground that it is unnecessarily complicated and costly. The Chief Registrar of Natives estimates that an annual expenditure of £700 would be required; moreover, we are not fully convinced that so complete an identification system is absolutely necessary. The number of juveniles likely to destroy or lose their certificates and refuse to disclose their identity must be few. Moreover, the recording of finger-prints can only be accomplished conveniently in a Government station and there will be hardship upon juveniles in requiring them to travel in some cases long distances to a Government station to obtain a certificate in order that they may return to work and sleep upon a farm in fairly close proximity to their homes. We have therefore come to the conclusion that the system as detailed above but without the recording of finger-prints would probably be sufficient. In making the recommendation below, we would point out that should the system we recommend for introduction forthwith turn out later to be insufficient or unsatisfactory, the solution will be to incorporate full finger-print identification on the lines we have set out above.

General considerations.

Recommendation.

We therefore recommend:—

VIII—(1) That no person should be permitted to employ any juvenile in work which entails the juvenile sleeping away from his home unless such juvenile is in possession of an identity certificate.

(2) That the certificate should record the juvenile's name and tribal particulars, his parent's or guardian's consent, the serial number and a District Officer's signature.

(3) That unless it is otherwise made a condition of the certificate, the possession of a certificate entitles the holder to seek work anywhere away from his home.

(4) That the parent's or guardian's consent may be recorded in writing before a Chief in council and such record should be filed with the duplicate copy of the certificate in the District Office. A second copy of the note of the parent's or guardian's consent should, after it has been marked with the serial number of the juvenile's certificate, be returned for retention by the parent or guardian.

(5) That the triplicate copy of the juvenile's certificate be forwarded to the Chief Registrar of Natives.

(6) That employers should be required to furnish a monthly return of all juveniles engaged or discharged during the month to the Chief Registrar of Natives; no nil return is necessary.

(7) That every juvenile upon issue of a certificate shall also receive a disc in a form convenient for carrying upon his person and marked with his District letters and the serial number of his certificate. (This will provide an easy means of tracing any juvenile who has lost or destroyed his certificate.)

(8) That arrangements should be made for District Officers to issue such certificates while on tour as well as in the Government Station.

The application of the Native Registration Ordinance to persons under sixteen in the Nakuru District should be cancelled.

Sanctions.

74. We do not propose that any sanction should be enforceable against a juvenile in respect of the possession or failure to possess a certificate beyond repatriation should he be found away from his home without a certificate, but sanctions will be required against employers.

Introduction of system.

75. This system will require to be brought into operation from a given date of which adequate notice should be given in advance; upon expiry of this date all juveniles in employment or desiring to enter employment away from their homes should be in possession of certificates. We anticipate difficulties in the transitional period. As a temporary expedient to avoid the necessity of every juvenile at

present in employment returning home to obtain a certificate, we suggest that District Officers and Labour Officers should be empowered to issue temporary certificates without discs, valid for not more than six months, to juveniles already in employment, who apply for them.

76. Although it is outside our terms of reference, there is one further point which we would mention in connexion with this system of identification with or without recorded finger-prints. We consider that only the detailed particulars described in our recommendation above should be included in the identity certificate. We have already recommended that juveniles should be allowed to enter into verbal contracts only. No written record of the contract of service is therefore required on their certificates. We would add that in our opinion the chief objection to the present registration system is that the particulars of identity and employment records appear upon the same document with the result that the impression is immediately given that all natives are labour. We cannot see that there will be any possible objection to an identity certificate for adults on the lines which we have recommended for juveniles above; this identity certificate would be equivalent to a passport with the substitution of recorded finger-prints for photographs; while labour records could be issued only to those natives who wish to enter employment. This separation of identity and labour records for adults is a measure worthy of consideration and would follow naturally upon reaching adulthood from the use by juveniles of the type of identity certificate which we have recommended.

CHAPTER IX—SUMMARY OF RECOMMENDATIONS

77. We recommend:—

I—That juveniles should be allowed only to enter into verbal contracts of service for a daily task or for the performance of thirty days' work within a period of forty-two days as provided under section 4 (d) of the Employment of Servants Ordinance.

Form of contracts.

II—That the recruiting of juveniles should be confined to private recruiting and that the recruiting of juveniles by professional recruiters should be prohibited.

Recruiting.

III—That the staff of the Labour Section should be increased by the appointment of at least two more Labour Officers, one of whom should be stationed on the Coast and the other available for the extra work which will be inevitable if the closer regulation and control of juvenile labour which we recommend is to be effected.

Staff of Labour Section.

Legislation relating to employment of juveniles.

IV—That all the provisions in the Employment of Servants Ordinance and the Employment of Women, Young Persons and Children Ordinance which relate to juveniles should be grouped together in one comprehensive enactment concerning the employment of juveniles.

Minimum age for juvenile employment generally.

V—That, subject to the restrictions mentioned below regarding certain forms of employment, the minimum age at which juveniles should be allowed to enter into employment should be raised to the apparent age of twelve years.

Minimum age for employment in industry.

VI—That sub-section (1) of section 4 of the Employment of Women, Young Persons and Children Ordinance should be deleted from the Ordinance so that no child, i.e. no person under the age of fourteen years, should be employed in any industrial undertaking.

Penal sanctions.

VII—That juveniles should be removed completely from the scope of penal sanctions under the Employment of Servants Ordinance.

System of identification and control.

VIII—(1) That no person should be permitted to employ any juvenile in work which entails the juvenile sleeping away from his home unless such juvenile is in possession of an identity certificate.

(2) That the certificate should record the juvenile's name and tribal particulars, his parent's or guardian's consent, the serial number and a District Officer's signature.

(3) That unless it is otherwise made a condition of the certificate, the possession of a certificate entitles the holder to seek work anywhere away from his home.

(4) That the parent's or guardian's consent may be recorded in writing before a Chief in council and such record should be filed with the duplicate copy of the certificate in the District Office. A second copy of the note of the parent's or guardian's consent should, after it has been marked with the serial number of the juvenile's certificate, be returned for retention by the parent or guardian.

(5) That the triplicate copy of the juvenile's certificate be forwarded to the Chief Registrar of Natives.

(6) That employers should be required to furnish a monthly return of all juveniles engaged or discharged during the month to the Chief Registrar of Natives; no nil return is necessary.

(7) That every juvenile upon issue of a certificate shall also receive a disc in a form convenient for carrying upon his person and marked with his District letters and the serial number of his certificate. (This will provide an easy means of tracing any juvenile who has lost or destroyed his certificate.)

(8) That arrangements should be made for District Officers to issue such certificates while on tour as well as in the Government Station.

78. In conclusion we wish to place on record our appreciation of the efficient work of our Secretary, Mr. W. A. W. Clark. By his diligent collection of evidence and preparation of précis and through his own practical experience in Nyanza of the problems with which we dealt, his services have been invaluable to the Committee.

We have the honour to be,

Your Excellency's obedient servants,

E. B. HOSKING, *Chairman*

H. R. MONTGOMERY

S. V. COOKE

R. G. M. CALDERWOOD

} *Members*

W. A. W. CLARK, *Secretary*.

NAIROBI

6th October, 1938

APPENDIX A
RELEVANT PROVISIONS OF EXISTING LEGISLATION
1—Employment of Servants Ordinance, 1937

Section 2.

Juvenile.

“juvenile” means an Arab, a Baluchi born in Africa, a Comoro Islander, a Malagasy, a Somali or a native, who has not reached the apparent age of sixteen years;

To recruit.

“to recruit” means to obtain or attempt to obtain the supply of labour of Arabs, Baluchis born in Africa, Comoro Islanders, Malagasies, Somalis or natives who do not spontaneously offer their services at the place of employment or at the office of a labour agent and “recruiting” includes all operations undertaken with that object in view.

Section 4.

Employer and servant may enter into a contract for performance of thirty days' work within a period of forty-two days.

Notwithstanding anything contained in section 3 of this Ordinance, it shall be competent for any person and an Arab, a Baluchi born in Africa, a Comoro Islander, a Malagasy, a Somali or a native to enter into a contract of service for the servant to work for the employer for thirty days (in succession or otherwise at the election of the employer) and in such cases—

- (a) the employer shall, except when it is impossible for him to do so by reason of any default on the part of the servant, provide thirty tasks for such servant or shall provide thirty days' work for such servant;
- (b) the employer shall provide food for the servant on payment in lieu thereof during the continuance of the contract except for days on which the servant is absent from his place of employment without lawful cause or the mutual consent of the parties;
- (c) it shall not be necessary, if the contract be in writing, to comply with any of the formalities prescribed;
- (d) the contract shall be known as a “ticket contract” and shall not, save as is provided in section 60 of this Ordinance, extend beyond a period of forty-two days from the making thereof. On the expiration of such period the servant shall be entitled to the payment of all wages accrued due in respect of the number of daily tasks which he has performed or of the number of days he has worked in the proportion which such number of tasks or days bear to thirty;

- (e) where a ticket contract is entered into the employer shall supply the servant with a ticket which shall be in such form as may be prescribed;
- (f) if the servant is absent from work through illness, the employer shall, at his own expense, if the servant is residing on the employer's premises, cause such servant to be properly fed during the period of his illness for the unexpired period of forty-two days.

Section 17.

(1) A contract may be entered into under which a task or piece-work is to be performed for an agreed remuneration. Task or piece-work.

(2) When a task has not been completed the servant shall, at the option of his employer, be entitled to be paid by his employer at the end of the day in proportion to the amount of the task which has been performed or to complete the task on the following day in which case he shall be entitled to be paid on the completion of the task.

(3) In the case of piecework the servant shall be paid by his employer at the end of each calendar month in proportion to the amount of work which he has performed during such month or on the completion of such work, whichever date is the earlier.

APPRENTICESHIP CONTRACTS

Section 19.

The father, or in the case of a fatherless child the guardian, of an Arab or a native child, or of the child of a Malagasy, a Comoro Islander, a Baluchi born in Africa, or a Somali may, if such child is above the age of ten years and under the age of sixteen, with the consent of such child testified by his execution of the deed of apprenticeship, apprentice him to a trade or employment in which art or skill is required, or as a domestic servant, for any term not exceeding five years. Apprenticeship of children by parents or guardians.

Section 20.

Whenever a juvenile is without known relatives, and is without a guardian, a magistrate of the district in which such juvenile resides or is found may authorize such juvenile to be apprenticed to a trade or employment mentioned in the last preceding section, and may appoint some fit person to execute the deed of apprenticeship and to act generally as guardian of such juvenile. Apprenticeship of children without known relatives or a guardian.

Section 21.

When persons
may apprentice
themselves.

An Arab, a Malagasy, a Comoro Islander, a Baluchi born in Africa, a Somali or a native, of the age of sixteen years or upwards, not being under a deed of apprenticeship, and subject to the provisions of section 23 of this Ordinance, may apprentice himself for a term not exceeding five years to a trade or employment in which art or skill is required or as a domestic servant.

Section 22.

Assignment of
contracts of
apprenticeship.

Every contract of apprenticeship may, with the consent of the parties thereto, and subject to the next succeeding section, be assigned.

Section 23.

Contracts and
assignments
invalid unless by
deed approved.

(1) Every contract of apprenticeship and every assignment thereof shall be by deed, and no such deed shall be valid unless attested by and made with the approval of a magistrate having jurisdiction in the district where the person to be apprenticed shall be living, and unless such approval is certified in writing under the hand of the magistrate on the deed of apprenticeship or assignment.

(2) Every deed of apprenticeship shall be in one of the forms in the Schedule to this Ordinance, or to the like effect.

Section 24.

Apprentices
not to be
removed from
the Colony.

Whoever removes or attempts to remove from the Colony any person apprenticed under this Ordinance during his apprenticeship without the authority in writing (the proof whereof shall lie on him) of the Colonial Secretary or any officer duly authorized in writing by the Colonial Secretary shall be liable on conviction to a fine not exceeding one hundred and fifty pounds and in default of payment to imprisonment for a period not exceeding twelve months.

Section 25.

Decoying
apprentices.

Whoever induces or attempts to induce any person apprenticed under this Ordinance to quit the service of his employer shall be liable on conviction to a fine not exceeding twenty-five pounds and in default of payment to imprisonment for a period not exceeding three months.

Section 26.

Apprentices
retained after
expiration of
contract
entitled to wages.

If any person with whom an apprentice under this Ordinance has been placed shall retain such apprentice in his service after the stipulated period of service has expired, without any agreement between the parties for the payment of

wages, the apprentice shall be entitled to recover from the person so retaining him wages at the ordinary current rate payable for service similar to that performed by such apprentice.

JUVENILES

Section 27.

No person shall employ a juvenile or cause a juvenile to be employed as a porter, fuel cutter, trolley or rickshaw boy or in any other class of labour for which in the opinion of a Government medical officer he is physically unsuitable.

Prohibition
against employ-
ment of juvenile.

28. (1) No labour agent shall engage, and no private or professional recruiter shall recruit, any juvenile unless such juvenile has obtained a certificate from a District Officer, which certificate shall be in the form set out in the Schedule to this Ordinance and shall, if such be the case, state that the permission of the father or guardian of such juvenile has been obtained.

Employment of
juveniles.

(2) A juvenile who has obtained such a certificate may, subject to the provisions of this Ordinance, enter into a contract of service.

(3) A District Officer may withhold such certificate for any reason deemed by him to be sufficient:

Provided that—

- (a) when there is a parent or guardian of a juvenile living and when such parent or guardian is unwilling to grant permission to such juvenile to seek employment the District Officer shall withhold the certificate;
- (b) no juvenile who appears to be below the age of ten years shall be allowed to enter into a contract of service;
- (c) subject to the provisions of the Employment of Women, Young Persons and Children Ordinance, 1933, and subject to the provisions of paragraph (a) of this proviso, nothing in this section shall apply to any juvenile who is employed by the day only and who is accompanied throughout the duration of such employment by an adult relative.

No. 14 of 1933.

Section 29.

(1) A District Officer of the district in which any juvenile is employed or seeking employment, or a labour officer, may terminate or cancel any contract of service, which has been

Powers of
district officer
and
labour officer.

entered into by a juvenile, on the grounds that the employer is an undesirable character, or that the nature of employment is dangerous, or immoral, or injurious to the health of such juvenile or for any other reasonable cause.

(2) Any person aggrieved by the action or by the order of a District Officer or a Labour Officer under the provisions of this section may, within thirty days after the date of such action or such order as the case may be, appeal to a Provincial Commissioner whose decision shall be final.

Section 30.

Apprenticeship
contracts not
affected.

Nothing in sections 17 and 28 of this Ordinance contained shall be deemed to affect or apply to apprenticeship contracts.

2—Employment of Women, Young Persons and Children Ordinance, 1933

Section 2.

Interpretation.

“child” means a person under the age of fourteen years;

“young person” means a person who has ceased to be a child and who is under the age of eighteen years;

“industrial undertaking” has, with respect to the employment of children, young persons and women, the meanings respectively assigned thereto in the Convention set out in Parts I, II and III of the Schedule to this Ordinance;

“mine” includes any undertaking, whether public or private, for the extraction of any substance from under the surface of the earth.

Section 3.

Savings.

(1) The provisions of this Ordinance shall be in addition to and not in derogation of any of the provisions of any other Ordinance restricting the employment of women, young persons, or children.

(2) Nothing in this Ordinance contained shall apply to an industrial undertaking or a ship in which only members of the same family are employed.

(3) Nothing in this Ordinance contained shall prevent the employment in any industrial undertaking or ship of a child lawfully so employed at the commencement of this Ordinance.

Section 4.

(1) No child under the age of twelve shall be employed in any industrial undertaking.

Restriction on the employment of women, young persons and children in industrial undertakings or in ships.

(2) No child shall be employed in any industrial undertaking, in attendance on any machinery, or in any open-cast workings or sub-surface workings which are entered by means of a shaft or adit.

(3) Notwithstanding the provisions of sub-section (1) of this section the Governor in Council may by order prohibit the employment of any child in any specified trade or industrial undertaking.

(4) No child shall be employed in any ship except to the extent to which and in the circumstances in which such employment is permitted under the Convention set out in Part IV of the Schedule to this Ordinance:

Provided that the provisions of this sub-section shall not apply in the case of a child who is employed in a native vessel or is under the care of a relative who is a member of the crew of the same vessel, if such relative is, in the opinion of a duly authorized officer, a fit and proper person to have charge of such child.

(5) No young person or woman shall be employed at night in any industrial undertaking, except to the extent to which and in the circumstances in which such employment is permitted under the conventions set out in Part II and Part III respectively of the Schedule to this Ordinance.

(6) Where young persons are employed in any industrial undertaking a register of the young persons so employed, of their ages or apparent ages, and of the dates on which they enter or leave the service of their employer, shall be kept, and shall at all times be open to inspection by any duly authorized officer.

(7) The master of every ship shall, if young persons under the age of sixteen years are employed therein, keep a register of those persons with particulars of their ages or apparent ages and of the dates on which they become or cease to be members of the crew, and the register so kept shall be open to inspection by an authorized officer: provided that this sub-section shall not apply to the master of a native vessel.

Employment of
young persons
as trimmers or
stokers.

Section 5.

(1) Subject to the provisions of Articles 3 and 4 of the Convention set out in Part V of the Schedule to this Ordinance, no young person shall be employed on work as a trimmer or stoker in any ship.

(2) The master of every ship shall, if young persons are so employed therein, keep a register of those persons with particulars of their ages or apparent ages and of the dates on which they become or cease to be members of the crew.

Section 6.

Penalties.

(1) If any person employs a child or a young person in any industrial undertaking in contravention of this Ordinance he shall be liable for each offence to a fine not exceeding two pounds, or, in the case of a second or subsequent offence, not exceeding five pounds; and where a child is taken into employment in any industrial undertaking in contravention of this Ordinance on the production by or with the privity of the parent, of a false or forged certificate, or on the false representation of his parent that the child or young person is of an age at which such employment is not in contravention of this Ordinance, that parent shall be liable to a fine not exceeding two pounds.

(3) If any person employs a woman in contravention of this Ordinance he shall be liable to a fine of twenty pounds.

Section 6.

(2) If any child is employed in any ship, or any young person is employed as a trimmer or stoker in any ship in contravention of this Ordinance the master of the ship shall be liable for each offence to a fine not exceeding two pounds, or, in the case of a second or subsequent offence, not exceeding five pounds, and where a child or young person, as the case may be, is taken into employment in any ship in contravention of this Ordinance on the production, by or with the privity of the parent, of a false or forged certificate, or on the false representation of his parent that the child or young person is of an age at which such employment is not in contravention of this Ordinance, that parent shall be liable to a fine not exceeding two pounds.

(4) If any person who is by this Ordinance required to keep a register fails to keep such a register, or refuses or neglects, when required, to produce it for inspection by a duly authorized officer, he shall be liable to a fine not exceeding twenty pounds.

SCHEDULE

PART I

CONVENTION FIXING MINIMUM AGE FOR ADMISSION OF
CHILDREN TO INDUSTRIAL EMPLOYMENT*Article 1*

For the purposes of this Convention the term "industrial undertaking" includes particularly:—

- (a) Mines, quarries, and other works for the extraction of minerals from the earth.
- (b) Industries in which articles are manufactured, altered, cleaned, repaired, ornamented, finished, adapted for sale, broken up or demolished, or in which materials are transformed, including shipbuilding, and the generation, transformation, and transmission of electricity and motive power of any kind.
- (c) Construction, reconstruction, maintenance, repair, alteration, or demolition of any building, railway, tramway, harbour, dock, pier, canal, inland waterway, road, tunnel, bridge, viaduct, sewer, drain, well, telegraphic or telephone installation, electrical undertaking, gas work, water work, or other work of construction, as well as the preparation for or laying the foundations of any such work or structure.
- (d) Transport of passengers or goods by road or rail or inland waterway, including the handling of goods at docks, quays, wharves, and warehouses, but excluding transport by hand.

The competent authority in each country shall define the line of division which separates industry from commerce and agriculture.

Article 2

Children under the age of fourteen years shall not be employed or work in any public or private industrial undertaking, or in any branch thereof, other than an undertaking in which only members of the same family are employed.

Article 3

The provisions of Article 2 shall not apply to work done by children in technical schools, provided that such work is approved and supervised by public authority.

Article 4

In order to facilitate the enforcement of the provisions of this Convention, every employer in an industrial undertaking shall be required to keep a register of all persons under the age of sixteen years employed by him, and of the dates of their birth.

PART II

**CONVENTION CONCERNING THE NIGHT WORK OF YOUNG
PERSONS EMPLOYED IN INDUSTRY**

Article 1

For the purposes of this Convention the term "industrial undertaking" includes particularly:—

- (a) Mines, quarries, and other works for the extraction of minerals from the earth.
- (b) Industries in which articles are manufactured, altered, cleaned, repaired, ornamented, finished, adapted for sale, broken up or demolished, or in which materials are transformed, including shipbuilding, and the generation, transformation, and transmission of electricity or motive power of any kind.
- (c) Construction, reconstruction, maintenance, repair, alteration, or demolition of any building, railway, tramway, harbour, dock, pier, canal, inland waterway, road, tunnel, bridge, viaduct, sewer, drain, well, telegraphic or telephonic installation, electrical undertaking, gas work, water work, or other work of construction, as well as the preparation for or laying the foundations of any such work or structure.
- (d) Transport of passengers or goods by road or rail, including the handling of goods at docks, quays, wharves and warehouses, but excluding transport by hand.

The competent authority in each country shall define the line of division which separates industry from commerce and agriculture.

Article 2

Young persons under eighteen years of age shall not be employed during the night in any public or private industrial undertaking, or in any branch thereof, other than an undertaking in which only members of the same family are employed, except as hereinafter provided for.

Young persons over the age of sixteen may be employed during the night in the following industrial undertakings on work which by reason of the nature of the process is required to be carried out continuously day and night:—

- (a) Manufacture of iron and steel; process in which reverberatory or regenerative furnaces are used, and galvanizing of sheet metal or wire (except the pickling process).
- (b) Glass works.
- (c) Manufacture of paper.
- (d) Manufacture of raw sugar.
- (e) Gold-mining reduction work.

Article 3

For the purpose of this Convention the term "night" signifies a period of at least eleven consecutive hours, including the interval between ten o'clock in the evening and five o'clock in the morning.

In coal and lignite mines work may be carried on in the interval between ten o'clock in the evening and five o'clock in the morning, if an interval of ordinarily fifteen hours, and in no case less than thirteen hours, separates two periods of work.

Where night work in the baking industry is prohibited for all workers, the interval between nine o'clock in the evening and four o'clock in the morning may be substituted in the baking industry for the interval between ten o'clock in the evening and five o'clock in the morning.

Article 4

The provisions of Articles 2 and 3 shall not apply to the night work of young persons between the ages of sixteen and eighteen years in cases of emergencies which could not have been controlled or foreseen, which are not of a periodical character, and which interfere with the normal working of the industrial undertaking.

Article 7

The prohibition of night work may be suspended by the Government, for young persons between the ages of sixteen and eighteen years, when in case of serious emergency the public interest demands it.

PART IV**CONVENTION FIXING THE MINIMUM AGE FOR ADMISSION
OF CHILDREN TO EMPLOYMENT AT SEA***Article 1*

For the purpose of this Convention the term "vessel" includes all ships, and boats, of any nature whatsoever, engaged in maritime navigation, whether publicly or privately owned; it excludes ships of war.

Article 2

Children under the age of fourteen years shall not be employed or work on vessels other than vessels upon which only members of the same family are employed.

Article 3

The provisions of Article 2 shall not apply to work done by children on school-ships or training-ships provided that such work is approved and supervised by public authority.

Article 4

In order to facilitate the enforcement of the provisions of this Convention, every shipmaster shall be required to keep a register of all persons under the age of sixteen years employed on board his vessel, or a list of them in the articles of agreement, and of the dates of their births.

PART V**CONVENTION FIXING THE MINIMUM AGE FOR THE ADMISSION
OF YOUNG PERSONS TO EMPLOYMENT AS TRIMMERS OR
STOKERS***Article 1*

For the purpose of this Convention, the term "vessel" includes all ships and boats, of any nature whatsoever, engaged in maritime navigation, whether publicly or privately owned; it excludes ships of war.

Article 2

Young persons under the age of eighteen years shall not be employed or work on vessels as trimmers or stokers.

Article 3

The provisions of Article 2 shall not apply:—

- (a) To work done by young persons on school-ships or on training-ships, provided that such work is approved and supervised by public authority;
- (b) To the employment of young persons on vessels mainly propelled by other means than steam;
- (c) To young persons of not less than sixteen years of age, who, if found physically fit after medical examination, may be employed as trimmers or stokers on vessels exclusively engaged in the coastal trade of India and of Japan, subject to regulations made after consultation with the most representative organizations of employers and workers in those countries.

Article 4

When a trimmer or stoker is required in a port where young persons of less than eighteen years of age only are available, such young persons may be employed and in that case it shall be necessary to engage two young persons in place of the trimmer or stoker required. Such young persons shall be at least sixteen years of age.

Article 5

In order to facilitate the enforcement of the provisions of this Convention, every shipmaster shall be required to keep a register of all persons under the age of eighteen years employed on board his vessel, or a list of them in the articles of agreement, and of the dates of their births.

Article 6

Articles of agreement shall contain a brief summary of the provisions of this Convention.

Article 11

Each member of the International Labour Organization which ratifies the Convention engages to apply it to its colonies, possessions and protectorates, in accordance with the provisions of Article 421 of the Treaty of Versailles and of the corresponding Articles of the other Treaties of Peace.

APPENDIX B
PERSONS FROM WHOM WRITTEN EVIDENCE OR MEMORANDA
WERE RECEIVED

The Kenya Tea Growers Association
The Nairobi Coffee Curing Co., Ltd.
The Molo and Mau Summit Settlers Association
The Kenya African Teachers Union
The Ven. Archdeacon Owen, Church Missionary Society.
Mr. E. McInnes, Labour Superintendent, African High-
lands Produce Co., Ltd., Kisii
Mr. W. G. L. Lillywhite, Kilifi
Mr. M. Blundell, Nakuru
Dr. H. L. Gordon, Nairobi
Mr. E. A. Evans, Nyeri
Mr. E. E. Bladen-Taylor, Escarpment
Col. H. F. Stoneham, Kitale
Rev. E. Apindi, Nyanza
Rev. E. Oyuwaya, Nyanza
Rev. J. Owuor, Nyanza.
Acting Director of Education
Principal Labour Officer
Chief Registrar of Natives



COLONY AND PROTECTORATE OF KENYA

SETTLEMENT COMMITTEE REPORT

Price 2/50

1939

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**SETTLEMENT COMMITTEE
REPORT**

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YOUR EXCELLENCY,

On the motion of Major Cavendish-Bentinck it was decided by the Legislative Council on the 11th August, 1937, "that a Committee be appointed to consider to what extent further assistance to settlers with approved qualifications can or could reasonably be provided by the Land Bank or by Government, and what provision could be made for imparting knowledge and experience of local conditions to newcomers, with a view to the establishment of a practical Settlement Scheme based on something tangible".

2. In accordance with this decision a Committee consisting of—

The Hon. E. B. Hosking, O.B.E. (*Chairman*);

Mr. G. J. L. Burton, M.C.;

The Hon. R. Daubney, O.B.E.;

Major the Hon. F. W. Cavendish-Bentinck;

Mr. Will Evans;

Mr. J. E. A. Wolryche Whitmore;

Capt. F. O'B. Wilson, C.M.G., D.S.O.;

Major Basil Hill;

Mr. J. L. Theron Focks;

Mr. C. E. Mortimer, M.B.E. (*Secretary*),

was appointed on the 29th September, 1937, with the following terms of reference:—

"To consider, with a view to encouraging additional and closer settlement, what further assistance and facilities to new settlers can reasonably be provided, and to make recommendations for the inauguration of practical Settlement Schemes, and for the setting up of a permanent body for the administration and control of such Schemes".

3. Many meetings of the full Committee were held and numerous Sub-Committee Meetings. Twenty-two witnesses have appeared before the Committee and given evidence, and, in addition, memoranda on Farming Costs have been submitted by thirty-three persons and Farmers' Associations.

4. For several months during 1938, whilst the report was being compiled, Messrs. Daubney, Evans, Wolryche-Whitmore and Capt. F. O'B. Wilson were absent from the Colony. Mr. Evans has not yet returned.

5. The Hon. E. H. Wright was appointed as an additional member on the 29th June, 1938, but left the Colony in November, 1938, for health reasons.

6. On the 4th August, 1938, Mr. Hosking resigned the Chairmanship of the Committee and Mr. C. E. Mortimer was appointed in his stead.

7. We now have the honour to present our report which for convenience we have divided into the following sections:

- I. Introduction.
- II. Summary of Recommendations.
- III. Land available for Settlement.
- IV. Water Supplies.
- V. Farming Prospects and Costs in Kenya.
- VI. Detailed Schemes.
- VII. Agricultural Education.
- VIII. Finance.
- IX. Administration and Control.
- X. General.

I—INTRODUCTION

8. We began our task by a preliminary survey and discussion, as a result of which we decided that we were justified in proceeding with the consideration of our terms of reference on certain premises which in our opinion are beyond question:—

(a) That the evidence and experience available indicate that the climate of the Kenya Highlands and the steadily improving conditions prevailing in the Colony are such that settlers can be invited with complete confidence to make their homes here.

(b) That it is of vital importance to the further progress of the Colony that the number of farmers be increased and that the land be more effectively occupied and development intensified, and that Government expenditure on such an objective is justified.

(c) That many of the existing settlers are holding areas of land in excess of what they can reasonably hope to develop, and that this surplus acreage might well be disposed of at prices which would make it possible for an incoming settler to succeed.

(d) That so long as labour is properly organized, housed, fed and paid reasonably we do not anticipate any labour shortage.

9. By way of a preamble to our report we would stress that the early settlers were, in a sense, experimentalists, and some of them, as has happened in all new countries, started with too little capital and often spent it unwisely; many of them were without previous farming experience and had everything to learn about the conditions of life and agriculture in a new and untried land.

10. These normal difficulties were accentuated by the post-war settlement taking place during a boom period when prices of produce were abnormally high. This resulted in too high a price being paid for land, in over-borrowing at high interest rates for development and in extravagant expenditure. The collapse of the boom, and its succession by a world depression, proved disastrous for many settlers who were still developing.

11. Taking these factors into account it speaks remarkably well for the agricultural conditions of the Colony, coupled with the pluck and perseverance of the settlers

themselves, that the majority of them have survived, with but little Government assistance, through an almost unprecedented world-wide economic blizzard, the first effect of which was to lower the prices of the primary products on which Kenya depends so much for its prosperity.

It does not come within the scope of our terms of reference to make any recommendations as to further measures for consolidating the present position of existing farmers, but as we are recommending financial assistance for newcomers we trust that the appropriate authorities will do all that is possible to assist the established agriculturalists who are indeed the pioneers who have rendered new settlement possible.

12. New settlers will begin under more normal conditions and will be able to profit by the experience of the pioneers, and later in this report we recommend that they should have the additional benefit of an organization that will be charged with the specific task of giving expert advice on local farming conditions. In our view new settlers of farming stock should be particularly encouraged, as we consider it imperative that a flow of immigrants of this type be fostered.

13. Without minimizing the difficulties that will inevitably lie in the path of any new colonist, we are satisfied that Kenya can offer to a prospective farmer attractions which compare favourably with those of any other part of the Empire. The great improvement in marketing facilities, the advance in public health, agricultural and veterinary research and farming experience, the wider range of crops available, and the progress in communications which have taken place within recent years, should remove most of the difficulties experienced by the pioneer settlers.

14. Educational facilities are now such that anxiety on this account may be banished. A note on this subject by the Acting Director of Education appears as Appendix V.

15. Careful consideration was given to the question of labour supplies and the fear that had been expressed in some quarters that any considerable increase in white settlement would jeopardize the supply of essential labour for the existing settlers. Whilst recognizing that there may be seasonal and regional difficulties, we are of the opinion, after carefully considering the matter, that the labour question will not be a bar to a successful advance in settlement. In few parts of the

Colonial Empire is the supply of labour so contiguous to the demand or the relations happier between employer and employed.

16. We are also of the opinion that the increasing development of "mixed farming", as opposed to single crop farming, will result in economies in the utilization of the labour supply at any time available.

17. We next considered the type of farming to be encouraged under any settlement proposals, and reached the conclusion that the background of the main scheme for assisted settlement should be the mixed farming unit, i.e. mixed crop and stock farming. We recognize, however, that there are portions of the Highlands which can best be developed as large-scale cattle or sheep ranches, and others which are well suited to permanent plantation crops.

18. Information is now available as to the agricultural possibilities of the various parts of the Highlands, and is briefly summarized in Appendix II of this Report.

19. We would emphasize our opinion that, for mixed farming in suitable areas, smaller units than have hitherto been regarded as necessary will provide economically satisfactory farms. This subject is enlarged upon in a later section of this Report.

20. Any extension of closer settlement must, of course, be contingent upon the existence of adequate water supplies. We embody in our report proposals for the development of the water resources of the Colony.

21. The Closer Settlement Proposals of 1928 were contingent upon financial assistance being obtained from the Overseas Settlement Department. Tentative enquiries have been made through the Kenya Agent in England and by the members of the Committee in London and there is reason to hope that some help from this source for the initial stages of new settlement (pupilage, etc.) may be forthcoming.

22. The main scheme we have in view will, however, require considerable Government financial backing to give it a start, but would be self-supporting in due course. Other minor schemes to which we shall refer would require independent non-Government support.

II—SUMMARY OF RECOMMENDATIONS

23. (1) Water Supplies

Para. 36

(a) That in the opening up of areas for closer settlement, and also when existing farms are being subdivided for closer settlement, the provision of water supplies should, whenever possible, precede the demarcation of farms.

Para. 36

(b) That a qualified engineer-geologist be engaged for this purpose and to advise farmers.

Para. 37

(c) That financial assistance be given by short-term loans for provision of water supplies on farms.

Para. 37

(d) That arrangements be made for the free railway transport of drilling plants and equipment to and from the siding or station nearest to the farms.

Para. 39

(e) That unsuccessful boring be subsidized by Government on certain conditions.

Para. 40

(f) That application be made to the Colonial Development Fund for assistance in providing further water supplies throughout the country.

(g) That a Government handbook be prepared giving advice to farmers on water supplies.

(2) Squatter Stock and Cattle Cleansing

Para. 54

That the Resident Native Labourers' Ordinance be applied as soon as possible in order to permit districts to remove the menace arising from the abuse of the squatter stock system which at present creates risk of cattle disease, increases farming costs and seriously diminishes the area of land available for increased settlement; also that the Cattle Cleansing Ordinance be generally applied at an early date.

Para. 53

(3) Rinderpest

Para. 57

That action be taken to eradicate rinderpest in order to increase the market for beef.

(4) Game Control

Para. 57

That closer control over game infection and game movements in relation to the spreading of stock diseases be exercised.

(5) Fenced Stock Routes

Para. 58

That in order to facilitate the free movement of live stock steps should be taken forthwith to provide fenced stock routes with the necessary outspans.

(6) Government-aided Land Purchase Scheme

(a) That a scheme be inaugurated for the Government-aided purchase of private land, open to both newcomers and existing residents, providing for advances on long-term loans of either 90% of the purchase price of the land plus 50% of the cost of certain permanent improvements, or, alternatively, 50% of the whole capital required to establish the farm, at interest, amortization and administration rates not exceeding a total of 5½% or 6% per annum. Para. 121
Paras. 48 and 124.

(b) That before the purchase of any land is approved under such a scheme it shall have been favourably reported upon by a competent person as a sound investment. Para. 125

(c) That a register be maintained by the Settlement Organization of farms and portions of farms available for sale, containing all essential details and an inspector's report, and the name of the agent, if any, who is acting on behalf of the vendor. Para. 127

(d) That arrangements be made for assisted settlers to continue to receive expert advice from agricultural staff after they start farming in order that their own interests and those of Government may be safeguarded. Para. 163

(e) That when increased demand for land occurs, Government bring pressure to bear upon present holders of land either to develop their holdings properly or to dispose of undeveloped portions at reasonable prices. Para. 25

(f) That if, in the course of time, there is evidence that privately-owned land is being deliberately withheld from the market, consideration may have to be given to a tax on undeveloped land, but that the introduction of such a tax would at present be premature. Para. 128

(7) Terms of Alienation of Crown Land

That in the alienation of Crown land farms an option be given to purchasers to purchase their land on terms in general conformity with the Government-aided purchase scheme. Para. 130

(8) Conditions of Crown Land Titles

That Government investigate as soon as possible the desirability of freeholding of land or of abolishing the revisable rental system. Para. 131

(9) Residential Settlement

Para. 133

(a) That residential settlement be encouraged and that grants of land for the purpose be made on special terms.

Para. 137

(b) That efforts be made to induce the Railway Council and the Shipping Companies to extend to residential settlers the facilities now granted to agricultural settlers and to widen the terms of the concessions.

(10) Civil and Railway Servants

Para. 139

That special facilities by way of land grants both for farming and residential purposes be offered to Civil and Railway Servants of East African Territories to settle in the Colony.

(11) Government Group Settlement Scheme

Para. 145

That a Group Settlement Scheme be established for the accommodation of locally born people if on full investigation by the Land and Settlement Board such a scheme appears to be feasible.

(12) Private Group Settlement Schemes

Para. 154

That before Government expresses approval of any privately organized group settlement schemes they should be thoroughly examined by the Land and Settlement Board.

(13) Jewish Settlement

Para. 156

That Jewish Settlement should be on the basis of individual farming and not in racial block settlements.

(14) Communal Farming

Para. 160

That communal farming schemes should not be encouraged.

(15) Farm Leases

Para. 161

That, if necessary, local legislation be enacted to make provision for the private leasing of farms.

(16) Agricultural Education

That provision be made for agricultural education by:—

Para. 162

(a) a properly organized pupilage scheme;

Para. 163

(b) short courses at Government farms;

Para. 164

(c) scholarships to Agricultural Colleges in South Africa;

Para. 165

(d) a Government training farm.

(17) Financial Provisions

That financial provision for the main scheme be made by including in the next Government loan schedule a sum of £250,000, and that in the meantime such funds as may be required be advanced by Government. Paras. 172 to 176

That in anticipation of any further provision that may be required in the future, investigation be made into the scheme which we have included in our report for the purchase of land either by Government Bonds, or by funds provided by Government Bond issues.

(18) Administration and Control

(a) That the general administration of settlement policy be in the hands of the Commissioner of Lands and Settlement with the advice of a Land and Settlement Board, the detailed application of the policy to be carried out through the agency of the Kenya Association (1932). Para. 177

(b) That as the schemes recommended produce results, a local settlement officer with agricultural experience be engaged. Para. 178

(c) That a local Advisory Committee be established in each district where necessary. Para. 178

(d) That a Land and Settlement Board be established. Para. 179

(e) That a full-time Settlement Officer in England is essential and that steps should be taken forthwith to secure a successor to Colonel Knaggs. Para. 181

(f) That a settlement handbook be prepared. Para. 185.

(19) Initial Costs to Settlers

That endeavours be made in co-operation with the Overseas Settlement Committee to reduce initial costs for intending settlers in passages and baggage charges, railway transport and pupilage. Para. 189.

(20) Survey Staff

That adequate provision for land survey staff be made to meet present and future requirements for settlement work. Para. 192.

III—AVAILABLE LAND FOR SETTLEMENT

24. The area available for farming in the "Highlands" as now defined is approximately 7,000,000 acres, and the number of existing registered occupiers is rather below 2,000. It might therefore be claimed that the average sized holding, based on these figures, is approximately 3,500 acres. This form of simple arithmetical calculation is, however, misleading. To begin with, there is still a limited amount of unalienated land. Furthermore in certain areas of the Colony individual holdings very much larger than 3,500 acres are necessary for ranching, etc., whereas, in other parts of the country, farms of from 400 acres upwards, suitable for mixed farming, are adequate.

As the country develops, grazing should improve, water supplies increase, and land acquire greater carrying capacity. After careful inquiry into conditions as a whole, we are satisfied that, from the point of view of availability of land, it would, even to-day, be easy to multiply the existing farming population many times over.

The land actually available at the moment can be divided into two categories as follows:—

(a) *Crown Land*.—With the assistance of Schedules provided by the Commissioner of Lands and Settlement, we brought under review the comparatively small areas of unalienated Crown land still remaining, and formed the conclusion that under existing conditions only comparatively little of it was suitable for further intensive settlement.

Meanwhile the area of accessible Crown land which is still available is steadily being reduced by the ordinary processes of land alienation and, so long as Government was taking steps to ensure that land was allotted only in the best interests of the development of the Colony, we did not consider it advisable to request that an embargo be placed on land sales pending the issue of our Report.

(b) *Privately owned land*.—With the assistance of Kenya Association (1932) an endeavour was made to schedule the land in private hands which was available for disposal either as whole farms or as subdivisions.

The result of the inquiry showed that there are very large numbers of farms and subdivisions of farms of varying sizes available for private sale.

With the provision of water supplies, by which further subdivision would be rendered possible, the number could be further increased. In the absence of inspection reports, details cannot at present be given about the quality of all this land, although we know that much of it is good, but the information as to the agricultural potentialities of the various districts to which reference is made in Appendix II will provide a general indication of the possibilities of individual areas. We are, however, recommending in our later proposals that in so far as such land is brought within any Settlement Scheme it should first be reported upon by an officer of the Agricultural Department or some other competent person in conjunction, when desirable, with the advice of a local authority as recommended in paragraph 125 of the Report.

We regard this recommendation as of the utmost importance.

25. In considering the areas that might become available for closer settlement we reviewed the position of leasehold farms on which the development conditions, either implied or expressed, in the Crown leases, had not been fulfilled, and we strongly urge that pressure be brought to bear upon the lessees of such land either to develop their holdings or to dispose of them at reasonable prices to new settlers who would develop them; alternatively, that Government should consider a stricter enforcement of the existing law with a view to recovering the land for the Crown.

We recognize that in many instances large sums of money have been spent on these properties on development which has been allowed to go back during the period of depression through which the Colony has passed, and that in other cases the present holders are mortgagees who have been compelled to foreclose in order to preserve the security for their loans; it is felt, however, that whatever may have been the reasons for past failure to comply with development and maintenance provisions the interests of the development of the Colony under the changed conditions now prevailing make it impossible for Government to acquiesce in large areas of land suitable for development remaining idle.

IV—WATER SUPPLIES

26. We have emphasized the necessity for increasing the number of farmers and ensuring that the land be more effectively occupied and development intensified. We have also expressed the opinion that in suitable areas the mixed farming of smaller units than have hitherto been regarded as necessary must be encouraged.

We have, however, drawn attention in paragraph 20 to the fact that the extension of closer settlement must be contingent upon adequate water supplies, and we would add that this is a basic problem to which adequate consideration has not been given hitherto.

27. Existing subdivisions of agricultural land have been based merely on surface drainage, the usual procedure being that one side of the farm abuts on to an existing stream, the other side of the farm being in many cases "dry".

This form of subdivision naturally does not lend itself to further subdivision for closer settlement, and much more attention must be given in future to the possibilities of increasing water supplies either by means of dams or boreholes.

28. We would stress that most of the highlands of Kenya enjoy good rainfall varying from 25 to 80 inches per annum depending on the district. In spite of what has been said to the contrary, the land in the highlands of Kenya, by reason of its conformation and composition, generally lends itself to the construction of small dams and, on the whole, to the sinking of successful boreholes. The importance of the subject warrants some elaboration in support of this statement, and this will be found in Appendix III kindly contributed by Mr. A. E. M. Tetley, B.Sc., Hydrographic Surveyor, to whom we are much indebted.

29. The details of the boreholes given in the Appendix provide general preliminary data on which the prospects of boring in Kenya may be appreciated, but we would stress that the proportion of successful holes, especially in the basement complex and the volcanic areas, would have been greater than that shown in the Appendix and in the summary on the plan, had some of the hirers of the plant accepted the expert advice given and either put down the boreholes where suggested or not abandoned the boreholes at depths too shallow at which an expert would have expected water.

30. It should, however, also be emphasized that the selection of suitable borehole sites is a matter of difficulty in Kenya and depends on the proper interpretation of

geological and relative data, which entails a considerable amount of detailed work in the field. A certain degree of success has been obtained in some countries by using geophysical methods, but the expense of locating water by this method is so high that, except in certain areas, in Southern Rhodesia for example, where the geological conditions are favourable it is only infrequently used at present. Generally it may be said that the science of geophysics in its application to the elucidation of underground water problems is yet in its infancy and that the results are indefinite. It may be pointed out that in South Africa, where there are about one hundred drilling machines in commission, the Irrigation Department still does not habitually use geophysical methods of locating borehole sites.

31. There is vast scope for boring and much remains to be done in Kenya, especially if closer settlement is to be encouraged. The opinion of Dr. du Toit expressed in his paper "Borehole Water Supplies in the Union of South Africa" in the Proceedings of the South African Society of Civil Engineers, may be noted: ". . . that the occupancy of vast spaces of South Africa and their closer settlement have been made possible principally by the agency of the boring machine. I firmly believe that more has been achieved towards the general development of the country from the comparatively few thousand pounds spent annually upon State boring than from all the other millions spent on large diversion and storage schemes".

32. The Public Works Department of Kenya has twelve percussion type boring plants with rated capacity of 1,000 feet, of which two are on hire at present and ten in store. On account of the age of the machines they have now reached the stage when they require rebuilding and overhauling, and certain essential boring tools require replacement. The Public Works Department boring plants are extremely heavy and on this account are expensive to move, whereas the lighter types now available have distinct advantages for drilling shallow holes as the component units of the drill can be transported by lorry. At present, Government hires out boring plants at the rate of Sh. 20 per day for the first twenty-eight days and Sh. 15 per day thereafter. In addition a deposit of £75 to cover daily charges and a Banker's Security Bond of £75 to cover any damage to the machine are also required. One of the essential conditions attaching to the use of these plants is that the contractor must provide an approved driller to operate the plant. Up to now an in-

sufficient number of approved drillers have been available. The work of a drill foreman is (apart from the necessity of carrying out running repairs) a skilled one, although to the casual observer it may not appear so. It has on a number of occasions been suggested that the plants be operated by untrained men; such action would result in crooked boreholes, lost and damaged tools, expensive fishing jobs, damage to the plant and frequent abandonment of boreholes.

33. In other countries, e.g. the Union of South Africa, where work is financed by Government, through the Land Bank, it is usual for Government to carry out the selection of borehole sites and to carry out the drilling by a Government Department, or very occasionally through a private contractor under contract to Government. The reason for the work being carried out by Government is that no satisfactory method, other than the payment per day of Government operated drills, has proved satisfactory in practice.

34. The question as to whether boring should be undertaken by Government or left to private enterprise is one which should be further investigated. We would point out that there are private companies operating in Kenya who have experience and can obtain highly qualified drillers. Furthermore, if they were assured of sufficient work they would import boring plant of a lighter and more suitable and up-to-date type than that which is at present in the possession of the Public Works Department; considerations which might tend to lower boring costs.

35. The best solution of the water supply problem on any farm can only be suggested by an examination of the area; in many instances the farmer himself, from his intimate knowledge of the area he occupies, can formulate his plans in so far as surface supplies are concerned, and frequently he can tell the possibilities of shallow wells at very little expense. As has already been stated, the selection of the borehole sites is a more difficult matter, and the enlistment of the services of a geologist for this purpose is a sound investment, although even a geologist is not infallible in this matter. In many areas test boring must be resorted to in order to determine the underground water resources. The Geological Survey section of the Public Works Department has the most intimate geological knowledge of the country and normally the geologists attached to that department are the best advisers on conditions of underground water supply. In addition to Government engineers, there are also engineers in private practice who are available for this work.

36. The provision of water supplies should whenever possible precede the demarcation of farms and the opening up of areas for closer settlement and the same holds true for subdivision of existing farms for closer settlement. For the alienation of Crown lands the investigation could be undertaken by the Public Works Department, if additional staff were provided, and this could be carried out in conjunction with advisory work on water supplies to farmers. We therefore recommend that the present Hydraulic Engineer be provided with the services of a competent Engineering-Geologist who would be available for a period of years for giving advice to farmers and to prospective settlers with regard to water problems.

37. We further consider that in the provision of water, either by dams or by boreholes, for subdivision of existing holdings with a view to closer settlement, financial assistance should be provided either through the medium of a Settlement Scheme or directly by the Land Bank in the form of a short-term loan, with the possible addition of a very limited grant-in-aid in the event of a successful borehole; it being borne in mind that every additional permanent water supply is not only an asset to the individual concerned but to the Colony as a whole. With this in view we recommend the provision of free railway transport of all drilling plants and equipment, to and from the nearest siding or station site.

38. In order to encourage boring for water for domestic purposes on farms, it is essential that a greater measure of assistance be given than that indicated above, for successful boreholes. One of the greatest factors to be considered is the risk of the borehole failing to encounter water, or encountering water in quantities less than say one hundred gallons per hour (although it has been drilled to a depth at which water in sufficient quantity might have been expected), or the quality of the water found being such as to render the borehole useless. Some provision must, therefore, be made so that the farmer does not bear all this risk himself, provided he complies with certain conditions as to the selection of the borehole site, the depth to which the drilling shall be carried on (say up to 500 feet), etc. It is usual when the boring is carried out by Government owned and operated drills to charge only half boring rates subject to a minimum charge; or, alternatively, to give a rebate of the daily hire charges up to a fixed maximum number of days, say twenty days. This system is satisfactory when the selection of the borehole sites is under the control of Government and when

Government can, if it so desires, for any reason refuse the application for the hire of the drill and when the applicant is prepared to drill to a reasonable depth as decided by Government in each case. When the boring is carried out by a contractor on the basis of payment per foot there are considerable difficulties to be overcome and these will necessitate the services of an inspector who must be always available to attend the test of the borehole and to inspect drilling operations. This will increase the cost of boring.

39. However, whether boring is to be carried on by Government or by private contractors we consider that rebates should be granted in the case of unsuccessful boreholes provided:—

- (1) That the borehole site be selected or approved by Government.
- (2) That the hirer be prepared to drill to a maximum depth of 500 feet or such other figure as Government may decide in each case.
- (3) That the control of the boring operations and/or contracts be supervised by Government and that Government have the right to refuse the application if it so desires.

In view of the fact, as pointed out in paragraph 37, that every additional permanent water supply is not only an asset to the individual or group of individuals concerned, but represents a material contribution to the development of the Colony as a whole, we can see no reason why application should not be made for financial assistance from the Colonial Development Fund, which Fund has already made contributions towards the cost of supplying water in native lands.

We therefore recommend:—

- (a) That the rebate or subsidy mentioned above should be half the cost of the borehole, subject to a maximum grant of £100, and that provision be made in the Estimates for this service, and
- (b) That application be made to the Colonial Development Fund for a substantial grant for this purpose, or towards the provision of further water supplies generally throughout the country.

40. In conclusion, we consider that a Government handbook should be available to all, giving instruction with regard to the construction of small dams, etc., of various types, and embracing other local information of value to the farmer and the newcomer.

V—FARMING PROSPECTS AND COSTS IN KENYA

(See Schedules at the end of this section)

A—General Review

41. This section of the report will show that whilst the capital which we, as a Committee, consider it prudent to advise that the average newcomer should possess for carrying a mixed farm through to the producing stage is normally not less than £2,000, it must be understood that it is impossible to lay down any rigid lines. Many factors enter into this problem, such as the age, ability, experience and temperament of the individual concerned, his mode of living and the degree of comfort he requires, his frugality and his sense of financial control. It is also, under certain conditions, possible for a newcomer to rent a small acreage of land for growing some temporarily high-priced crop (such as pyrethrum to-day) and gradually to acquire the capital he needs to start on his own out of the profits. This may be a satisfactory way of making a start so long as the crop he selects remains at a high price, and by this means the capital requirements may be considerably reduced. This is gone into in greater detail in the section on pyrethrum. In the case, however, of immigrants taking salaried employment during the first few years of their residence it may be possible to make a success of ordinary mixed farming (not pyrethrum) on a capital of £1,250, of which £550 only would be provided by the settler at the start and the rest would come out of savings set aside during the period of employment. A small holding might be started on as little as £500 (see Schedule No. 6), but the standard of living would be modest. The figure of £150 inserted in the table of capital costs for passages and pupilage in most of the schedules would not, of course, be required in the case of existing residents, and the cost of starting in such cases could be reduced by that amount.

42. A locally-born man, brought up on a farm, or a man with several years of local experience of managing a farm, with his knowledge and experience of local conditions, starts farming on his own account with a valuable asset for which a newcomer has to pay. An older settler from overseas, particularly if a married man, will usually require a larger capital than a younger man. In any event, we feel we must place on record a warning against the mistake, which has been made too often in the past, of starting farming on too large a scale and with inadequate resources.

43. It would perhaps be wise to take this opportunity of replying to those critics who consider £2,000, apart from land purchase, to be an unnecessarily high figure to start farming and that any settlement scheme based on such a figure is doomed to failure from the start. The schedules, except in the special case of pyrethrum and for salaried employees, justify our contention that that is the capital which the average man will require. To become an owner-farmer necessitates capital just as much as the building up of a business, and the figures suggested are smaller than have been generally used to start farming in the past. Statements about lower capital requirements usually come from those who know of people who started with less than the figures we have suggested. But in many of these cases there have been special circumstances, or the people referred to have been first in employment and have acquired land in the vicinity and started farming on a small scale whilst still in that employment. It is, of course, quite true that in extreme cases of this nature success has been achieved by men who have started with £10, let alone £500, but as a responsible body of people we cannot guarantee special circumstances or salaried employment to new immigrants, and we, therefore, give what we consider to be conservative and reasonable figures and say at the same time that in certain circumstances, as outlined in Schedules 5 and 6 particularly, immigrants might start and make a success with less capital, but these circumstances are very clearly portrayed.

44. The Schedules in this section of the Report give a general idea of the prospects of different kinds of farming. Explanatory notes on the Schedules are contained in paragraphs 94 to 113. Schedule 1 (b) gives the capital required and the prospects of a maize, wheat and stock farm, done on a fairly large scale coupled with a fair standard of living; Schedule 1 (a) gives a programme of the same type of farming, but with the owner living more frugally for several years; Schedule 2 gives the prospects of a pyrethrum and stock farm; Schedule 3 of a maize farm; Schedule 4 of a purely stock farm, run on fairly intensive lines; in Schedule 5 an outline is given of what would be needed if a beginning were made by taking employment as a manager at a reasonable salary on an adjacent farm; Schedule 6 gives an account of what may be expected from a low capital expenditure on a small holding requiring dependence on a crop with a high and stable value; Schedule 7 is a scheme for a man who has

a small capital of about £1,500 and a pension of £150 to £300 a year; finally, Schedule 8 gives an approximate picture of residential settlement.

45. All the Schedules, except Nos. 5, 6, 7 and 8, suggest that the minimum capital required varies between £2,100 and £2,600, with a possible special reduction to £1,455 in the case of pyrethrum farming at the present time. Only 10% of the cost of the land is included in these costs, the remainder of the land purchase price being provided by Government and interest charged only after four years have passed, if our recommendations are accepted. Should an intending settler wish to pay all capital charges, the initial cost would be increased by about £900.

46. Assuming, however, that in addition to advancing 90% of the cost of the land Government also advanced half the cost of certain permanent improvements, such as a dip, fencing and anti-erosion works, the initial capital required by an intending settler would be reduced to between £2,000 and £2,500. Farmers' Associations and individual farmers, whose opinion was asked on this matter, gave figures of capital required varying from £1,600 to £4,000. All these omitted the cost of the land entirely—this was by request—so that some £100 should be added on for 10% of land purchase. The more costly schemes submitted provided for a bigger annual income and a higher standard of living than do the Schedules of this Report; the cheaper ones mostly omitted the cost of coming to Kenya, of pupilage, of the possibility of the land being "dirty", which prevents non-immune female stock from being brought on to the land at once, or they provided for a lower standard of living.

47. Our view, we repeat, is that a newcomer from abroad would (with certain exceptions) need about £2,000 to spend during his first three years of pupilage and farming in Kenya, that is for the standard of living hitherto usually accepted as desirable. In addition a further contribution would be required from Government for 90% of the land purchase price, together with a contribution of £100 or so towards the cost of a dip, fencing and anti-erosion works. Farming a "small holding" comes into quite a different category as to costs and revenue.

48. Hitherto it has been tacitly assumed that in any Government-aided settlement schemes, the most Government can do is to provide 90% of the land purchase price,

with contributions towards permanent improvements such as dips, fencing, anti-erosion works and towards passages. This is based on the principle that Government must be able to recover its capital should a farming venture prove a failure, and the chief security is usually considered to be the land. We would go rather further than this, however. In our opinion the scheme as a whole might well be regarded as the real security, the individual farmer himself being a very relevant part of it. If this view is accepted an advance might be made up to 50% of the total capital required during the first four years—see Schedules of capital costs—thus reducing the amount needed by the farmer himself to between £1,500 and £1,700.* This is a much more likely sum to be possessed by possible settlers than one ranging between £2,000 and £2,500. During the first year's residence it should be possible to form an opinion of an intending settler's ability and character; and if the subsequent farming is carried out under competent advice there is no reason why in the normal course of events the farm should fail. In the event of the occupier's death, a manager could always be put in to keep the farming going. The additional interest to be paid on a slightly larger loan should not present insuperable difficulties after the first four years have passed. Should the conditions attached to any Government loan not allow of an advance unsecured by land or permanent improvements, it is possible that a body such as the Overseas Settlement Committee might consider the project as coming within its scope. From what has been said, it is clear that an advance of up to 50 per cent of the total might do more than anything else to increase settlement. The total sum required would vary mostly with the quantity and price of land. In the Schedules the advance by Government approximates to £1,000. With the settler's contribution of £2,000, the total is £3,000. Fifty per cent amounts in this case to £1,500, and we would emphasize again the desirability of getting the contribution of the average settler down to this figure by means of Government loans and Imperial grants.†

STOCK AND CROP INDUSTRIES

Before discussing in detail the items dealt with in the Schedules of farming costs it will be well to give a general

* See also para. 124.

† Paragraphs 43 to 48 are the subject of notes by Mr. J. Theron Focks and Major Cavendish-Bentinck, and by Captain F. O'B. Wilson and Mr. Burton.

picture of the stock and crop industries of Kenya. Such a picture is also necessary in order that the basis on which the Schedules were framed can be appreciated.

STOCK

(i) *Cattle*

50. In framing this Report our attention has been mainly focused on settlement of the mixed farming type, and from the data tabulated in Appendix II, "System and Acreages of Farming Applicable to Various Districts", it will be evident that all the highland areas on which settlement is proposed are suitable for stock farming, generally of the more intensive kind, which connotes dairying with grade or pure-bred stock, pig-raising, and the use of small flocks of ewes to produce fat lambs or wethers by suitable crossing. As we have already explained it is our view that most of the acreage for new settlement must be provided by the subdivision of existing holdings of land which to-day are imperfectly utilized for one reason or another. Land suitable for beef ranching or extensive sheep farming, of which there is still a limited area available for alienation, offers quite different problems in relation to settlement, and it is not proposed to deal specifically with this type of farm in this report.

51. The basis of dairy farming in Kenya is the production of butter fat for manufacture and export, largely to the United Kingdom. The export trade is in the hands of the Kenya Co-operative Creamery and the needs of dairy farmers in the highlands are well catered for by five creameries situated at Naivasha, Molo, Eldoret, Thomson's Falls and Nanyuki. At the moment the annual export of butter amounts to approximately 1,200 tons, and a further 400 tons is consumed within the Customs Union. On the London market, Kenya Creamery butter is usually quoted at only from Sh. 2 to Sh. 4 per cwt. lower than New Zealand No. 1 butter; locally prices have been maintained and the export industry subsidized by the imposition of a Butter Levy of 25 cents per lb. on all butter manufactured by non-co-operators, the proceeds of which are applied to the assistance of the export trade. Under these conditions the average payout to the producer has been 87 cents per lb. of butterfat over the last two years. While the out-turn of the existing creameries is still capable of considerable expansion there is no doubt that further extensive development of the dairy industry in the highlands would lead to the erection of

additional creameries as they were needed, with a general reduction in transport mileages and consequent improvement in the quality of the cream delivered and the butter manufactured.

52. With dairying on a butterfat basis it is very desirable that the surplus of separated milk should be used in the most profitable manner. The efforts that are being made to establish a meat industry—based on the export of chilled beef and green bacon, frozen pork and frozen lamb—are of interest to the mixed farmer in so far as they are likely to enable him to fatten steers with his surplus crops, raise baconers or porkers partly on skimmed milk, and run folded sheep on his arable lands and short grass leys in much the same way that flocks are managed in Great Britain.

53. The schedules of estimated capital costs for the various types of farm are based on the assumption that it will be necessary to carry out preliminary cleansing of land that is situated in the East Coast fever infected areas which are indicated in Appendix II. Although the cleaning up of the individual fenced farm offers no insuperable difficulties, the safety factor is greatly increased and the task rendered much easier by the application of compulsory dipping to whole districts. It is reassuring to see that the Cattle Cleansing Ordinance of 1929, which was designed for this purpose, is gradually being adopted by the mixed farming districts. We feel that it is impossible to over-emphasize the importance of compulsory cattle cleansing in any attempt to increase settlement of the mixed farming type.

54. The removal of squatter-owned stock from mixed farming districts is proving of great benefit to individual farmers, and we wish to draw the attention of Government to the harmful effect of continued delay in putting the Resident Labourers' Ordinance, 1937, into operation. Not only are squatter-owned stock frequently responsible for the introduction of tick-borne and other diseases to uninfected farms, but the amount of grazing that has yearly to be set aside for these animals considerably reduces the acreage that is actually available for European settlement. The purchase of extra land to accommodate unnecessary squatter stock increases both the size of the farm and the capital costs of farming. The Agricultural Census, 1937, places the total number of squatter cattle in the settled area at 190,387, which is far too low.

55. A comparison of Agricultural Census figures for the Machakos District with those obtained by a direct count made in 1936-7 records a great disparity:—

Agricultural Census—Cattle: 19,102; Sheep and Goats: 6,766.

Actual Count, 1936-7—Cattle: 30,282; Sheep and Goats: 14,112.

No one with experience would ever claim that it is possible accurately to count native stock. A similar disparity between the census returns and the actual numbers is indicated by reports from the Trans Nzoia and other areas. It is safe to conclude that the number of squatter cattle is in the neighbourhood of 500,000.

56. In our opinion the practice of allowing resident labourers to keep stock has developed in certain districts into an abuse which constitutes perhaps the most dangerous menace to genuine farming in the Highlands to-day. Not only do these uneconomic animals occupy land that may urgently be needed for new settlement, but illicit movement of squatter stock is responsible for many of the outbreaks of tick-borne and other diseases, the control of which involves Government in a considerable yearly expenditure. It must not be lost sight of that such areas as Uasin Gishu were infected in the first place by squatter stock brought up from Nyanza during the period of intensive agricultural development and, if these areas are to change over to mixed farming in the near future, public opinion on the subject of squatter stock must be revised. The present position in which the numbers of squatter stock are greater than those of European-owned stock is thoroughly untenable and unsound and must be rectified.

57. We are informed that an export of chilled beef to the United Kingdom cannot be arranged unless rinderpest is eradicated from the whole Colony, with the possible exception of the Northern Frontier District. We are advised that with the newer and cheaper methods of immunization now available total eradication can be effected at a not unreasonable cost and that it is possible that the Colonial Development Fund might be disposed to grant funds for this purpose; we, therefore, strongly urge that Government should allow nothing to stand in the way of this project, for the whole future of farming in Kenya is bound up with this programme of disease eradication.

With regard to the part that is played by game in the dissemination of rinderpest and other important stock diseases, we understand that although it is unlikely that game will serve for protracted periods as a reservoir of rinderpest it will nevertheless be necessary to exercise a close control over game infection and game movements during the progress of the eradication campaign. The whole question of the relationship of game to the spread of stock diseases is one that should receive constant and careful scrutiny from the officers concerned.

58. Fenced stock routes are urgently needed to reduce the danger at present inherent in the frequent stock movements that must be allowed in the normal course of trade between clean and infected areas.

(ii) *Small Stock*

59. The sheep industry has so far been mainly developed on extensive lines for wool production. In the drier areas the Merino is exclusively employed, but in the higher, moist areas there are large flocks of Romney Marsh and Corriedale. Experiments recently carried out indicate that it is possible for the mixed farmer to utilize draft or culled ewes from the Merino or Romney flocks for crossing with a view to the production of fat lambs for the export market. Sheep require a good deal of experience with regard to management and disease control, but an experienced man, farming on fairly intensive lines in certain districts, could make a net profit of £3 or £4 a month with a small flock, involving a capital outlay of £70 to £100. In most of the dairying pastures sheep can with advantage be used to follow grazing cattle, and in addition the fold-feeding of catch crops on arable lands is an excellent method of restoring fertility.

60. With regard to pigs, under normal circumstances farms such as those described in the Schedules would be expected to produce some fifty baconers a year or almost double the quantity of porkers, and in this way full use would be made of the surplus skimmed milk.

Pigs should be the principal consumers of skimmed milk, and dairy farmers should rather regard the rearing of steers as secondary to that of pigs than the other way about. The steers for some years to come will not be of a beef type, since during the period of building up and improvement of dairy cattle they will be bred from dairy animals on both sides; and if in the meantime a beef export trade is developed

it will pay the mixed farmer better to buy ranched steers for fattening than to attempt to rear steers from his dairy herd. The beef ranching herds will naturally take most of the culled cows from the dairy farms.

61. The local market for pork and bacon is a limited one, and it is necessary to seek an outlet by export. Until quite recently, in fact up to 1938, the price fluctuations of bacon on the United Kingdom market were so great as to make the export of green bacon or frozen bacon a highly speculative undertaking; but under the latest conditions of controlled marketing a high degree of stabilization has been reached and recent experimental consignments of frozen bacon from Kenya have yielded promising returns. It is probable that a profitable outlet for the surplus of skim milk and home grown concentrates will be found through this export and we trust that every support will be given to these experiments. The alternative method of exporting frozen porkers is also being explored, and the most careful attention should be given to a comparison of the two methods.

63. The farmer who is producing baconers for the limited local market can rely on making a profit of Sh. 30 per head, or £75 per year when he is farming on the scale suggested in the Schedules. The returns from pigs exported as green bacon are likely to be somewhat lower but still profitable under the new conditions. Should they approach within any reasonable distance the returns from the local market the consequent expansion of production would call for the application of control and payment from a pool for both export and domestic sales.

64. Poultry keeping is not included here or in the Schedules, but is discussed in paragraphs 114 and 115.

CROPS

65. Intending settlers must realize, first, that the absence of all but a small local market in Kenya for crops, as well as stock, definitely restricts the outlet *locally* of farm products of the ordinary type, and, secondly, that the advantages of low production costs, on account of inexpensive native labour and cheap land, are largely offset by high transport charges to cheap foreign markets. Specialized crops such as good quality coffee, pyrethrum and tea are not so subject to these disabilities since the export market for them is usually a good one and parts of the country are particularly suited to them.

66. Coffee is not mentioned in the Schedules attached to this section though it is a crop which, in the right districts, could well come within the purview of intending settlers. Kenya coffee has an especially sought after flavour, and good quality coffee, grown in the right environment, is still a remunerative crop, particularly to a newcomer who did not over-capitalize his farm. The land in the most suitable districts for coffee, where this would be the sole crop, is, however, almost fully taken up with it and newcomers could hardly acquire a satisfactory interest in this coffee with the capital suggested in the Schedules. A capital nearer £8,000 would be needed. In the western districts of Kenya, however, at altitudes of 6,000 ft. to 7,000 ft., any coffee grown should usually form only a small item in a mixed farming programme—up to, say, fifty acres—and in such circumstances an additional £500 in the table of capital costs should suffice to bring the crop to maturity. Coffee growing must, however, be approached with the greatest caution in these districts and grown only on the advice of the Agricultural Department and where experience has shown that it can be embarked upon with good prospects of success.

67. Pyrethrum is fully considered in the Schedule dealing with it, i.e. Schedule 2. Tea growing requires considerable capital and is mostly in the hands of large companies; in any case, its production is restricted under an international control scheme, but, in those parts of Kenya with a rainfall of 60 inches and over, it is an extremely profitable crop at present prices, due to control. It is hoped that every effort will be made to increase the allotment of the tea acreage for Kenya, to enable farmers settled in districts suitable for tea growing to have a crop to grow.

68. Grenadillas (passion fruit) is a crop which is just beginning to attract attention in Kenya. It is only in the earliest experimental stage but seems suited to districts between 6,000 ft. and 7,000 ft. in altitude, especially those with a rainfall around 40 inches or more. It costs £10 to £15 an acre to establish; twenty acres costing, say, £250. Should the market, prices and yields remain as they are to-day, it is possible in the more suitable areas to make a profit of £20 an acre, so that twenty acres would bring in £400 a year net. As a straight drink, passion fruit has a limited sale abroad, but it has also a market for flavourings. How much the market for this crop can expand remains to be seen, but it must do so if it is not to be satiated fairly easily.

Some disease is showing up in certain areas of Kenya as it has in other countries, but it is too early yet to say how prevalent it will become and to what extent it will reduce the yields of the crop. Prices are likely to fluctuate and even to show a downward trend but it would take a considerable reduction in price and in yields to make passion fruit unprofitable. The crop is, however, still far too much in the experimental stage to put it definitely into a recommended farming programme, and the acreage put under the crop should not be such as to cause financial embarrassment to the farmer should it prove disappointing.

69. Sisal is another crop which is not mentioned in the Schedules. It is a specialized crop like coffee, but unsuited for growing as a side line. It requires the laying down of costly machinery and considerable capital expenditure in other directions besides entailing a long wait before the crop can be harvested. It can be and is grown on a large scale in many parts of Kenya. It has suffered from price fluctuations in the past but the research going on into improved cultural methods, into a reduction in waste and utilization of by-products, as well as to improvement in fibre, should both harden and extend the market whilst increasing the acre yields of marketable products.

70. Wattle is another crop whose possibilities should not be lost sight of in good rainfall districts, but further investigation is required into the possibilities of Kenya wattle bark and extract obtaining a larger share of the world's markets at remunerative prices.

71. Wheat and maize have hitherto been regarded as the staple crops in the mixed farming areas of Kenya. Much has been done in the production of rust-resistant varieties of wheat whilst the industry has enjoyed protection from the importation of flour from outside sources. The value of the breeding work and of its continuance as well as of a protection of local flour, which does not impose an appreciable hardship on the consumer, is evidenced by the importance of the crop to settlement and the farming community. Much of the success of farming to-day and of the hope for starting new settlers off with a minimum of capital depends on the continuance of research work with wheat and on the protection of the industry.

72. Kenya is one of the few countries specializing in a flat white type of maize which sometimes enjoys a premium over

yellow on the export market. It is a crop easy to grow and to which Kenya is peculiarly suited as is shown by the outstandingly high average yields per acre of this country. It is, however, a bulk crop and has to compete in the feed market as well as be used in the industrial market. It is of considerable value to Kenya not only for export but also as the staple food for the native population, whether in the reserves or in employment on farms or in industry. It therefore enjoys, and rightly so, a special export freight rate on the railway and from the shipping lines. The maize industry, whilst enjoying these special rate privileges and, sometimes in the past, a subsidy, is also subject to marketing control and, when occasion arises, even to price control. A continuance of all these measures is recommended in the interests of settlement.

73. Crops such as barley, oats, beans and peas are grown to a small extent and are not likely to take a larger place in farming programmes until small stock are more in evidence and farming becomes better balanced, as it will when feed crops are more in demand. Potatoes grow well, but so far the types which yield best and keep fairly well in Kenya, do not keep equally well, during transportation to Bombay, the best market. Further varieties are, however, under trial.

74. The fruits which can be grown are almost unlimited, though not all can be grown in every district. Oranges, lemons, limes, grapes, apples, pineapples, paw-paws, plums, peaches, avocado pears, strawberries, and berries of all sorts are grown. Every imaginable vegetable also does well, and the many available fodder crops for stock only await a larger and more intensive programme of stock raising to use them.

75. Clearly there are specialized crops thoroughly well suited to Kenya, each to its own locality and environment, and some of these crops command a special price. For reasons which will be apparent, however, the economics of the Schedules have been based solely on a very conservative programme and estimate of *established* crop and stock farming.

Nevertheless it must be remembered that even one good wheat crop of ten bags to the acre would completely revolutionize the economics of the Schedules in favour of the farmer. For the present, however, success is likely to depend on a regular turnover obtained from a larger scale of farming rather than on the small scale intensive kind of farming usual in more highly developed countries, and the

lines of production will for some time be somewhat restricted. Almost any crop can be grown successfully in Kenya, but the actual production on a large scale of those which are not highly priced on the export market is dependent on the development of a large local market. This again is dependent on an increase in business and residential settlement.

B—Notes on capital requirements in the Schedules

76. Some of the main items of capital costs in the Schedules will now be discussed.

LAND

77. The Schedules have been compiled on the assumption that land will be purchased from private individuals.

78. It will be observed that in all the programmes the cost of the land has been put at around £1,000. In some districts as much as 1,500 acres would be required for a farm, in others only 500 acres or less. In the former case, if a farm had to be that size to be economic, the land might well be valued at only Sh. 15 per acre, whilst in the latter case the comparative value might be £2 an acre or more. These are arbitrary figures but probably not far wide of the mark. It is a truism to say that it might well be better to pay £4 an acre for land which will run a beast to an acre (with the arable land equally good) than to pay five shillings an acre for land worth only twenty acres to a beast. One of the duties of the Land and Settlement Board will be to see that the purchase price paid for the land bears some relation to the acre profits to be made from it, and it should refuse to purchase land from individuals who demanded so much as to prejudice from the outset the success of the intending settler. Value of land, in a country where the local market is small and the main market is an unsubsidized export one, should not be nearly as high as in more mature countries.

79. No suggestion is intended that a 1,000 acre farm is not as economic as a 500 acre farm. One district varies greatly from another, as do individual holdings in a district. Configuration, as well as quality of the land, has an important bearing on size of farm. A 1,000 acre farm, however, for the purpose of the Schedules, presupposes the grazing to be worth about three to four acres and a half to a beast. It is anticipated that farms can be subdivided into smaller units (even as low as 300 acres) as the grazing and the quality of the stock improve through sound farming methods. One

reason why farms must be larger in Kenya than the usual run of farms in England is that most of the produce has to be sold at export prices. The cost of freight to far distant markets is high, in some cases equalling or even exceeding the whole cost of production on the farm. It is necessary, therefore, to farm extensively to obtain an adequate turnover. Cheap production is partly off-set by cost of transport.

80. It is not proposed to go into details in this Report as to the comparative value of farms in the different districts, the size of farms required in them, the kind of farming and crops and stock suitable for them, and the climatic and ecological conditions obtaining in them. A brief summary of this information appears in Appendix II of this Report, and a publication giving considerable detail is in course of preparation by the Department of Agriculture. Plenty of authoritative and impartial information is, however, already available and intending settlers are strongly advised to make use of it. Within the main altitude ranges, there are considerable variations in rainfall and quality of soil and vegetation which have a definite influence on the kind of farming advised. Proximity to a railway station and reasonable roads of access are desirable features to look for when acquiring land. Water supplies in the form of streams, dams or wells are of vital importance, and have been discussed fully in the appropriate section of this Report. Incoming settlers are advised that high rainfall districts, whilst seldom being too wet for agriculture, are far less likely to suffer from droughts than the drier areas, and settlement should mainly take place in districts with an average annual rainfall of 35 inches or over.

81. It is frequently stated that, to reduce the capital costs of starting farming, land should be rented rather than purchased. This is tantamount to what has been proposed in this Report—the interest on money advanced for land purchase being the equivalent of rent. We consider, in fact, that a Government-aided purchase scheme on the lines proposed gives facilities equivalent to the usual tenancy and lessens certain difficulties inherent in Kenya conditions when private persons are the landlords. Few private landlords will have erected on their surplus land those permanent buildings and other improvements which every farm must have and this necessitates their being put up by the tenant. In such cases the tenant must be thoroughly safeguarded by appropriate compensatory clauses in the leases which would cover him

should he have to leave the farm. A Government-aided purchase scheme would involve less difficulties, since an outgoing tenant would in fact sell a lease and would include the value of improvements of all sorts in the sale price. Government would never force him off the land if the conditions of his lease were being fulfilled, whereas a private landlord would be entitled to do so under an ordinary lease. It would, however, be open to private landlords to advance the purchase price of their land to tenants on the same lines as the Government-aided scheme.

82. Soil deterioration and erosion can take place far more readily under the climatic conditions of Kenya than in England and in both private tenancy and Government land purchase agreements it is essential to insert clauses providing for the maintenance of soil fertility and conservation of the soil, or to secure similar results by special legislation.

Private landlords would make their own arrangements to see that their land was not exploited, Government assisting when necessary. Security of tenure, or compensation for the tenant, and the acceptance by Government of its responsibility for the well-being of the land are both necessary, or exploitation of the land without regard for the future is bound to prevail. Suitable types of tenancy agreements are available at the Lands and Settlement Office and at the office of the Kenya Association.

EQUIPMENT OF FARMS

83. Little comment is needed on this. The items in the Schedules speak for themselves. It is estimated that one team of oxen will suffice for sixty to seventy acres of maize or wheat, though with mixed crops a little more might be done and a bigger income obtained. At the same time seventy acres per team can often be too much and lead to bad cultural methods. Criticism may be directed against the provision of a farm car as an unnecessary luxury. We do not regard it as such. Distances to medical assistance, to hospitals and to towns are considerable and some social intercourse is desirable. Different opinions exist on the subject of housing. Some consider that a mud and wattle and thatched hut is adequate; others that a well constructed brick or stone building is more than desirable. In our estimates we have adopted a middle course, but clearly the capital required for housing could be slightly reduced or considerably enlarged in accordance with circumstances.

SUBSISTENCE WHILST FARM IS DEVELOPING

84. It will be observed in the Schedules that in the case of mixed farms, living expenses, wages and running expenses are provided out of capital for the first eighteen months. This is necessitated by the fact that a farmer must plough new land at least six months, and preferably more, before he plants. If he plants in March or April he should, therefore, do his first ploughing in September to allow the soil to aerate and sweeten by the time the crop is planted. In some districts he should plough virgin land earlier than that. His crop of maize or wheat will not be harvested until the succeeding December so that during the fifteen to eighteen months whilst he is doing his first development he gets no returns. Of the returns he gets after the first eighteen months part must, of course, go to finance his second year's operations. With crops, his returns come in at the end of each year; with stock, the returns come in more frequently.

RESERVES

85. Considerable reserves of cash are provided in case one season during the first two or three is bad and the yield of crops low, or to keep the farmer going should abnormally low prices prevail during the early years before he is established on a sound and comprehensive stock and crop basis. It would be most unwise not to have such reserves available.

C—Notes on Income and Expenditure in the Schedules

ANNUAL PROFIT AND LOSS ACCOUNTS

86. Some explanation is now required of the five-year farming programmes. These have been provided as the best means of showing a prospective settler what the prospects for his outlay are likely to be. It should at once be said that these programmes do not pretend to be exact; no "paper" farming can be; they are merely average figures for guidance and are given in some detail to show that they are not the guesswork so often indulged in over capital requirements, but are a reliable indication of what may be expected from the outlay made.

87. Schedules 1 (a) and 1 (b) will be considered first. The main differences between them are that Schedule 1 (b) provides for 140 acres of cultivation, necessitating two teams of oxen, whilst Schedule 1 (a) contemplates only 70 acres of cultivation for a start, necessitating only one team of oxen. Again, provision is made for sixty cows in Schedule 1 (b), but for only fifty in Schedule 1 (a).

88. **Schedule 1 (a).**—Fifty cows is suggested as the minimum size of dairy herd and the monthly cream cheque from it is regarded as the basis for living expenses, though this will provide only a modest standard of living until the first male and female progeny have matured sufficiently to give beef and milk for sale. One team of oxen and spares is the least unit of traction if any crop cultivation is to be undertaken. The scheme outlined in this Schedule is, therefore, about the smallest that could be undertaken unless a lower standard of living is contemplated, as in Schedule 6, or unless other sources of income are available. The capital required is £2,935 less £810 advanced in respect of 90% of land purchase and £97 advanced in respect of certain permanent improvements—say a net £2,000. Alternatively only about £1,450 would be required if 50% of the whole outlay of £2,935 were advanced by Government.

89. Examination of the income and expenditure estimates over the first five or six years shows that the yearly profit and loss account does not allow a great margin in favour of the farmer for the first four years, and if anything went seriously wrong in the way of droughts or bad prices during that period the farmer would be hard put to it. This is the reason for the fairly high reserve of £250 inserted in the table of capital costs. Living expenses are put at a low rate, but as soon as the farm is producing food a farmer can live on very little, much less than during the first eighteen months of development of the farm.

THE DAIRYING PROGRAMME

90. In the case of "dirty" farming districts such as Schedule 1 (a) deals with, the dairy herd cannot be brought on the farm until the paddocks have been cleaned of East Coast fever by the immune working oxen. Therefore, no cream cheque will come in until towards the end of the first eighteen months, perhaps not until the very end. This increases the difficulties of making ends meet during the first few years; ridding the farming districts of East Coast fever will clearly be one of the most important aids to further settlement. This has been dealt with in paragraphs 52 to 57.

91. The value of butterfat has varied from 60 cents to 95 cents during the past few years—it is around the latter figure now. A herd of grade heifers or cows, such as those envisaged in the Schedules, likely to average a gallon of

milk a day with $3\frac{1}{2}$ per cent butterfat could, at present, be fairly easily purchased at £7 a head, but with any rapid increase in settlement a serious shortage of foundation grade stock may be disclosed. The first consideration of the farmer, however, should be to improve the yield of milk by means of bulls from good milking strains and eventually by the use of "proved" bulls. He should in fact pay more attention to a higher yielding herd (within limits) than to building up a larger herd of inferior animals. If by judicious breeding and culling he can, within ten years, possess seventy cows averaging even $1\frac{1}{2}$ gallons of milk a day his net cream cheque would amount to about £280 a year and at two gallons a day to over £350 a year, that is about double the amount shown in the Schedules. To aim at this by breeding better milkers, at the same time culling out low-yielding animals, is greatly to be preferred to merely building up a large herd with many unprofitable animals in it. The net cream cheque in the Schedules is calculated on the basis that labour, medicines, dip, feed, etc., for the herd will cost from £1/5/0 to £1/15/0 per dairy cow. As milk yields improve, the cost of supplementary feeds will increase, but not in proportion to increased yield of milk. It is usually reckoned that the total herd kept numbers about double the number of dairy cows.

THE CROP PROGRAMME

92. The price of maize has varied in recent years from Sh. 2 per bag on the farm to Sh. 5/50. The first year yields on new lands suitable for maize growing are likely to be under ten bags of 200 lb. net per acre except on the best soils; thereafter they should average between ten to fifteen bags, with up to twenty bags per acre on the very best soils. An average of fifteen bags on ordinary soils can only be maintained with good farming but fifteen bags an acre at Sh. 4 per bag is better than eleven bags at Sh. 5, and high yields are of the utmost importance. Some of the maize harvested will be used in the form of maize meal (*posho*) to feed labour, i.e. about $3\frac{1}{2}$ bags a year per labourer, but where the altitude or other conditions are adverse to maize, the bulk of the rations for the labourers must be bought.

93. Owing partly to a wheat pool, partly to duties on imported flour and partly to a restricted acreage under the crop, the price of wheat is likely to remain at about Sh. 15 per bag, so long as all these conditions continue. Yields per acre vary from three to twelve bags, depending on a

number of reasons, some within and some without the farmer's control. Averages of seven bags per acre are common in the best wheat-growing districts.

In order to strike an average, both maize and wheat have been included in Schedules 1 (a) and 1 (b), and some districts are equally suited to both crops. In those districts, however, which are suited to maize only and not wheat, the farmer's income from cereals will not work out quite so well because the price of maize is more dependent on export prices than is wheat, though a pool is in operation. This is because there is a considerable surplus of maize for export. So long as the acreage under wheat remains about enough to supply only the East African territories, it is a much more profitable crop to grow than maize, but only in districts really suited for it and where a severe reduction in yields by rust disease is not a very likely contingency. The growing of wheat only, instead of maize, would increase the annual profits in both Schedules by £80 to £160. This is a very substantial increase, but it must be emphasized that an increase in acreage resulting in a considerable surplus for export would, at present world prices, reduce the profits to that of maize growing.

94. Schedule 1 (b).—This shows a better picture throughout the annual income and expenditure Schedules, the margin between profit and loss not being nearly so narrow as in Schedule 1 (a) during the early years. The programmes in the two Schedules can be readily compared. The standard of living allowed for in Schedule 1 (b) is higher from the start.

95. Gross capital expenditure is put down at £3,417. Net capital required by the settler would be less by £900 advanced for land purchase and £112 for permanent improvements; leaving the settler to find £2,405 himself; alternatively £1,700 only would be required if 50 per cent of the whole outlay were advanced by Government.

96. Schedule 2.—This is based on pyrethrum. The pyrethrum grower should, however, acquire stock from his pyrethrum profits so that he may have a sound proposition to work on, if and when pyrethrum becomes less remunerative. He should also be able to turn over to wheat growing if necessary. Again there are possibilities in hiring land for pyrethrum. In such event a small acreage would suffice, but the rent would be fairly high; nevertheless, money could be made in this way and set aside for purchasing a farm later on. Sharing profits with the owner is another possibility.

the owner providing the land and the settler the cash; it would, however, probably pay the settler better to purchase the land under the assisted purchase scheme if he could.

97. Pyrethrum is a new crop in Kenya. It generally does well at over 7,000 feet and possesses a higher percentage of pyrethrin than the Japanese product. It, therefore, fetches a higher price and readily enters the market. The market for pyrethrum (an insecticide) may, however, be a limited one, and therefore the acreage in Kenya, which is rapidly increasing, may eventually have to be controlled. These are merely possibilities, but ought to be mentioned. For the present it is a gold mine for those lucky enough to be in a position to grow it, the price being 70 cents a pound instead of the 50 cents suggested in the Schedule. How long the high prices will last it is impossible to say, but even if restriction and control come in the price is likely to be a paying one. Thirty acres is quite a reasonable acreage for an individual to handle well to start with. Proximity of labour supplies must be taken into consideration with pyrethrum growing. So long as the price remains really high it would be difficult to purchase farms, suitable for the crop, at under £3 an acre. In such cases the capital expenditure would have to be increased proportionately.

98. There are something like 7,000 acres under pyrethrum already—some of it at rather too low an altitude. It is probable that another 3,000 or 4,000 acres could be put under the crop without seriously affecting prices. It must be remembered, however, that Tanganyika Territory and Brazil, and probably other countries, are beginning to be interested in pyrethrum growing owing to Kenya's success. But it is yet to be seen whether other countries can grow the high quality pyrethrum that is produced in Kenya. If they cannot, and the quality of such pyrethrum remains much as that of Japan, Kenya will still retain an advantageous position.

99. This Schedule shows that the gross capital required for a pyrethrum farm would be £2,235. The net capital required by the settler would be less by £900 for 90 per cent of land purchase and by £100 for a half-share of permanent improvements, namely £1,455. Should 50% of the total outlay be advanced, the capital required would be £1,117.

100. The yields of pyrethrum vary from 400 lb. per acre at just over 7,000 ft. altitude to more than 1,000 lb. per acre at 8,500 ft. and above. Reference to Schedule 2 will show

that at yields of 400 lb. and with prices at 50 cents, pyrethrum would best form part of a mixed farming programme, but at 70 cents per lb. (its present price) it could stand on its own. With yields of 700 lb. per acre and prices at 50 cents per lb. the net profit is high, nearly £400 a year; at 70 cents the profit would be over £800 a year. With yields of 1,000 lb. and prices of 50 cents, the profits are again over £800 and at 70 cents they are almost fabulous. The question of whether to purchase stock out of pyrethrum profits or capital will depend on yields and prices as also will the question of the acreage to go under the crop. A word of warning should, however, be sounded. With increasing production in Kenya and in other parts of the world and despite high quality it cannot be expected that prices will be maintained quite at the present level for long, and newcomers will be well advised not to base their hopes entirely on present conditions in the industry.

101. Schedule 3.—Some farmers are not interested in stock. Provision has, therefore, been made for them in Schedule 3, purely as maize growers.

A method of maize farming that has been practised in Kenya is to weed-fallow (possibly with the assistance of legumes), or put under temporary leys, 25% of the land after the first few years of cropping, otherwise yields steadily deteriorate. It has been found that a good fallow or rotation of this nature will maintain the yields of maize at a reasonable figure for some three years in succession, but the maize stalks should also be put back on the land in the form of compost or manure—the farmer using the dung from his working oxen to assist in the process of manufacture.

The capital expenditure suggested for maize farming amounts to a gross figure of £3,422, but in a Government-aided scheme this would be less by £900 for land purchase and £75 for anti-erosion expenditure, namely £2,467, or only £1,700 if 50% of the total outlay required were advanced.

102. If a reduced maize farming schedule were devised for a smaller farm with only 180 acres under maize and 60 acres fallow, the gross capital expenditure could be reduced by £500, but the annual returns over the first four years would only average out at about £30 a year beyond bare living expenses. This is a narrow margin. After the first four years the balance would be about £120 a year over bare living expenses. Such a scheme need not be ruled out of court for the right type of man. He would be hard hit

if the price of maize fell below Sh. 5 per bag, but, on the other hand, he should not farm on such a small scale on land which could not average fifteen bags to the acre. This would even things up nearer to the economics of the larger scheme. In any case, however, those who wish to farm maize alone, would obviously be well advised to settle only on land capable of yielding not less than fourteen to fifteen bags to the acre. Such yields provide a reserve for bad seasons and low prices. It would be folly to rely entirely on maize unless the land were really good maize land.

103. That this Schedule has been included must not be taken to mean that we advocate one-crop farming. There are definite disadvantages in it, one of the more obvious being entire dependency on the export price of one particular crop.

104. **Schedule 4.**—There are areas of the Colony suited rather for stock than crops; in such areas the acreage needed would usually be much higher than has been suggested in this Schedule, but the purchase price would be correspondingly low and the final picture would, therefore, be much as has been suggested. A purely stock farm would only be advisable in a "clean" district where the dairy herd could be brought on the land at once and the cream cheque start coming in within six months. In the case of the stock farmer, his gross income would be doubled as he improves his herd. Besides breeding better milkers, he must at the same time improve his grazing and give supplementary feed either by purchasing it or growing it himself; nevertheless his net income should increase to at least half as much again as that of the first few years. Gross capital required for the stock farming programme would be £2,935, but in a Government-aided scheme suggested it would be less by £900 for land and a contribution of £100 towards a dip and fencing, namely, a net £1,935 or only £1,470 if 50% of the total outlay required were advanced.

105. Dairying, except on a very large scale and with a large outlay, does not provide the income that mixed farming does, and a purely stock farm, except in special circumstances, is not recommended.

106. **Schedule 5.**—This represents a scheme for a man who has only between £500 and £600, and is prepared, by taking a salaried post, to find another £700 out of his savings in due time. Such a scheme would not need a gross total of more than £2,150, of which Government would supply

£900 for land purchase and permanent improvements, leaving the settler to find only £1,250, about half to be original capital and half to be found from savings. The original capital such a man requires depends on how long he is prepared to work and save in a salaried post. It is no use anyone thinking of immigrating on these lines unless he keeps the prospect of becoming a farmer ever before him and has the determination and grit to accept any sort of post and effect savings from his wages, however small they may be. The ideal post would be that of a farm manager after a period of pupilage, but there is not an unlimited number of such posts, and other kinds of employment might have to be taken. The Kenya Association (1932) would do its best to place such men in suitable posts.

107. Present and future farm managers or employees on farms and plantations should not be content to remain as such and eventually find themselves thrown on to the world in old age without any savings. Farm manager jobs are precarious anywhere and only a few large concerns can offer proper terms of service and pensions or provident funds for their employees. It should be the ideal of every farm employee to become an owner-farmer. Some employees are receiving salaries of £25 to £50 a month. It would not take them long to save enough to start farming on their own without any other source of capital. These proposals are dependent, however, on Government adopting a scheme of assisted land purchase. This is a first and essential step towards fostering settlement and development.

108. **Schedule 6.**—In Schedule 5 the suggestion has been made that a man who is prepared to take, and succeeds in finding, salaried employment for the first few years after his arrival in the country, may make good with an original capital of £600, including £150 for passages and pupilage. It is also possible under certain circumstances for local residents of working farming stock to make a start, at the present time, on £450 to £600 (excluding, of course, passages and pupilage), or for immigrants of working farming stock to do so on £600 to £700, without, in either case, taking salaried employment to add to their capital. Returns from stock products are not sufficiently good for stock to come into such a scheme at the start and success depends on finding a crop at a sufficiently high and stable price to give a good return from a small expenditure, a good enough return in fact to enable the farmer to set aside income as capital for

further development whilst living on a bare subsistence standard for the first few years. For the present, such crops are wheat and pyrethrum, and it has been proved, at least in the case of wheat, that a successful start on these lines can be made using such crops. The scheme is detailed in Schedule 6. Living expenses are reckoned at £6 a month until the farm starts to produce food, and thereafter at £3 a month. The house would be little more than a shack with the barest of furniture. Travelling wheat threshers would be hired for wheat, and a bull would also be hired when necessary. The land could either be hired or bought; in the latter case at, say, Sh. 15 an acre for five-bag-an-acre land, or £2 an acre for eight-bag-an-acre land.

109. It must not be forgotten, however, that the possibilities outlined in this Schedule are not likely to be of a permanent nature. As rust in wheat becomes less prevalent so that the certainty of a crop increases, the present good price is bound to cause an increase in the acreage under the crop. The result of this would be an export trade at world prices and the pool price would fall, possibly, to a figure which would make five bags an acre hardly an economic yield, whilst even at an average yield of seven or eight bags the acreage would have to be a large one to get the requisite turnover, as is already the case with maize which is largely an export crop. The future of pyrethrum is impossible to forecast. It is almost entirely an export crop, but Kenya-grown pyrethrum has special qualities which are likely to make it a profitable crop for some little time to come. The cautious outlook of this paragraph should be borne in mind by intending settlers of this category, for what seems good to-day may not be so in a few years' time. If present opportunities *are* seized, it is vital to turn profits into a sound investment for the future, that is mixed farming.

110. In any case, so far as local residents are concerned, time is the important factor and it is essential that any scheme designed to assist them should be applied without delay. Such a scheme would be an integral part of the main scheme, with Government assistance along the same lines, and land must be made available at a reasonable price for intending and approved settlers of this type.

111. Schedule 6 covers the case of wheat, but a somewhat similar Schedule could be made out for pyrethrum, though more capital would be needed to cover the increased cost of land suitable for pyrethrum.

112. Schedules 7 and 8.—These deal with people who have private incomes and a capital of between £1,400 and £2,800. Schedule 7 is for people who wish to farm in accordance with the scheme outlined in Schedule 1 (a). In both Schedules 1 (a) and 1 (b), much of the capital required is for the provision of an income during the first two or three years after arrival in the Colony, i.e. until the farm brings in its first returns. A private income of £150 would in this way reduce the capital expenditure from £2,125 to £1,550, whilst a private income of £300 would reduce it to £1,400. This might particularly appeal to those with pensions, part of which could be commuted. Bigger incomes would not necessarily reduce the capital expenditure further, unless income was used as capital in the early years.

113. Schedule 8 deals with residential settlement. The capital required varies from £1,600 to £2,800, depending on whether the home is to be near or in Nairobi or in a country district. The income required would be about £500 a year, of which some £360 would go in ordinary household expenses and some £140 in insurance, assisted education of children, clubs, provision for holidays, etc. A simple though reasonable standard of living is possible on this income, and the social life obtainable would be at least equivalent to that obtainable in England on an income of half as much again.

Standard of Living

114. The Schedules show that the standard of living provided for ordinary necessities of life under most of the schemes is a fairly good one. A single man can get along quite well on £7 to £12 a month, with farm produce to help him, but he will not, until the first few years are over, have much spare cash to spend on such amusements as require cash. No provision has been made for the additional expenses of a married man because it is calculated that sidelines which a farmer's wife would undertake, such as poultry, would provide an additional income sufficient to cover the extra costs. A little more capital, however, for passages and living expenses during the first two years would be needed if the intending settler came out already married. Poultry have not been inserted, therefore, in the farming programmes, because they have been set off against the wife, though a bachelor would not find poultry keeping take too much of his time if he adopted the Hosier system, which, incidentally, benefits the grazing also.

115. Poultry, besides using up some of the skim milk, should provide an additional £50 to £100 a year—probably the former figure if, with increasing settlement, the export trade became the main one. A side-line in poultry would also contribute towards the upkeep of children, whilst their education could be faced with equanimity from the increased general profits made as the farm matures. If, however, a bigger income is wanted in the earlier years, the scale of farming must be increased with a corresponding increase of, say, another £250 in capital expenditure for every £7 a month additional income—basing the farming programme on the crops and stock itemized in the main Schedules.

116. The main Schedules as they stand show a return, after the farm has got going, of nearly 20% on an outlay of £2,000 odd. With another £50 a year from poultry and £50 a year from pigs, the return is increased to 25%. This suggests that farming in Kenya is a by no means unprofitable undertaking for those who tackle it in the right way. There are bound to be ups and downs and bad years as well as good years. The only way to keep up an average is not to dissipate the small fortunes made in good years but to put reserves aside for the bad years and the periods of bad prices that are inseparable from farming all over the world. And there are other attractions for the farmer in Kenya besides a good income.

117. With an altitude ranging from 5,000 ft. to 9,000 ft., on the Equator, there are naturally great variations in conditions governing plant growth, but the climate on the whole is equable, being never warmer than an English summer and seldom cooler than an English spring. As already suggested, the range of crops is equally great and tends to lower the cost of living, besides giving a steady supply of every conceivable type of fresh food throughout the year. Residents of Kenya can live very well and cheaply on locally produced foods; meat is exceptionally good and cheeses, vegetables, pig products, poultry, eggs and fruit are all first rate. All kinds of European and South African flowers grow remarkably well. The country districts are no longer out in the blue and all have their social clubs, golf courses, tennis courts, polo grounds and most even have race-courses. Rough shooting is obtainable, whilst small and big game shooting is now almost a prerogative of Kenya. First class fishing of all kinds (including trout) is easily obtainable. All forms of sport and games are, in fact, readily obtainable and at

minimum cost. The modern wireless set brings the world to the fireside. In short, newcomers with sufficient resources, knowledge and capacity for work can expect not only to do well at farming, but lead at the same time a comfortable, civilized and pleasant existence. The same applies to their wives. These will find that, in addition to a full measure of the ordinary amenities of life, there is no servant problem, since the male native makes an excellent house boy and cook at wages of from Sh. 15 to Sh. 30 a month in the country districts, whilst it should not be long before the native woman is able to perform the same tasks.

118. This section of our Report may appear to constitute a treatise on farming in Kenya, but we regard something of this kind as forming an essential background to the recommendations we are making.

SCHEDULE 1(a)

CAPITAL COSTS FOR MINIMUM STANDARD OF MIXED FARMING

MIXED FARM OF 600 ACRES—Value £1 10s. an acre.

MAIZE, WHEAT AND DAIRYING—150 acres arable and arable grass.
450 acres grazing and general.

CARRYING CAPACITY—3 acres to a beast.

PURCHASE PRICE OF FARM—£900 (approx.)

	Capital Expendi- ture	Depreci- ation
	£	£
Passages, journeys and pupilage for one year ..	150	
10 per cent of purchase price	90	
20 oxen (1 team and spares at £4 10s. each) ..	90	9
One plough	30	3
One disc harrow (second-hand)	15	4
Harrows (second-hand)	5	1
Cultivators	4	1
Yokes, skeys and chains	5	1
Tools and jembies, etc.	15	5
One scotch cart	25	5
Maize cribs	20	4
One shed and store	20	4
One sheller and engine	35	5
One small wheat thresher	30	5
One mower with reaper attachment	35	5
Seed maize and wheat	10	
One dip	100	10
Fencing and paddocks	60	5
Separator and dairy utensils	15	3
Dairy	10	1
Weighing machine	5	
Water cart	25	5
Anti-erosion measures on 70 acres at Sh. 10 ..	35	
Farm car	60	12
Petrol for 18 months	40	
House and furniture	110	10
Clearing 90 acres at Sh. 10 per acre	45	
Reserve for 50 in-calf grade heifers at £7 each ..	350	
Living for 18 months at £12 a month (little food grown first 2 months)	216	
Wages and posho, 18 months (putting up buildings, etc.), 15 boys at Sh. 10	135	
Running expenses for 18 months	40	
Bulls	50	15
Reserves	250	
TOTAL CAPITAL EXPENDITURE .. £	2,125	113

NOTE.—The reserves, and consequently the capital could be reduced by £100 if the land were "clean".

If in addition to the £810 advanced for land purchase, half the outlay for certain permanent improvements is also advanced by Government the capital required by the settler would be reduced by £97 10s. to £2,028

Or (if the land were "clean") £1,928

These additional items suggested are:—

Dip	£100
Anti-erosion measures	35
Fencing	60

TOTAL .. £ 195

Half of Total—£97 10s.

Total capital required, provided partly by the settler, and partly by Government, is therefore £2,935

£907 would be advanced by Government and the interest on this sum at 5½% would be £50

ESTIMATED PROFIT AND LOSS ACCOUNT FOR FIVE YEARS

(1) RETURNS AT END OF FIRST YEAR'S FARMING, I.E. AT END OF FIRST 18 MONTHS—

50 acres maize at 8 bags per acre, less 80 bags for food for labour, at Sh. 5 net	£ 80
20 acres wheat at 4 bags at Sh. 15 net	60
Net cream cheque	40
	£180

NOTE.—The living and working expenses for this period have already been accounted for in the capital expenditure.

(1) SET ASIDE COSTS FOR SECOND YEAR—

Cost of living at £10 per month	£ 120
Labour (other than stock)	50
Running expenses and repairs	35
Car expenses	25

£230

Debit balance to come from reserves £50

Net profit, i.e. living expenses and balance .. £70

NOTE.—If the land were clean from East Coast fever, the dairy herd could be brought on to the farm at the beginning, and thus the net cream cheque in the first year would be £110. This would result in a credit balance of £20 instead of a debit of £50, and a net profit of £140. Stock improvement would also be one year ahead.

(2) RETURNS, SECOND YEAR—

50 acres maize at 11 bags, less posho (i.e. food)	£ 120
20 acres wheat at 5 bags	75
Net cream cheque (less costs of running stock)	110

£305

(2) SET ASIDE COSTS FOR THIRD YEAR—		£
Costs of living at £9 per month	110	
Labour	50	
Running expenses and repairs	40	
Petrol and repairs	30	
Purchase 10 oxen and yokes, etc. ..	50	
	£280	
Credit balance		£25
Net profit, i.e. living expenses and balance ..		£135
(3) RETURNS, THIRD YEAR—		£
50 acres maize at 11 bags per acre, less posho ..	120	
20 acres wheat at 5 bags	75	
Net cream cheque, less costs	110	
	£305	
(3) SET ASIDE COSTS FOR FOURTH YEAR—		£
Cost of living at £9 per month	110	
Labour	60	
Running expenses and repairs	60	
Petrol and repairs	30	
Purchase of 8 oxen at £4 10s.	35	
Purchase of one plough and harrow ..	40	
	£335	
Debit balance to come from reserves		£30
Net profit, i.e. living expenses and balance ..		£80
(4) RETURNS, FOURTH YEAR—		£
10 acres forage crops	Nil	
15 acres to grass	Nil	
80 acres maize at 11 bags (less posho)	190	
40 acres wheat at 4 bags	120	
Net cream cheque	120	
	£430	
(4) SET ASIDE COSTS, FIFTH YEAR—		£
Cost of living at £12 per month	145	
Labour	80	
Repairs, running expenses, renewals	70	
Petrol and repairs	30	
Interest on loan	50	
	£375	
Crédit balance		£55
Net profit, i.e. living expenses and balance ..		£200

(5) RETURNS, FIFTH YEAR—

	£
40 acres forage and reverted grass	Nil
90 acres maize at 11 bags, less posho	210
40 acres wheat at 5 bags per acre	150
Cream cheque	140
15 steers at £4 each	60
	£560

(5) SET ASIDE COSTS FOR SIXTH YEAR—

	£
Cost of living at £15 per month	180
Labour, repairs, running expenses, etc. ..	150
Petrol	20
Interest charges	50
	£400
Credit balance	£160
Net profit, i.e., living expenses and balance ..	£340

From now onwards the standard of living can be improved and implements, etc., renewed as the yields of milk (cream cheque) and general fertility of the farm improve. An income of £400 a year, after fully allowing for depreciation, should be attainable in a few years.

SCHEDULE 1 (b)

CAPITAL COSTS FOR MEDIUM STANDARD OF MIXED FARMING

MIXED FARM OF 700 ACRES—Value £1 10s. an acre.

MAIZE, WHEAT AND DAIRYING—200 acres arable. 500 acres grazing and general.

CARRYING CAPACITY—3 acres to a beast.

PURCHASE PRICE OF FARM—£1,000 (approx.)

	Capital Expendi- ture	Depreci- ation
	£	£
Passages, journeys and pupilage for one year ..	150	
10 per cent of purchase price ..	100	
40 oxen (two teams and spares at £4 10s. each) ..	180	18
Two ploughs	60	7
Disc harrows	25	3
Tooth harrows	10	1
Cultivators	6	1
Yokes, skeys and chains	10	2
Tools, etc.	25	7
One scotch cart	25	5
Maize cribs	30	3
Shed and store	20	2
Sheller and engine	35	5
Wheat thresher	30	3
Mower with reaper attachment	35	5
Seed maize and wheat	15	
Planter	15	3
Dip	100	10
Fencing and paddocks	75	7
Separator and dairy utensils	15	3
Dairy	10	1
Weighing machine	5	
Water cart	25	5
Anti-erosion measures	50	
Farm car	60	15
Petrol and repairs for 18 months	60	
House and furniture	150	10
Clearing 120 acres at Sh. 10 per acre	60	
Reserve for 60 in-calf grade heifers at £7 each ..	420	
Bulls	50	15
Living expenses for 18 months at £12 per month ..	216	
Wages and posho for 18 months	200	
Running expenses for 18 months	50	
Reserves	200	
TOTAL CAPITAL EXPENDITURE .. £	2,517	131

NOTE.—The reserves, and consequently the capital, could be reduced by £100 if the land were "clean".

If, in addition to the £900 advanced for land purchase, half the cash for certain permanent improvements is also advanced by Government, the capital required by the settler is reduced by £112 to	£2,405
Or (if the land were "clean").. .. .	£2,305

These additional items suggested are:—

	£
Dip	100
Anti-erosion measures	50
Fencing	75
TOTAL .. £	225

Half of Total—£112 10s.

Total capital required, provided partly by the settler and partly by Government, is therefore	£3,417
£1,012 would be advanced by Government and the interest on this sum at 5½% would be	£56

ESTIMATED PROFIT AND LOSS ACCOUNT FOR FIVE YEARS

(1) RETURNS AT END OF FIRST YEAR, I.E. AT END OF FIRST 18 MONTHS—	
	£
80 acres of maize at 8 bags per acre, less 80 bags for labour, at Sh. 5 net	140
40 acres of wheat at 4 bags per acre at Sh. 15 net	120
Net cream cheque for 4 months	45
	£305

NOTE.—The living and working expenses for this period have already been accounted for in the capital expenditure.

(1) SET ASIDE EXPENDITURE REQUIRED FOR SECOND YEAR'S FARMING—	
	£
Labour	90
Running expenses and repairs	40
Car expenses	25
Living expenses at £12 per month	145
	£300
Credit balance	£5
Net profit, i.e. living expenses and balance	£150

NOTE.—If the land were clean from East Coast Fever, the dairy herd could be brought on to the farm at the beginning, and thus the net cream cheque in the first year would be £135. This would result in a credit balance of £100 and a net profit of £235. Stock improvement would also be one year ahead.

(2) RETURNS, SECOND YEAR—

	£
80 acres maize at 11 bags (less posho) at Sh. 5 per bag net	200
40 acres wheat at 5 bags at Sh. 15 per bag net ..	150
Net cream cheque (i.e. less cost of running stock)	135
TOTAL .. £	485

(2) SET ASIDE COSTS FOR THIRD YEAR—

	£
Labour	90
Running expenses and repairs	50
Car expenses	25
Living expenses at £12 10s. per month ..	150
	£315
Spend £50 on implements and improvements	50
	£365
Credit balance	£120
Net profit, i.e. living expenses and balance ..	£270

(3) RETURNS, THIRD YEAR—

	£
80 acres maize at 11 bags (less posho) at Sh. 5 per bag net	200
40 acres wheat at 5 bags per acre at Sh. 15 per bag net	150
Net cream cheque (i.e. less cost of running stock)	135
TOTAL .. £	485

(3) SET ASIDE COSTS FOR FOURTH YEAR—

	£
Labour	100
Running expenses, repairs, renewals, car expenses, etc.	100
Living expenses	150
	£350
Credit balance	£135
Net profit, i.e. living expenses and balance ..	£285

(4) RETURNS, FOURTH YEAR—

	£
10 acres forage crops	Nil (cash)
20 acres old arable land to grass	Nil (cash)
80 acres maize at 11 bags per acre (less posho) ..	200
40 acres wheat at 4 bags per acre	120
Net cream cheque	145
TOTAL .. £	465

(4) SET ASIDE COSTS FOR FIFTH YEAR—

	£
Labour	100
Running expenses, repairs, renewals, car expenses, etc.	100
Living expenses	150
Interest on capital advanced	56
	<u>£406</u>

Credit balance	<u>£60</u>

Net profit, i.e. living expenses and balance ..	<u>£210</u>

(5) RETURNS, FIFTH YEAR—

	£
80 acres maize at 11 bags per acre (less posho) ..	200
40 acres wheat at 5 bags per acre	150
Net cream cheque	170
20 steers at £4 each	80
TOTAL .. £	<u>600</u>

(5) SET ASIDE COSTS FOR SIXTH YEAR—

	£
Labour	100
Running expenses and repairs, car, etc. ..	100
Living expenses at £15 per month ..	180
Interest charges	56
	<u>£436</u>

Credit balance	<u>£164</u>

Net profit, i.e. living expenses and balance ..	<u>£340</u>

From now onwards the standard of living can be improved and implements, etc., renewed as the yields of milk (cream cheque) and general fertility of the farm improve. An income of £400 a year after allowing fully for depreciation should be easily attainable in a few years.

SCHEDULE 2

PYRETHRUM AND STOCK FARM OF 700 ACRES

VALUE £1 10s. AN ACRE

PURCHASE PRICE OF FARM £1,000 (APPROX.)

	Capital Expendi- ture	Depreci- ation
	£	£
Passages journeys and pupilage for one year ..	150	
10 per cent of purchase price	100	
20 oxen at £4 10 s. each with yokes, etc. ..	95	10
One plough and harrows	50	7
Tools, etc.	15	3
Scotch cart	25	5
Drying shed	50	10
Shed and store	20	4
Dairying, separator and utensils	25	4
Water cart	25	5
Anti-erosion measures	20	
Farm car	60	15
Petrol and repairs for 18 months	40	
House and furniture	150	15
Living expenses at £15 per month for 18 months (approx.)	270	
Wages and posho for 18 months	180	
Running expenses for 12 months.. .. .	120	
Reserves	50	
TOTAL CAPITAL EXPENDITURE ON PYRETHRUM AND STOCK FARM	£ 1,445	78

The total capital required, provided partly by the settler,
and partly by Government, is, therefore.. .. £2,345

£900 would be advanced by Government and the interest
on this sum at 5½ would be £50

The capital to be provided by the settler is.. .. £1,445

Of, (if half the total outlay were advanced by Government) £1,200

(1) RETURNS AT THE END OF FIRST YEAR'S FARMING, I.E.
AT END OF FIRST 18 MONTHS—

30 acres of pyrethrum for 5 months at 300 lb. an
acre at 50 cents per lb. £ 225

(2) RETURNS DURING SECOND YEAR'S FARMING—

30 acres pyrethrum at 700 lb. per acre at 50 cents
per lb. £525

(2) COSTS DURING SECOND YEAR—

	£	
Cost of living at £12 10s. per month ..	150	
Labour	180	
Car repairs and petrol	30	
Running expenses	40	
Incidentals and reserves	20	
	<u>£400</u>	
To preparing another 30 acres of land for pyrethrum ..		95
Erection of second dryer		60
		<u>£155</u>
Credit balance over 2 years		£195
Net profit, i.e. living expenses and balance ..		<u>£345</u>

(3) RETURNS DURING THIRD YEAR'S FARMING—

	£
30 acres at 700 lb. per acre at 50 cents per lb. ..	525
30 acres at 300 lb. per acre at 50 cents per lb. ..	225
	<u>£750</u>

(3) COSTS DURING THIRD YEAR—

	£	
Cost of living at £15 per month	180	
Labour	280	
Car repairs and petrol	30	
Running expenses and repairs	90	
	<u>£580</u>	
Credit balance		£170
Net profit, i.e. living expenses and balance ..		<u>£350</u>

(4) RETURNS DURING THE FOURTH YEAR—

60 acres of pyrethrum at 700 lb. per acre at 50 cents per lb.	£1,050

(4) COSTS DURING FOURTH YEAR—

	£	
Living expenses at £15 per month	180	
Labour	320	
Car repairs and petrol	50	
Running expenses and repairs	120	
	<u>£670</u>	
Credit balance		£380
Net profit, i.e. living expenses and balance ..		<u>£560</u>

At the end of the fifth year and onwards the balance would be reduced by £50, i.e., the interest on the capital loaned.

The credit balances over the first four years are ample to start fencing and dipping and stocking for dairying and so put the farm on a sound basis.

SCHEDULE 3

MAIZE FARMING

A MAIZE FARM OF 1,000 ACRES—VALUED AT £1 PER ACRE
500 ACRES ARABLE—PRICE £1,000

	Capital Expendi- ture	Depreci- ation
	£	£
Passages, journeys and pupilage for one year ..	150	
10 per cent of land purchase	100	
Five teams of oxen and spares at £4 10s. a head	405	40
Three ploughs	105	10
Disc harrow	25	5
Tooth harrows	25	5
Cultivators	15	4
One wagon	60	7
One cart	25	5
Yokes, skeys and chains	25	5
Tools, etc.	60	12
Stores and sheds	30	5
Maize cribs	75	15
Sheller and engine	35	5
Planters	40	8
Posho mill	15	2
Posho tanks	15	1
House and furniture	150	15
Water cart	25	5
Weighing machine and tarpaulins	10	2
Seed maize	10	
Farm car	60	15
Petrol for 18 months	40	
Living expenses for 18 months at £12 per month	216	
Wages and posho for 18 months	300	
Anti-erosion measures on 200 acres	100	
Running expenses for 18 months	125	
Clearing 200 acres at Sh. 10	100	
Reserves, incidentals and contingencies	200	
TOTAL .. £	2,541	166

If Government advances £75 for anti-erosion measures as well as £900 for land purchase, the capital required by the settler is reduced by £75 to £2,466

Total capital required, provided partly by Government and partly by the settler is £3,441

£975 would be advanced by Government and the interest on this at 5½% would be £54

(1) RETURNS AT END OF FIRST YEAR'S FARMING, I.E. AT
END OF FIRST 18 MONTHS—
200 acres of maize at 8 bags per acre (less 120 bags
for posho for 2nd year) at Sh. 5 net per bag .. £370

NOTE.—The living and working expenses for this period have already been accounted for in the capital expenditure.

(1) SET-ASIDE COSTS FOR SECOND YEAR'S FARMING—

	£
Cost of living at £11 per month	130
Labour	145
Running expenses, repairs, etc.	100
Car expenses	25
Anti-erosion measures on 100 acres ..	50
	<u>£450</u>
Debit balance to come from reserves	£80
Net profit, i.e. living expenses and balance ..	<u>£50</u>

(2) RETURNS AT END OF SECOND YEAR—

300 acres maize at 10 bags per acre (less posho) at Sh. 5 net	<u>£710</u>

(2) SET-ASIDE COSTS FOR THIRD YEAR'S FARMING—

	£
Cost of living at £15 per month	180
Labour	150
Running expenses and repairs and renewals ..	120
Car expenses	30
Break 50 acres fresh land	50
TOTAL	<u>£530</u>
Credit balance	£180
Net profit, i.e. living expenses and balance ..	<u>£360</u>

(3) RETURNS AT END OF THIRD YEAR—

300 acres maize at 12 bags per acre (less posho) ..	<u>£850</u>

(3) SET-ASIDE COSTS FOR FOURTH YEAR—

	£
Cost of living at £15 per month	180
Labour	150
Running expenses, repairs and renewals ..	150
Car expenses	30
Break 50 acres new land	50
Anti-erosion measures on 50 acres ..	25
TOTAL	<u>585</u>
Credit balance	£265
Net profit, i.e. living expenses and balance ..	<u>£445</u>

(4) RETURNS AT END OF FOURTH YEAR—

	£
300 acres maize at 10 bags per acre (less posho) ..	700
50 acres fallow	Nil
TOTAL	<u>£ 700</u>

(4) SET-ASIDE COSTS FOR FIFTH YEAR—

	£
Cost of living at £15 per month	180
Labour	150
Running expenses, repairs, etc.	150
Car expenses	30
Anti-erosion measures on 50 acres.. ..	25
Interest on loan	50

TOTAL ..£ 585

Credit balance £115

Net profit, i.e. living expenses and balance .. £295

(5) RETURNS AT END OF FIFTH YEAR—

300 acres of maize at 12 bags per acre (less posho)	850
100 acres fallow	Nil

TOTAL ..£ 850

(5) SET-ASIDE COSTS FOR SIXTH YEAR—

	£
Cost of living at £15 per month	180
Labour	150
Running expenses, repairs, etc.	150
Car expenses	30
Interest on loan	50

£500

Credit balance £290

Net profit, i.e. living expenses and balance .. £470

Improvements to house, car and renewals of implements can now be undertaken.

Average annual income less allowance for depreciation should work out at about £360 a year.

SCHEDULE 4**STOCK FARMING**

A FARM OF 800 ACRES IN A "CLEAN" AREA—Value £1 5s. per acre.

200 ACRES ARABLE—Grazing three acres to a beast.

STOCK ONLY ON CLEAN LAND.

	Capital Expendi- ture	Depreci- ation
	£	£
Passages, journeys and pupillage for one year ..	150	
10 per cent of purchase price	100	
Eight oxen	40	4
Cultivating machinery	30	4
Scotch cart	25	5
Mower	25	5
Dip	100	10
Fencing	100	10
Separator, dairy, etc.	40	7
Water cart	25	5
Farm car	60	15
Petrol and repairs for 18 months	40	
House and furniture	150	15
Sheds	20	2
100 in-calf heifers at £7 each	700	
Bulls	100	30
Living expenses 9 months at £12 per month ..	110	
Wages and posho for 9 months	70	
Running expenses and incidentals for 9 months	50	
Reserves	100	
TOTAL .. £	2,035	112

If Government advances £100 for dip and fencing, in addition to the £900 for land purchase, the capital required by the settler is reduced to £1,935

The total capital required, provided partly by Government and partly by the settler is £2,935

£1,000 would be advanced by Government and the interest on this at 5% would be £55

(1) RETURNS AT END OF FIRST YEAR—

Net cream cheque £225

NOTE.—The living and working expenses for this period have already been accounted for in the capital expenditure.

(1) SET-ASIDE COSTS FOR SECOND YEAR—

	£
Living expenses at £12 per month ..	145
Petrol and repairs	25
Incidentals and renewals	30
	£200

Credit balance £25

Net profit, i.e. living expenses and balance £170

Interest can be paid out of part of stock increase at end of fourth year.

Net cream cheque will then be about £280 a year and increase (steers) about £200 a year. Cultivation for feed will have to be increased but after a few more years the farmer should be making about £300 a year including living expenses and after making full allowance for depreciation.

SCHEDULE 5

SCHEDULE OF FARMING FOR IMMIGRANTS WHO START IN A SALARIED POST

This is the case of a man who starts as a farm manager and is probably one of the most important and likely avenues of settlement. Managers would usually be single men to start with and would go through the proper course of pupillage before taking employment. During this period they would select the district in which they eventually wished to farm and try and obtain a post as a manager in that district. The essence of the scheme is that the manager would provide a large part of his capital out of savings from salary. With a salary of £15 a month to start with, he might save £7 a month, and more in proportion with a larger salary. On an average he should in six or seven years' time save £700. Should he have had £550 of his own, £150 of which will have been spent on passages and pupillage, he will have accumulated £1,100 to spend on farming, stocking and equipment, etc., part of which he will spend during his salaried years. Referring to Schedule 1(a), the drop from £2,000 to £1,250 in capital required is easily explained. His experience will enable him to save about £80 in purchase of equipment, and he may be content with a house and furniture costing £50, thus saving £60 on this item. He should be able to reduce the reserves required by about £150. The biggest savings, however, will be in the purchase of the dairy herd and in connexion with his living expenses during the first eighteen months of settling on his own farm. If, early in his employment, he purchases a small dairy herd of only about 20 cows and puts them on his own farm, with a dip and fencing, he will save about another £240 in the costs of male and female stock. The reason he can start in a small way is because his herd can be bred up during the years he is in a salaried post, until its size and output is such that by the time he goes on to his own farm he can just meet his living expenses (of £216) for the first year or 18 months out of sales of dairy produce and beef. In this way he would save about another £200 out of the original table of capital costs.

It is suggested that this, rather than cropping, is the way to make a start. It necessitates the boarding out of his nucleus herd. This might be done, possibly on the farm of his employer, under some such arrangement as the employer taking the cream and the owner the increase. When the time comes near to go to his own farm, the employee could make arrangements for "cleaning" it by the temporary herding there of a number of immune oxen. It might also be possible to do a little crop growing also, depending on the circumstances of each particular case. A similar scheme could probably be adopted if the new settler failed to find a post as a farm manager, but took on any kind of job—even as a foreman on roads. The point is that an immigrant can come out to Kenya with every prospect of eventual success so long as he is prepared to be, and can obtain a post as, a wage earner at a low salary. He must relish hard work and possess the determination to save on his salary and live very frugally until he has amassed sufficient savings to quit wage earning and begin farming with whatever capital of his own he has already spent on starting his farm going. In ten or twelve years from coming out to Kenya, such a settler should be doing quite as well as is portrayed at the end of Schedule 1(a) and 1(b). His system of farming, after settling on his own farm, would be in accordance with Schedules 1(a) and 1(b), and he would use his acquired capital on the crop programme.

SCHEDULE 6**A SMALL HOLDING WITH WHEAT AS THE MAIN CROP**

300 TO 500 ACRES OF LAND AT £1 PER ACRE—ASSUMING VERY LITTLE
CLEARING TO BE DONE

	Resident	Immigrant
	£	£
Passages and pupilage.. .. .	—	150
10 per cent of purchase price of land ..	30	30
One team of oxen (20)	90	90
One plough (second-hand)	15	20
One harrow (second-hand)	5	15
One cart, harness and horse	40	40
One self-binder	25	25
One drill.. .. .	30	30
Eight cows (immune natives)	60	60
House and furniture	35	35
Store	10	10
Running expenses (15 months) (seed, harvest- ing costs, threshing, bags, transport) ..	30	30
Living expenses (15 months)	70	70
Wages (15 months)	50	60
Poultry	10	10
Reserves	30	40
£	530	705

RETURNS FIRST YEAR—

70 acres of wheat at 4 bags at Sh. 15 a bag £210

SET ASIDE COSTS FOR SECOND YEAR—

	£
Living expenses	40
Wages	50
Running expenses	15
Renewals	20
Seed	20
Six young oxen	20
Drill	30

£ 195

Credit balance £15

Net profit, i.e. living expenses and balance .. £55

RETURNS SECOND YEAR—

	£
70 acres of wheat at 5 bags at Sh. 15 per bag (seed deducted)	260
Poultry	20
£	280

SET ASIDE COSTS FOR THIRD YEAR—

	£
Living expenses at £4 per month ..	60
Wages	80
Running expenses	25
Renewals, etc.	20
Eight oxen	30
Seed	30
	£ 235

Credit balance	£45

Net profit, i.e. living expenses and balance ..	£95

RETURNS, THIRD YEAR—(NOTE. Use plough in double shifts)—

	£
120 acres of wheat at 5 bags at Sh. 15 per bag ..	450
Poultry	40
	£ 490

SET ASIDE COSTS FOR FOURTH YEAR—

	£
Living expenses at £5 per month ..	60
Wages	80
Seed	30
Running expenses	25
Renewals, etc. (second plough, other im- plements, etc.)	85
	£ 280

Credit balance	£210

Net profit, i.e. living expenses and balance ..	£270

From now onward, the farmer can pay interest on borrowed capital for land purchase on a 50-year funding scheme, amounting to about £15 a year, and must put aside money for stock and for the extra land he will need for stock and gradually build up a sound and well-balanced farm. A dip would have to be built with Government assistance.

SCHEDULE 7

PERSONS WITH PENSIONS

A man with a pension of £150 a year could start farming in accordance with Schedule 1(a) on a capital of £1,550. This is because his pension would pay for passages and pupilage during the first year, i.e. £150; his cost of living for the next 18 months, amounting to £216 in all, could also be met; he would not need any more than £100 reserves, thus saving another £150; and he could start with a smaller dairy herd as he would not need to live on the cream cheque and could afford to build up his herd from small beginnings—this would save another £150. These savings total £650. He would, however, be likely to spend another £200 on housing so that his net savings would be £450 on capital expenditure, reducing the capital required to £1,550. A man with a pension of £350 a year could save another £175 in capital expenditure in connexion with farm wages and petrol, thus reducing capital requirements to £1,375.

SCHEDULE 8

CAPITAL COSTS OF RESIDENTIAL SETTLEMENT

	£
1. 20 acres of land at £5 per acre	100
N.B.—If within 20 miles of Nairobi, provision should be made for a price of £20 to £50 per acre, but the acreage purchased would be less.	
2. Cost of house in stone, with sitting room, dining room, three bedrooms, verandah, store, kitchen, bath room, pantry, and furniture	900
3. Garage and boys' quarters in wood and iron	40
4. Installation of inside sanitation	30
5. Installation of electric light	120
6. Installation of ram with, say, a 200-foot lift and 300 yards of piping, and storage tank	50
7. Installation of two rain water tanks and hot water apparatus	25
If within 20 miles of Nairobi, items 2 to 7 would cost about £2,000 inclusive. A suitable car would be likely to cost more than £80, but items 12, 16 and 17 might be omitted.	
8. Purchase of car	80
9. Purchase of lawn mower, tools, etc.	20
10. Purchase of fruit trees, seed, etc.	20
11. Purchase of two ponies and saddlery	60
12. Building dairy, cow-shed and stable in stone	30
13. Clearing costs	10
14. Fencing, including gates	35
15. Installation of fowl yard, i.e., two laying pens with two houses and wired-in runs	20
16. Purchase of three cows for milking	18
17. Planting up three acres with wattle for firewood	5
	£ 1,563

An annual income of about £500 would be sufficient to cover the cost of living for a small family and all incidental expenses.

VI—DETAILED SCHEMES

119. We consider that attractive facilities should be offered for all types of potential settlers, both agricultural and residential, and we have devised our proposals accordingly.

1—Agricultural Settlement

(i) SCHEME FOR GOVERNMENT-AIDED PURCHASE OF PRIVATE LAND

120. Since unalienated Crown land suitable for general mixed agricultural development is limited in area, it is inevitable that any proposals for a considerable extension of settlement will depend mainly upon a more efficient utilization of land already in private ownership. We have, therefore, devoted special consideration to a scheme for assisting new settlers to purchase private holdings.

It should be emphasized, however, that the benefits of the scheme should be available for all who possess the necessary qualifications whether newcomers or existing residents, and it is clear that the latter would not need the £150 set aside in the schedules of capital costs for passages and pupilage.

121. The scheme we recommend is based on the regulations in operation in the Union of South Africa. The following is an outline of the proposals of which full details will be found in Appendix I. Our recommendations for the financing of the scheme are in Section VIII. Applicants would have to be approved by the Land and Settlement Board and, regardless of previous experience, must have had at least twelve months' farming experience in the Colony. To this condition we attach the greatest importance. The farm to be purchased must be for the applicant's personal occupation and development and he must be able to furnish satisfactory proof of financial competency to bear the initial development costs and pay his share of the purchase price. Government's contribution would not exceed 90 per cent of the total purchase price of the land and would not usually be more than £1,000 to £1,500 but in exceptional circumstances might be as much as £1,800. The land would be transferred to Government and re-sold to the settler on a forty-eight years' lease in the first instance (convertible to a 999 years' lease on fulfilment of the specified conditions). During the first four years of the lease no payments of interest or purchase price instalments would be required. After the fourth year, purchase price and interest together with the accumulated interest for

the initial period, would be payable in equal half-yearly sums over the remaining period of the lease.

122. Based on a $3\frac{1}{2}\%$ compound interest table, a payment of 1% per annum will completely clear a debt in $43\frac{1}{2}$ years. We have therefore suggested a term of 48 years for the lease, in order to provide for an initial period of four years free of payments and $43\frac{1}{2}$ years for the amortization of the debt.

123. We consider that annual outgoings of 7% or over are uneconomic for farming loans with commodity prices at normal levels (and in this connexion we would refer to the second part of paragraph 11), though we would emphasize that unduly high capital costs for land and so forth can have an even more disastrous effect than high interest charges. We recommend, therefore, that the rate of interest chargeable should be as low as possible and that the total annual charges, including amortization, should not exceed $5\frac{1}{2}\%$ or 6% per annum. We calculate that this figure would be made up of interest $3\frac{1}{2}\%$ or 4%, amortization 1% and working expenses 1%. We consider that the usual allowance of 1% or so for bad debts should, as an additional encouragement to new settlement, be carried by Government. Since the assisted settlement should be carefully supervised (as recommended), the risk of losses through bad debts should be below normal.

124. In order further to reduce the capital required by the new settlers, we recommend that provision of additional assistance for certain permanent improvements (see Schedules) should be made by short-term loans at the same rate of interest as the main loan.

Alternatively, if an Imperial grant were made available, we would stress the desirability of making an advance up to 50% of the total capital outlay during the first four years (including passage, pupilage, living expenses, etc., as detailed in Schedules Nos. 1 (a) to 6). (See also para. 48.)

125. One essential condition of the scheme is that, before purchase, the farm shall be inspected by an officer of the Agricultural Department or other qualified person skilled in this kind of work and shall have been approved as a sound investment for farming purposes.

126. More land than is necessary, within reason, for the applicant's purpose should not be purchased. It is vital, also, that too high a price should not be paid for land purchased from private individuals, that is to say, a price which might endanger the prospects of the new venture. Values should

bear a close relation to the productive capacity of the land and the relative position with regard to markets and will have to be such as will bear examination in the light of the figures recorded in the Schedules to Section V.

127. We recommend that in the first instance a register be kept by the settlement organization of farms or portions of farms which are available for sale or leasing, and that all essential details be recorded together with the name of the agent, if any, who is acting on behalf of the vendor. All such farms should be inspected and reported upon by a competent authority as soon as practicable in order to have at hand a list of approved farms for the guidance of prospective settlers.

128. If, when an active demand for land is created, there is evidence that, in spite of the application of the measures recommended in paragraph 25, land suitable for settlement is deliberately being kept out of the market, or is being held in an undeveloped condition for speculative reasons or merely for the occupation of squatter stock, we believe that it may be necessary for the Government to consider the application of a tax on undeveloped land, but we are of the opinion that the introduction of such a tax would at present be premature.

(ii) CROWN LAND GRANTS

129. Grants of Crown land farms are, under existing regulations, made by allotment on applications for which a special form is provided. An applicant must satisfy the Commissioner of Lands and Settlement that he is financially competent to develop the farm applied for and that he possesses the necessary farming experience. If accepted for consideration applications are then advertised for one month and, after the views of the local District Council or Committee have been obtained, are considered by the Advisory Land Board, which then makes its recommendations to Government. Leases are for periods of 999 years and carry rents revisable every 30 years; for the initial period up to 1945 the rents are at a flat rate of 20 cents per acre per annum; for the second period from 1946 to 1975 rents will be assessed at 1 per cent of the unimproved value of the land in 1945; for the third period of 30 years 2 per cent, for the next period 3 per cent and for every 30 year period thereafter 3 per cent. The purchase price is payable in ten equal annual instalments. Development conditions are imposed, to be fulfilled during the first three years and the first five years respectively, and to be subsequently maintained.

130. If our scheme for Government assisted purchase of private land is accepted, we consider that the ordinary terms for the alienation of Crown land as regards the period allowed for the payment of stand premium should be amended and brought into conformity with those proposals.

131. Evidence was submitted to the effect that the existing revisable rent conditions of the Crown Lands Ordinance are inimical to settlement and act as a serious deterrent to the provision of capital for land development. In view of his official position the chairman was unable to express an opinion on this matter. With this exception the Committee was unanimously convinced that the evidence was justified. Some members of the Committee favour the freeholding of land; others consider that the objection should be met by adopting a system of perpetual leases with peppercorn or at any rate non-revisable rentals. We make no recommendation on the subject, however, as we understand that Government has undertaken to appoint a Committee to inquire into these subjects. As long ago as 1922 the Land Tenure Commission recommended the freeholding of land titles; in 1932 an assurance was given by Government that an inquiry would take place and that assurance has been renewed on subsequent occasions.

We would urge the importance of starting the investigation as soon as possible.

2—Residential Settlement

132. Every possible encouragement should be given to this class of settlement.

133. The Indian Army War Block Officers' Scheme, reproduced in Appendix IV, was specially designed for a group of ex-officers of the Indian Army, and is open for applications only until the 31st December, 1938. In our view the scheme should be renewed and its application extended to include retired people of European race of all professions who desire residential plots (not in Nairobi or Mombasa) for their personal occupation. Apart from the special provisions recommended in the next sub-section for Civil and Railway Servants of the East African territories, we consider that a reasonable charge should be made for the land but that allottees should have the option of paying the assessed sum in four equal annual instalments free of interest.

134. Authority has already been given to the Commissioner of Lands and Settlement to sell at a fixed rate to approved residential settlers plots for personal occupation in such townships as Nyeri, Nanyuki, Timau and Thomson's Falls. Upon application to the Commissioner, Box 89, Nairobi, particulars may be obtained of plots available in any of these townships.

135. Such areas as Tigoni, near Limuru, and Kileleshwa in Nairobi, will, when available for disposal, provide further attractive openings for residential settlement.

136. We believe that the Colony, with its outstandingly healthy and equable climate, can offer great attractions for settlement of this kind and that every reasonable inducement should be offered to prospective residential settlers to make their homes in Kenya. The cost of living is not high as Schedule 8 of Section V will show. As stated in Section V, many and varied amenities such as games of all kinds and sport of every description are available at very cheap cost almost everywhere, and there is no difficulty in obtaining domestic servants.

137. At present the concessions granted by the Shipping Companies and the Kenya and Uganda Railways Administration apply only to farming settlers and can be claimed only when settlers are able to produce evidence that they have actually acquired agricultural land.

We strongly recommend that the Railway Council and the Shipping Companies be urged to extend the concessions to all prospective settlers, whether farming or residential, who are vouched for by the Kenya Association (1932) or the Settlement Officer in London.

3—Scheme for the Settlement of Retired East African Government and Railway Officials

138. In 1927 a scheme was adopted by the Legislative Council for the provision of special facilities for grants of farms or residential plots to encourage Government and Railway officials to retire in the Colony. The scheme was absorbed into the Closer Settlement Proposals, 1928, but was never brought into operation. We consider that it will be in every way to the advantage of the Colony to secure the settlement in the Colony of as many retired Civil and Railway Servants of the E.A. territories as can be induced to remain.

139. We recommend the application of the following proposals which are based on the 1927 scheme with modifications to bring them into line with present day policy.

**PROPOSALS FOR ENCOURAGING THE SETTLEMENT IN KENYA OF
RETIRING EAST AFRICAN CIVIL AND RAILWAY SERVANTS**

140. The following shall be eligible to participate in the scheme:—

- (a) Officers on permanent and pensionable establishment of the Governments of Kenya, Uganda, Tanganyika Territory, Zanzibar, Nyasaland, Northern Rhodesia, and of the Administrations of the Kenya and Uganda Railways and Harbours and of the Tanganyika Railways, during their final five years of pensionable service.
- (b) Officers serving in the Governments and Administrations mentioned in (a), but not on the permanent and pensionable establishment, who have served under the Crown for a period of at least ten years immediately preceding the date of application, and who at that date have expressed their intention of retiring on the expiration of their agreement or their then tour of service.

(a) Residential Plots.

141. (1) Applications for grants of residential plots, specified on a schedule to be prepared but not including plots in Nairobi and Mombasa Municipalities, will be considered by the Land and Settlement Board.

(2) Grants will be for terms of 99 years and will be free of *stand premium* charge but subject to a nominal rent of Sh. 20 per annum.

(3) The land allotted must be personally occupied by the allottee for a period aggregating three years within the first five years from the date of retirement. Any occupation completed before the date of retirement will not count for the purpose of this condition.

(4) A dwelling house constructed of permanent materials to the satisfaction of the Commissioner of Lands and Settlement must be erected within two years of the date of retirement.

(5) No transfer will be permitted until the occupation condition has been complied with, except in the case of death or to another retiring officer who may be equally eligible for

participation in the scheme. Transfer at any subsequent time within ten years of the commencement of the grant except in the case of death or to another officer eligible to participate in the scheme will be permitted only on payment of the full assessed unimproved value of the plot at the date of transfer, either by way of a cash payment or an increased rent.

(6) The allottee will be required to pay on the issue of the title the usual charges for survey fees, cost of deed, registration fee and stamp duty.

(7) Titles must be completed within twelve months of the date of allotment.

(8) The allottee may be called upon to pay a proportion of the cost of construction of road and drains serving the plot.

(b) Farms.

142. Applications from any officers eligible for participation will be considered either for grants of Crown land on the usual terms or for a loan under the scheme for Government assistance in the purchase of private land.

(c) Additional proposals for Purchase and/or Development of Farms and Residential Plots.

143. (1) An additional or alternative proposal for the purchase and/or development of farm land by retiring pensionable officers of the Kenya Government.

It is provided by section 18 of the European Officers' Pension Ordinance, No. 11 of 1927, that where a European officer, holding a pensionable office who is not on probation or agreement, dies while in the service of Kenya, and during the five years preceding his death, has continuously held pensionable office in Kenya or offices in other public services which were, when he held them, pensionable under the pensions regulations applicable to such service, it shall be lawful for the Governor in Council to grant to his legal personal representatives a gratuity of an amount not exceeding one year's pensionable emoluments; and section 14 of the Schedule of the Ordinance gives such officer the option of being paid in lieu of any pension accruing under the Ordinance, a pension at the rate of three-fourths of such pension, together with a gratuity equal to ten times the amount of the reduction so made in pensions.

It is recommended in the case of officers who express their intention of retiring on pension within five years, and are eligible to do so, and who express the further intention of

remaining in the Kenya Civil Service until retirement, and who have given notice of their intention to accept a reduced pension and gratuity under section 14 of the Schedule of the Ordinance, that Government should, if requested to do so, advance to them sums not exceeding the amount which in the event of death the Governor in Council would be empowered by the section of the Ordinance quoted, to pay to their estates, or not exceeding the amount which will be payable to them as the total commuted portion of their pension from all sources, whichever is the lesser amount, for the purpose of enabling them to purchase and develop prior to retirement, land other than Crown land, and/or where they have been granted an allotment of Crown land under the scheme to enable them to develop such land and/or to purchase and develop Crown land additional to their grants, in order that it may be ready for their beneficial occupation immediately after retirement.

It is proposed that any amount advanced should bear a reasonable rate of interest, and that it should be a condition of the agreement that, if not previously repaid, the advance should be deducted in full out of the gratuity which would become payable under the Pensions Ordinance on retirement or at death as the case may be. As a further security against loss it is proposed that Government should take a mortgage over the property for the amount of the advance, and that no transfer of the property be permitted until the mortgage has been discharged.

It is felt that if each application for an advance is considered on its merits (the consideration to include the probability or otherwise of granting a gratuity to the officer's estate in the event of death) and if the expenditure on development is required to be in accordance with a plan approved by the Land and Settlement Board, Government will be fully secured against loss; it is also felt that great encouragement will be given by the scheme to the settlement of officers in the Colony on retirement.

(2) A similar provision should also be made, as specified in the scheme approved in 1929 by the Secretary of State, for officers of the Kenya and Uganda Railways and Harbours Service.

4—Group Settlement Schemes

144. One of the problems which must be faced is the existence in the Colony of a large and increasing number of Kenya born people, born on the land, whose natural

bent is towards farming but who are at present landless. These must form a valuable adjunct in the development of the Colony, in that they must know how best to deal with local conditions and the type of land which their fathers farmed before them and we feel that everything possible to assist these people should be done. Many possess a few farming implements and cattle, farming experience of varying quantity and quality, but little or no capital, and the problem created by their presence, if further neglected, will become increasingly difficult of solution. If we refrained from indicating the lines upon which we think a partial solution of the problem can be found we should consider that we had failed in our duty. We are greatly indebted to Colonel R. B. Turner, the Commissioner for the Union of South Africa, for a very full and careful investigation made by him with a view to discovering the extent of the problem. This shows that in order to meet the demands of these people provision would have to be made for at least a hundred, some with families. We cannot close our eyes to the fact that in addition to these landless adults there are several hundred children who may be seeking land in a few years time. We would, however, take the opportunity of repudiating the view which we find to be commonly held that it is the obligation of the Government to provide land for all who want it. We consider that in general the proper way to begin a farming career for those who wish to be on the land and cannot afford to purchase and develop land of their own is in the employ of those who can. In Schedule 5 of Section V, dealing with farm managers, will be found an estimate of the position of the employee.

145. If difficulty should be found in obtaining employment either as farm managers or in other agricultural capacities we hold the view that a suitable type of Group Settlement scheme might provide at any rate a partial solution of the problem. The precise area required for the scheme and the details of its organization, management and finance we have not fully worked out. Details of this kind would be appropriately referred to the Land and Settlement Board which in another section we recommend should be set up. A block of land we have in mind as possibly suitable for such a settlement is the Ol Arabel Valley in the north-west of Laikipia. The settlement would require to be thoroughly well organized and under strict control, and the scheme should provide for assistance towards the individual settlement of those who, after a period of probation, prove themselves worthy of it.

146. The financial provision required for the scheme would depend upon the area or areas selected for the Settlement, the number of participants and the size of the individual unit.

147. An estimate has been given that, apart from the provision of land, the requirements of each participant would be approximately £300 as shown in the following Schedule:—

	£
Housing and fencing material	50
10 Cows	80
1 Bull	20
12 Bullocks	50
Plough, Harrow and Gear	10
Separator, and Cream Cans	15
Pigs	10
Ox Cart	20
	£255
Survey fees and unforeseen	15
Total Capital Advance	£270

148. If a further charge of approximately £100 be made for the value of each land unit the total indebtedness of each participant would be about £400. On a 5 per cent interest table and a 30 years amortization the annual sum payable would be only about £30. Only a bare subsistence would be obtained under any scheme based on these estimates, unless a high priced crop could be grown.

5—Privately Organized Group Settlement Schemes

149. Two other group settlement schemes have been submitted to us, one by Mr. E. Powys Cobb and the other by the Sotik Co-operative Society, Ltd. The essential feature of both schemes is that individual farms are grouped around a central Home Farm run by experts where tuition is provided for intending participants in the scheme. From the Home Farm, advice and help to establish individuals of the group are also given as well as assistance in the preparation of land for cropping and in harvesting. Preparation of products for marketing can also be done on the Home Farm.

150. Mr. Cobb's scheme provides for the settlement of boys and girls from overseas. Training would be given on the Home Farm and on completion of the initial period the

boys would take up their individual holdings which they would then develop on mixed farming lines without the assistance of any native labour. Produce would be marketed co-operatively.

151. The Sotik scheme was organized by a group of local farmers and is intended to provide for the needs of prospective settlers with a limited amount of capital. The individual blocks of land are about 500 acres each, and we understand that at present ten out of the fourteen available on the original holding have been taken up and most of these are being actively developed, with passion fruit as the main crop and source of income.

152. A large number of advantages, actual and implied, are claimed for group settlement schemes in general by their protagonists. It is true to say that the work on the individual farms would be closely supervised by the experts on the Home Farm and mistakes thus avoided, as this is in the interests of the central organization, but the services of these experts have to be paid for somehow and under a Government-assisted scheme they would be provided in a measure by the Agricultural Officer, free of charge. A mechanic available for all, who would also run the power implements would be useful and an economy. The new settler has the advantage of being trained on land similar to his own but he can also arrange for this under the Government-assisted scheme. Transport of produce could be done by the central organization, but there is now plenty of cheap organized transport in the country. Centralized processing and marketing could be done on and by the Home Farm, but there are already in existence processing and marketing organizations available on a co-operative basis for most products. A social centre would be available at little cost. There are certain real advantages. These are:—

(a) Female stock of whose quality something is known could be bought from the Home Farm.

(b) The services of pedigree and even proved bulls could be made more cheaply available for the individual's dairy herd either naturally or by means of artificial insemination and the herd could thus be rapidly improved in quality. Artificial insemination may come into use more generally, however, throughout the country.

(c) If the farms were in a district "dirty" for E.C.F. they could be cleaned up whilst the individual settlers were still

in the pupilage stage and thus a whole year could be saved. Their crops could also be put in for them during the last year of pupilage.

(d) Should stock be the main item on the individual settler's programme, small acreages of food crops for stock and all grain crops for sale could be power planted and harvested by the central organization with the assistance of the settlers, thus obviating individual capital expenditure on implements and traction.

(e) The Home Farm organization would provide land, prepare it for occupation and stock it with little capital expenditure on the part of the individual participants who, instead, would pay interest at low rates on the capital value of what is provided for them. These capital requirements provided would be more than in the usual state-aided land purchase schemes but not much more than in a Government scheme which contributed pound for pound with what the settler provided. In any case, however, the central organization must be repaid—whether in capital or extra interest makes little difference in the long run as regards the final obligations of the individual participant.

153. The participants in a group settlement scheme will not have such a high standard of living as private farmers, for the reason that their cultivation programme is likely to be on a smaller scale, being done by the central organization with reduced overheads. The enterprise is smaller, requiring smaller capital, giving a smaller income. Much depends, however, on how fully the individual's time is taken up with sidelines such as pigs, poultry and manufactured dairy products, and to what extent these products can be marketed by the central organization. Life in such a group is apt to be somewhat restricted, but would appeal to those with small capital who were content with a simple social life, inexpensive amusements and a modest standard of living.

154. In our view it is important before any group settlement schemes are given the approval of Government, or newcomers encouraged to participate in them, that they should be thoroughly examined and approved by the Land and Settlement Board. It would be just as bad for the reputation of Kenya if privately organized group settlement schemes, apparently tacitly approved by Government, failed, as it would if Government settlement schemes suffered a similar fate. No individual participant in any group settlement scheme should actually purchase his holding until he

has given it a trial for several years. These schemes sometimes look more attractive than they actually are. Such schemes in other countries have been known to fail probably because the advantages are more apparent than real and it has been forgotten that a minimum amount of capital is necessary for farming—whatever the organization—and that the individual participant's holding, cultivation and stocking must be sufficient to give him a full time job and an adequate turnover.

155. It is our opinion that group settlements should be placed on fertile land with an assured rainfall. We do not consider that land of the ranching type is suitable for them, though such land would be suitable for private individuals who are interested purely in that kind of farming.

6—Jewish Settlement

156. During the past few months the subject of the immigration of Jews from European countries has received much public attention in the Colony. We are fully alive to the gravity and importance of the problem and have given it much consideration. We are of the opinion that the carefully regulated agricultural settlement of a comparatively small number of Jews of nordic type on individual holdings—the number to be governed by the absorptive capacity of the Colony—might be an advantage to Kenya, and would provide a small contribution towards the solution of an acute world problem. Such settlement should be privately organized and financed but should, at every stage, be subject to the approval of Government.

157. Jewish immigration should, in our view, be very rigorously supervised and controlled, as, in the absence of any large secondary industries in Kenya, it would be impossible for any considerable number of artisans, clerks and professional people to be absorbed in the economic life of the Colony without seriously jeopardising the interests of existing residents.

158. We understand that a Jewish Agricultural Group Settlement Scheme is already being organized by a privately established company and that its aim is to bring out a limited number of young German Jews who have had some agricultural training before arrival and who would be given a period of pupilage on private farms here, and would then be established on land acquired by purchase in the open market. Whilst we feel that in the interests of the country as a whole

schemes for foreign group settlements should be examined with the utmost caution, we are prepared to approve such a scheme as that to which we have referred, which is based on careful selection, limited numbers, sound finance and adequate supervision.

159. In our consideration of this subject and the general question of group settlement we had the advantage of meetings and discussions with Mr. Asaph Grasovsky, Senior Horticultural Officer in Palestine, who was loaned by the Palestinian Government to the British Council for German Jewry for the purpose of investigating and reporting upon the possibilities of Jewish settlement in Kenya. Mr. Grasovsky's report is generally favourable only to the development of individual Jewish agricultural holdings in selected areas, but is definitely discouraging to Jewish immigration of other kinds.

7—Communal Farms

160. There is another possible form of settlement—the Communal Farm. Briefly, this is a large farm with a central organization, in which, instead of each unit having an individual farm, every participant does his own specialized task such as ploughing, planting, harvesting, repairs, and so forth, tasks being interchanged at intervals to avoid undue monotony. The units would be little more than foremen-labourers and would have little prospect of gaining a position of independence. We consider that this type of settlement is unsuitable to conditions of life in Kenya and should not be encouraged.

8—Leasing Arrangements

161. We consider that an important line of agricultural advance may lie in the development of a system of leasing farms for periods of years, the landlord providing essential farm buildings, fencing, dams and other permanent improvements and charging an economic rent to cover his capital outlay. Such a scheme of tenant farming may prove attractive to young men with agricultural experience but with little capital. We discussed this suggestion with some of the largest land owners in the Colony, and they expressed their willingness to consider it in further detail. Adequate safeguards for the protection of both landlord and tenant will be required, and we recommend that either local legislation on the lines of the English Landlord and Tenant Acts be enacted or that standard forms of agreement be drawn up for the guidance of those who desire them.

VII—AGRICULTURAL EDUCATION

Pupilage and Scholarships

162. However experienced a prospective settler may be in the kind of farming suitable to the country from which he emigrates, it is essential for him to acquire a large amount of local knowledge in Kenya before he starts to farm on his own, for there are many problems peculiar to this country which are not experienced in Europe, such as certain cattle and stock diseases, control of soil erosion, cultivation methods, types of cropping, etc. A period of apprenticeship on suitable farms is therefore essential and is recommended as the basis of agricultural education. In the past the pupilage system has not always been successful since, not taking advice, pupils have gone to farms where the farmer himself may have insufficient knowledge or insufficient time to devote to the pupil, with the result that in a few instances the pupils have become dissatisfied with the country and have learnt little. There are, however, practically no instances where suitable pupils apprenticed to the right type of farmer have not settled down and later done well in the country. Lists of approved farms in different districts, whose owners have expressed their willingness to take pupils, are already in the hands of the Kenya Association (1932), but we recommend that a more comprehensive list of approved farms be compiled, and that farms on the present lists, if not already known to the Settlement Board should be inspected and reported on with regard to their suitability or otherwise for training men. New pupils, who are under the wing of the Land and Settlement Board, should not be allowed to engage themselves to any other than approved farmers.

163. New immigrants could well spend their term of pupilage on more than one farm in order to widen their experience of farming types, and decide in which area they wish to settle. During their term of pupilage they should be visited at intervals by an Agricultural Officer, or someone specially deputed for the purpose. This officer would observe how they were getting on and do all he could to assist them. On the completion of the new settlers' terms of pupilage on farms they should take a course at the Government Experiment Station centres at Njoro or Kitale, with short courses at the Naivasha Experiment Station or the Veterinary Research Laboratory. These courses would be given to explain the why and wherefore of the various practices learned on the farms to which they had been apprenticed. Certain centres should, we consider, be equipped to take pupils at suitable

periods. The same system of education might be applied also to the sons of existing farmers and to Kenya born youths, but in addition, a scholarship fund should be made available for selected applicants to enable them to take a six months' or two years' course, depending on circumstances, at an Agricultural College in the Union of South Africa, until such time as equally efficient local institutions can be established. After taking up their farms, chosen by them with the assistance and approval of their local authority and Agricultural Officer, they should be constantly visited and advised by the Agricultural Officer of the district or someone specially deputed for the purpose. This adviser would send in his reports to the Land and Settlement Board so that adequate supervision of the farming would be effected and the money advanced be safeguarded as far as possible.

This supervision is considered to be a vital part of any land settlement scheme and one which should give the new settler every chance of succeeding. The settler himself would feel that he had the full support and advice of Government and its technical advisers behind him and this should go far towards removing the fears of new settlers about taking up land and staking their all in the country.

Training Farm

164. Such a scheme of agricultural education on the pupilage system is recommended for older men but should be run in conjunction with a more centralized institution for young men. We feel that there is a class of prospective settler who, under present conditions, is almost entirely lost to Kenya. This is the boy of from 17 to 18 years of age who has just left school. Unless he is going to a University, his choice of career has to be made at this age and, once made, there is a natural disinclination to change, on the part of both the parents and the boys. The proposals which follow should apply both to boys born in Kenya and those born overseas whose parents, particularly in the latter case, might hesitate to send their sons out to be pupils with unknown farmers but who would not hesitate to send them to a well run Government controlled institution. The provision of a training school for young farmers might well be the means of attracting boys whose parents were prepared eventually to provide a suitable amount of capital to start their sons' farming. Should the capital available be below the amount necessary to start on leaving school, the boys would be equipped to take up posts as managers and could save the balance of the capital required out of their salaries in course of time.

165. The training farm we have in mind should aim at being self-supporting, except for the manager-instructor's salary, and the farm should be run entirely by the pupils, domestic staff only being provided by natives. Any surplus of income over expenditure should go towards further improvements and developments. The object is to give the pupils first hand knowledge and experience of every farming operation, including the erection of buildings, repairing of implements, and all cropping and stock operations. It will require a fair establishment of pupils to enable the farm to be run in this way. We have reason to believe that a sufficient number of boys, both local and overseas, would be found. The provision of the necessary equipment and stock for the modest beginnings would not be costly; apart from the quarters of the instructional staff, an important and interesting part of the training would be the erection of and improvements to their living quarters and all the usual farm buildings.

166. Lectures and talks would be given by technical Government officers and farmers.

167. We visualize a comparatively modest beginning to this scheme and if it failed, the net loss to the country would be little if anything more than the salaries of the instructional staff, which we have suggested should not be a charge on the farm.

168. On the other hand, if the scheme were successful, we can visualize that in the course of time it might develop into a fully equipped Agricultural College, worthy of our country, but always keeping the training farm as an integral and separate part of the whole establishment. We recommend that in selecting the farm for the purpose this ultimate aim should be borne in mind.

169. We consider that having obtained a suitable man as manager (a most important factor) he should be under the general supervision of a Board of Governors consisting of an officer from the Agricultural Department, and three or four practical farmers who would direct the general policy of the farm and control finance. It is hoped that such a farm as we propose would have the sympathetic support of the whole community, farmers and commercial firms as well as Government, so that some of the equipment might be provided in the form of gifts. We have also reason to believe that a proportion of the costs of this scheme might be obtained from the Overseas Settlement Fund, but, in the schedule of capital costs and expenditure which is attached, we make no provision for help from outside the Colony.

ROUGH ESTIMATE OF PRELIMINARY EXPENDITURE REQUIRED TO
START A FARM TRAINING SCHOOL OF 2,000 ACRES ON LINES PROPOSED
IN MEMORANDUM. BASED ON MAKING A START WITH 15 PUPILS
FROM OVERSEAS AND FIVE FROM KENYA

CAPITAL EXPENDITURE	Provided by Govern- ment	Individual Gifts
	£	
30 oxen at £5	150	
20 oxen at £5, 3 ploughs	—	20 oxen, 3 ploughs.
Disc harrows, tooth harrows, culti- vators	—	Disc harrows, tooth harrows, cultivators.
Yokes, skeys and chains	20	
Tools, etc.	25	
Scotch cart	25	
Shed and store	20	
Engine	20	
Sheller	—	Sheller.
Posho mill	—	Posho mill.
Posho tanks	10	
Wheat thrasher	30	
Mower with reaper attachment	10	Mower.
Seed maize and wheat	—	Seed maize and wheat
Planter	—	Planter.
Dip	120	
Fencing and paddocks	100	
Separator and dairy utensils	15	
Dairy	10	
Weighing machine	5	
Water supplies	50	
Housing and furniture, manager and assistant	1,000	
Material for building pupils' quarters	500	
Furniture	50	
Farm library	50	
Clearing 200 acres at Sh. 10 per acre	100	
50 cows	—	50 cows.
50 in-calf heifers at £7	350	
1 bull	50	
1 bull	—	1 bull.
Running expenses	50	
Reserve	200	
	£ 2,960	
Pigs, poultry, etc. (See Note 3)	250	
TOTAL CAPITAL REQUIRED .. £	3,210	
Say, £3,200		

NOTE 1.—It is realized that the bulk of the farm implements would be second-hand but it is considered that on a farm school this would be if anything an advantage as the keeping in order of these implements would be a valuable part of the pupils' training.

NOTE 2.—Manager's housing and equipment £1,000. This might easily be reduced or done away with if the farm acquired already had building on it.

NOTE 3.—Items such as pigs, poultry, incubators, butterfat testers, have not been included in preliminary capital expenditure but a sum of, say, £250 might easily be required for purposes such as these towards the end of the first year's working and before the farm was on a basis to provide for these out of profits.

ESTIMATED PROFIT AND LOSS ACCOUNT

(1) It is suggested that the whole or a large proportion of the salaries of Manager and Assistant should not be borne by the farm and these items are therefore not included in this Schedule.

(2) It is also suggested that it would be reasonable that pupils should pay for their own keep at the rate of £36 per annum. During the first year, before the farm was producing anything, this sum might be exceeded.

Expenditure (First Year)—

				£
20 pupils at Sh. 10 per month	...	...	...	120
Running expenses and repairs	...	...	...	100
Domestic staff	...	...	...	80
Agricultural periodicals	...	...	...	20
Contingencies	...	...	...	50
				£370

Basing the revenue on figures given in Schedule 1 (b) of farming costs, and allowing that this instructional farm would be on a considerably larger scale than allowed for in Schedule 1 (b), there should be, after the first two years, an appreciable and growing surplus which would go towards reserves and further development.

VIII—FINANCE

170. The carrying out of our main recommendation for a Government aided scheme for the purchase of privately owned land will require that a large sum be made available in some way for making advances. We estimate that during the early stages not less than £250,000 will be required, and that additional provision should be made if the Scheme is successful and the demand arises.

171. Although it may have been beyond our terms of reference to consider the source from which the required capital could be obtained, we have given much thought to the subject, as we appreciated that in view of the Colony's financial position this is bound to be a vital consideration.

172. We discussed many schemes and a number of suggestions were submitted to us, but in view of the urgency of dealing with the problem of settlement without any further loss of time we have come to the conclusion that there is no satisfactory alternative to raising the initial capital that will be required for the starting of the scheme by the inclusion in the next Colony loan of a sum of £250,000 for the purpose.

173. As regards any further capital that may be required the same urgency does not exist. For this object we recommend that an inquiry into the following methods be instigated at the earliest possible moment in order that the feasibility of financing the scheme by these means may be ascertained in advance of the actual requirements:

A. That the purchase of the land be effected by the purchaser's own cash contribution of not less than 10%, and for the balance by means of Bonds issued by the Land and Agricultural Bank on a Government guarantee, at a fixed rate of interest, which should be not more than 4%, redeemable over 43½ years by instalments. The Bank would advance the capital sum to the purchaser on the terms recommended in Section VI (1) (i). If our proposals are accepted Government would bear the interest charges for the first four years and the initial costs of inspection, etc., and would recover its disbursements over the subsequent years, and would also accept the liability for bad debts. The Bank's functions would consist in collecting interest and repayment from the purchaser and paying the seller, plus carrying the risk.

174. Under this general scheme various methods could be applied as might prove most acceptable to sellers, purchasers and the financial advisers to Government. For example, automatic redemption by the purchaser could be replaced by a right to pay off the capital sum in units of, say, £50 at a time. Similarly, the Bonds issued to the seller, which would be saleable, might be made redeemable only on notice and after, say, ten years. It could also be provided that the interest rates payable by the purchaser should be reviewed, say, every six years, and revised downwards if the position of the scheme justified it.

175. A vital factor in the success of such a scheme would be the free negotiability of the Bonds at or near par.

176. B. That purchase be effected by cash payments raised by Bond issues created somewhat in advance of the demand. On this proposal Government would obtain authority for the issue of Bonds up to a total amount of, say, £250,000, and would then, every six months or so, issue a sufficient number to meet the estimated demands for the ensuing period until the next issue. It is probable that a market for Bonds issued in this way might be more easily established than for Bonds issued under Scheme A and that big financial concerns such as Banks, Insurance Companies, or the Railway Administration would take them up in blocks.

IX—ADMINISTRATION AND CONTROL

177. Very valuable preliminary work in connexion with the encouragement of settlement has been done by the Kenya Association, and, as much of this work must in some way or another have come to the notice of many, it is a matter for astonishment that more financial support has not been forthcoming. It must be remembered, however, that the Kenya Association, from its inception, was charged with the duties of encouraging not only settlement, but of furthering tourist traffic, giving assistance and information to visitors, etc., and with the general publicity for the Colony.

From experience it became evident that tourist traffic, visitors and general publicity could be better handled by an East African Inter-territorial Publicity Association; efforts were therefore made to create such an organization and the East Africa Publicity Association has now been established.

This organization will in future relieve the Kenya Association, and the Kenya Agent in London (who was appointed largely at the instigation of the Kenya Association) of tourist and general publicity work, which will enable them to concentrate solely and entirely on "settlement" and on publicity specifically directed towards Kenya settlement. We consider that the Kenya Association will now evolve into an expert organization which already has experience and the knowledge necessary to operate a successful settlement scheme.

We have investigated various alternative proposals, but have come to the conclusion that whilst the general administration of any settlement scheme should be under the control of the Commissioner of Lands and Settlement, with the advice of a Settlement Board, the detailed working of such schemes should be carried out through the agency of the Kenya Association (1932), and that any necessary additional funds for staff and equipment should be provided by Government.

We must again stress that the further development of the country is dependent on increased settlement, and that in our opinion the expenditure which we recommend, with the full knowledge of the difficulties of providing for it, is amply justified.

178. We envisage that, if our recommendations are accepted and the resultant schemes are successful in attracting a steady flow of new settlers, it may be necessary for the

Kenya Association to engage a Settlement Officer with local agricultural experience who would supervise the operation of settlement on the spot, looking after the pupils, examining and reporting on farms offered for sale, and advising and assisting the new settler after he has obtained his own land.

In this work he would have the assistance of small local Advisory Committees appointed on the recommendation of the appropriate District Commissioners who, together with the District Agricultural Officers, would be members of these local committees.

179. The central organization which we recommend as necessary to advise the Commissioner of Lands and Settlement on all matters appertaining to settlement, is a small but influential Land and Settlement Board representative of agriculture, finance and administration. This Board should consist of:—

The Commissioner of Lands and Settlement as chairman;

The Chairman of the Kenya Association (1932), who shall be vice-chairman;

A representative of the Agricultural Department, to be appointed by name and not by office;

The Secretary of the Land Bank;

Two practical farmers;

One other person to be nominated by the Governor—the filling or otherwise of this vacancy to be at the discretion of the Governor;

With the Lands Secretary as secretary.

Note.—One at least of the above members should be an Elected Member of Legislative Council.

The organizing Secretary of the Kenya Association (1932) or the Local Settlement Officer would be in attendance at meetings of the Board.

180. This Board would take over the functions at present carried out by the Advisory Land Board and the Kenya Advisory Committee, and would make recommendations on all applications for grants of Crown land and for assisted purchase of private land, and upon all land settlement questions.

181. We now refer to the overseas organizations for attracting the right type of settler. We consider it to be essential for the extension of settlement that a full-time Settlement

Officer be maintained in England. He should have a practical knowledge of farming, know the country as a whole, have had recent Kenya experience, be able to discuss farming with farmers and place before prospective settlers a true and attractive picture of what Kenya has to offer. We would take this opportunity of paying a tribute to the work of Colonel Knaggs, who, as Kenya Agent for the past four years, has laid sound foundations and who has ably carried on his task in the most difficult circumstances throughout a period of world-wide depression when but little inducement could be offered to anyone to take up farming in a new country. He has been further handicapped by lack of a definite settlement policy and by having no detailed information on farming costs and prospects. The Settlement Officer should have his headquarters in the East African Office in London, and should be provided with adequate staff. General publicity work will, in future, be undertaken by the recently established Inter-territorial Publicity Association Limited; but the London Officer will have to undertake special publicity for purely Kenya settlement. He will not have an easy task, but we hope that he will, by visiting universities, agricultural colleges, agricultural shows, farmers' clubs, fairs, societies of all sorts in rural districts, be able to establish contacts which will produce fruitful results amongst those brought up on the land. We also hope that Kenya residents on holiday in England will assist the central organization by giving talks or lectures in their own home districts or elsewhere and that a supply of suitable films and lecture notes will be available for their use. We stress again, however, that much of the interest in settlement in Kenya will depend on the extent to which the Government of Kenya can, by its own contributions of capital sums on loan or otherwise, reduce the amount of the capital to be provided by the settler himself.

182. The appointment of Colonel Knaggs as the Kenya Agent in England has been extended, but will terminate at the end of March, 1939. We have, therefore, submitted to Government recommendations for the appointment of a successor. We are strongly of the opinion that the London Agent and his staff should be employed directly by Kenya Association (1932), that his work and his office organization should be entirely independent of the East African Commissioner (although housed in the same building), and that he should be Kenya's representative in England for all matters relating to settlement.

183. We consider that, taking into account the British income tax and the cost of housing accommodation in or near London, the salary of the post should be £1,000 a year, plus reasonable travelling expenses and an entertaining allowance of £250; also that the services of the existing office staff should be retained.

184. In 1927 Lt.-Col. Hoy, the Organizer and Secretary of the 1820 Memorial Settlers' Association of South Africa, visited Kenya for the purpose of investigating and reporting upon the possibilities of closer settlement in the Colony. It is pertinent for it to be realized that eleven years ago Colonel Hoy reached very much the same conclusions on settlement and the organization and administration of settlement schemes as we have now, quite independently, expressed. Extracts from Colonel Hoy's Report are reproduced in Appendix VI.

185. We recommend that for the general guidance of prospective settlers a **Settlement Handbook** be prepared which will embody certain sections of this Report.

X—GENERAL

1—Special Facilities for New Settlers

186. The Report of the Overseas Settlement Board, published in May, 1938, emphasizes the facts that migration from Great Britain has practically ceased for a period of nearly ten years and that the tradition of migration which formerly existed amongst the people of the United Kingdom has tended to weaken; also that migration is a matter of attraction and not of compulsion. The declining birth-rate in the United Kingdom, the economic disabilities under which Colonies and Dependencies have suffered for some years, combined with social and economic conditions and policies which have made life in the countries of the old world more attractive, have all tended to discourage emigration during recent years. It is clear, therefore, that the success or failure of Kenya's efforts to increase settlement will depend entirely on the attractions that can be offered.

187. The Kenya Agent in London and the Kenya Association (1932) have advised us that in their opinion it would be a great incentive to a prospective settler to come out to the Colony and have a look for himself if the costs involved could be reduced. Even if the prospective settler has sufficient capital to permit of his starting to farm on his own account, the early expenses are a considerable item and he is at once attracted by concessions, however small, on such things as cost of transport, free handling of baggage, cost of pupilage, etc.

188. It is estimated that the cost of transport to Kenya, plus the immigration deposit, fees for a year's pupilage, and a reasonable sum for pocket money, amounts to about £200. In addition, there is the risk of a settler having to keep himself for a time in the event of failure to obtain employment or a farm of his own immediately on the termination of his pupilage.

189. As there is definite evidence that promising settlers have been deterred from coming to Kenya by the present conditions, we recommend that an effort be made to reduce these costs for genuine settlers by the following means:—

- (a) Free or assisted passages to be provided by Government jointly with the Overseas Settlement Board, in conjunction with the steamship companies.

- (b) Arrangements to be made for the free handling of baggage at the coast. The Kenya Farmers' Association might be able to assist in this service.
- (c) Free railway transport to destination to be arranged with the co-operation of the Kenya and Uganda Railways and Harbours Administration.
- (d) The contribution by Government and the Overseas Settlement Board jointly of half the cost of a year's pupillage (approximately £50).
- (e) On the subject of the immigration deposit or bond we make no recommendation, as we are aware of the difficulties involved and also that the matter is being considered elsewhere. We suggest, however, that the Land and Settlement Board bring the subject under review at an early date.

2—Land Survey

190. Our proposals for increased settlement must necessarily involve extra land survey in connexion both with the laying out of new farms and blocks of land and with the subdivision of undeveloped privately owned land. We have ascertained that the departmental survey staff was considerably reduced during the period of financial stringency which began in 1930-31. In 1931 the number of surveyors was 27, but this was reduced by 1938 to 12, a number quite inadequate to deal even with existing demands.

191. In the last two or three years, as a result of rising prosperity, there has been a considerable increase in the sales of Crown land and in the number of subdivisions for sale of privately owned land; but with the present reduced staff it has been quite impossible to keep pace with the corresponding increase in the demand for survey and for control of private subdivisional survey. We understand that the inevitable delays due to shortage of staff are causing much inconvenience, and even loss, to the public.

192. We therefore consider it essential that the survey staff should be increased to ensure that there should be no delay in giving effect to our proposals. As we understand that trained land surveyors, able to undertake the necessary surveys, are now obtainable only with difficulty, we recommend that early steps should be taken to engage additional staff.

(3) Acknowledgments

193. Our thanks are due to the many willing helpers who have assisted us by giving oral or written evidence or by personal service. Appendix VII contains a list of individuals and farmers' associations and other bodies who assisted us in this way.

194. The majority of the Committee feel that they cannot close the report without expressing their appreciation of the patience shown and the work done by Mr. Mortimer, who for a time acted as Secretary of the Committee and later undertook its Chairmanship. They also feel that special mention should be made of the assistance and drafting work which has been done by Mr. Gerald Burton, who also made himself responsible for collecting information from many outside sources.

C. E. MORTIMER (*Chairman*).

GERALD J. L. BURTON.

R. DAUBNEY.

F. CAVENDISH-BENTINCK.

WILL EVANS.

J. E. A. WOLRYCHE-WHITMORE.

F. O'B. WILSON.

B. H. HILL.

J. L. THERON FOCKS.

Dated the 26th day of January, 1939.

As the Hon. Mr. E. H. Wright is absent from the Colony, he has been unable to sign the Report, and has expressed no views on its final form and contents.

C. E. MORTIMER,

Chairman.

MINORITY AND OTHER NOTES

1. Training Farm.

(a) Mr. G. J. L. Burton.

(b) Mr. C. E. Mortimer.

(c) Major F. W. Cavendish-Bentinck.

2. Undeveloped Land Tax:

Mr. G. J. L. Burton.

3. Initial Capital Requirements:

(a) Mr. J. L. Theron Focks and Major F. W. Cavendish-Bentinck.

(b) Captain F. O'B. Wilson and Mr. G. J. L. Burton.

Note 1 (a)—Training Farm Proposals

I agree in principle with the proposal for a training farm for youngsters, but I cannot agree with the scheme outlined in the Report as it stands.

2. First of all, I consider a hundred cows and heifers not only an unnecessarily large expense but as making the farm unbalanced. Dairying is an essential part of farming, but not a particularly profitable one on its own until a high-yielding herd has been bred up. A hundred cows would involve a total head of nearly 250 cattle and, with the working oxen, would provide far more manure than is needed for the rest of the farm as well as taking up far too much of the time of the students. This last criticism applies to a good deal of the scheme. In any case, the fewer cattle that suffer from inexperienced handling the better. It is suggested that original development on the lines of Schedule 1 (b) is sufficient and that eventual development should be along lines of quality rather than quantity. The whole emphasis on further development seems wrong and would make the training farm far too cumbersome.

3. The house for the manager will cost practically the same amount of money whether built anew or incorporated in the purchase price of a farm on which there was a house. It is doubtful if an assistant would be required. Pigs and poultry should not require more than a capital expenditure of £50 instead of the £250 suggested. In the profit and loss account, the additional living expenses of pupils during the first year is likely to amount to £300. This should be added on to the capital expenditure, making it about £3,500.

4. It is open to doubt whether the pupils would, in this country, work as full-time labourers continually on all the work expected of native labour. Whilst ploughing and work with machinery and oxen would certainly be acceptable, it is doubtful whether the students would spend more time and energy on hoeing, hand-weeding and harvesting of maize, for example, than was desirable to gain the necessary experience of such tasks. The ideal is probably impractical, and some native labour would seem desirable. The continual emphasis on the need for a large scale of farming and further development seems to overlook the fact that some twenty-five students would be necessary as full-time labourers to keep the original development going—let alone normal increases or the proposed increased development. There would be little time for lectures and instructional visits. Either about forty pupils would be needed, say twenty a year for a two-year course, or the scale of farming should not be larger than Schedule 1 (b). I think a more modest scheme than that proposed would be desirable, employing some native labour as a nucleus for certain arable work as well as for looking after breeding stock, but the management should insist on the students doing enough of the tasks on the farm to equip them for running the labour and farming operations on their own farms at maximum efficiency.

5. However, my main objection to the scheme is that it starts wrong unless we are actually assured beforehand of a steady flow of fifteen to twenty students a year for the first few years. I would much prefer a more modest beginning with the training farm attached to an existing Government station, such as the Experiment Station at Njoro, as has been the proved practice in other countries. All that would be needed to start with in such case would be a small hostel and a further area of adjoining land for crops and stock set aside for the training farm, with a suitable existing member of the staff devoting his attention wholly to the training farm and the field work of the station. He would employ the first students fairly fully on the practical work of the farm and give instruction through the field work on the station. The self-supporting aspect of the farm should never be lost sight of. This proposal would involve very little expenditure at the start—merely a hostel, a few extra implements and additional stock of all sorts. This would obviate losses from any failure of the large-scale proposals of the Report, without prejudicing its eventual adoption should it prove feasible. It also does

away with the obvious difficulties as to whether the pupils should come first or the farm start first. It seems to me to be unwise to recommend an outlay of £3,500 on equipment, etc., and another £6,000, say, on land, without a better assurance that it will not end in fiasco, though admittedly about half the expenditure would be recoverable in a sale. For every reason, however, it is unwise to make a big start and then possibly fail. I would prefer to start in a small way and, if necessary, expand. If, after a few years, it was found the scheme was going well and an assured, regular and large supply of students forthcoming, the training farm and its (by then) full-time manager-instructor could be entirely divorced from the experiment station and the whole concern even moved to a totally different site if considered desirable.

6. It remains to be seen whether the farming population of the Colony is large enough to support a full-blooded Agricultural College.

7. In my view these proposals should be submitted to the Land and Settlement Board and to Government for consideration.

G. J. L. BURTON.

Note 1 (b)—Training Farm Proposals

I wish to associate myself with the note of caution embodied in Mr. Burton's comment on the Training Farm Proposal. Such a scheme would, I believe, be a valuable addition to the training facilities of the Colony, but I should prefer to see it started in a more modest way than that recommended in the body of the Report.

C. E. MORTIMER.

Note 1 (c)—Training Farm Proposals

I agree in principle with the proposals for a training farm, subject to the following notes:—

2. I consider that an institution of this kind would be of such value to the Colony that a reasonable expenditure thereon can be amply justified. My experience as Chairman of the Kenya Association has led me to believe that a training farm of the kind visualized is very urgently required, and would be a direct stimulant to the encouragement of young settlers.

3. Without wishing to advocate any exorbitant expenditure, I nevertheless believe that it would be a waste of money to launch such a scheme on the scale suggested in the Schedule in para. 169. This would only lead to disappointment and the failure of the scheme.

4. I consider that any estimates of the cost of such an institution will have to provide for many commitments which have been disregarded in the provisional schedule contained in our Report. It is very easy to suggest that the pupils would build their own quarters, etc., and I agree that many of the farm buildings and additional pupils' quarters, etc., could in due course be built by the pupils themselves, and such will provide useful practical experience. In the meantime, however, the pupils must eat and sleep somewhere—in bad weather as in good—and I feel any Government-backed institution must have watertight dormitories, some form of lecture hall or classrooms, a carpenter's shop, a blacksmith's shop, etc. Beds, linen, blankets, crockery, furniture, etc., must also be provided for; otherwise parents will not send their children to work as labourers under conditions which might be injurious to health, and under which it might be difficult to enforce adequate discipline, or even to provide reasonable food and sleeping accommodation.

5. I am not suggesting that any of the amenities, or rather necessities, of life to which I refer should be provided on anything but a modest scale.

6. I would like to see a farm purchased such as the one which was discussed by the Committee. Such a farm, suitable for all types of mixed farming, would already be equipped with certain farm buildings, and would have on it a house which could be used by the manager or principal. Quarters for pupils would, in my opinion, have to be built on a minimum scale prior to the opening of the institution.

7. As soon as this was done, I believe it would be easy to provide sufficient pupils from the country itself with which to make a start, as I know that in certain parts of Kenya there is a growing demand for some such training farm, and if it was properly run, I am convinced that a number of pupils would be immediately forthcoming.

8. I see from the schedule appended, it is suggested that a start should be made with fifteen pupils from overseas and five from Kenya. I personally suggest that the start should be

made with at least fifteen or twenty from Kenya, and as many as we can get from overseas, which would probably be no more than five or six to start with—a number which would rapidly increase as soon as the existence of a satisfactory training farm was known overseas.

9. It was suggested during our deliberations that such an institution might be operated in conjunction with an existing Government station, such as the Experimental Station at Njoro.

Such a scheme presents many advantages, but nevertheless, to ensure its success, I am convinced that proper equipment must be provided from the start, and that the considerable expense would have to be incurred of providing all the requirements mentioned in paragraph 4 of this note. Furthermore, more land would be required, which might present a difficulty.

10. As regards personnel, it must be remembered that these experimental stations have been established for a specific purpose and that the officers stationed at them have specific and valuable duties to perform for the agricultural industry as a whole. They have now been given the further task of arranging the short periodical courses which will be attended by new settlers, pupils, and even existing farmers. I suggest that running an experimental station plus organizing these short few-day courses would keep such officers fully employed without any added duties such as the training, discipline, feeding and general supervision of a number of boys and young men, for which extra and specially qualified staff would have to be engaged, although possibly some assistance could be given by the existing staff in the form of lectures and limited specialized instruction.

11. I am convinced that any satisfactory institution, whether attached to an existing experimental station or not, would have to be run as an entity, on strictly economic farming lines, and I do not believe that such a training farm could be started on less than £5,000 capital expenditure, coupled with a recurrent expenditure of anything from £1,000 to £2,000 per annum. Personally, I believe this expenditure would be thoroughly justified, and might even be allocated from the money provided for settlement (£250,000, paragraph 172).

12. In conclusion, I suggest that, as the Settlement Committee all agree in principle with the advisability of starting such an institution, the proposal be carefully investigated by the Settlement Board when set up, which should be instructed to make a recommendation to Government at an early date on this subject.

F. W. CAVENDISH-BENTINCK.

Note 2—Suggested Undeveloped Land Tax

ADDENDUM BY MR. G. J. L. BURTON.

Paragraph 128 of the Report suggests that it may be necessary to bring in an Undeveloped Land Tax, and I wish to emphasize some of the reasons for that paragraph before suggesting an actual form of tax. Land is almost bound to go up in price with the start of a definite settlement policy. Some land, for various reasons, may come on the market at a reasonable price since the most certain way of selling it will be through assisted purchase schemes; the Report suggests that purchases must not be assisted unless the land is at a price economic to the purchaser and some owners badly want to sell their surplus land. It is quite possible, however, that much of the best land may be held up—that is, not offered for sale at all or at too high a price—though that is the very land most wanted for new settlement. Good land at an economic price is vital to successful farming; acre yields of crop and stock produce must be good and the interest on loans (i.e. on capital) must be as low as possible; in fact, examination of the schedules of farming costs will show that interest charges together with Government rents (not mentioned in the profit and loss accounts) must not exceed £100 a year—preferably £75 a year.

2. An Undeveloped Land Tax might therefore become necessary, and in order to allay the fears of those who think it will bear hardly on them or prevent capitalists coming into the country I consider it wise to show what kind of tax I have in mind should one ever be needed. It will be clear from what follows that it will not apply to anyone who is genuinely developing his land, as the provisions for exemption are extremely generous.

3. Developed land, not taxable, would come under the following headings:—

- (i) Any owner who builds a house, and resides in it; or puts his manager in it, should have 200 acres of land tax-free;

- (ii) For every acre under beneficial cultivation he should have another two acres tax-free;
- (iii) For every acre occupied by his own stock, excluding his own working oxen, he should have a further equivalent acreage tax-free.

4. The acreage in item (i) is based on land worth three acres to a beast for grazing. Were the land worth only six acres to a beast the acreage would be 400 acres. An estimate of grazing capacity of land is also necessary for item (iii).

5. It is suggested that the schedule of taxation should be as follows, though it might well be doubled without causing hardship:—

Undeveloped land valued up to Sh. 10 per acre to be taxed at $\frac{1}{8}$ per cent.

Undeveloped land valued up to £1 per acre to be taxed at $\frac{1}{4}$ per cent.

Undeveloped land valued up to £2 per acre to be taxed at $\frac{1}{2}$ per cent.

Undeveloped land valued from £2 to £3 per acre to be taxed at $\frac{3}{4}$ per cent.

Undeveloped land value from £3 to £4 per acre to be taxed at 1 per cent.

Undeveloped land valued from £4 to £5 per acre to be taxed at $1\frac{1}{2}$ per cent.

Undeveloped land valued from £5 to £6 per acre to be taxed at $1\frac{1}{2}$ per cent.

Undeveloped land valued from £6 to £7 per acre to be taxed at $1\frac{1}{2}$ per cent.

Undeveloped land valued from £7 to £8 per acre to be taxed at 2 per cent.

6. The whole point of this tax is that the owner puts his own value on his land, but he can be called upon to sell the undeveloped portion of his land at the value he has put upon it, subject to the development conditions of the purchase. Should he wish, however, to keep any undeveloped land for further development or for gift or for speculation, he can do so by putting a prohibitive price upon it, but upon this he would have to pay the appropriate tax.

7. It has been suggested that a tax would be both expensive and difficult to administer. I do not hold that view. All that the owner need do is to fill in a form every year stating his acreage, average carrying capacity of his land, acreage under cultivation, total head of stock (classified appropriately), and whether there is a house, with himself or his representative in residence. He should also state his proposed future developments with a time limit; this makes the necessary provision for those who are only starting to farm or to develop. Only in such cases where the appropriate local authority, such as the District Council, had reason to believe that misrepresentation on any of the above counts had taken place would an investigation be made by the local authority with the District Agricultural Officer. Reports would be made to the Commissioner of Lands and Settlement. I consider that these proposals overcome the difficulties of expense and administration.

8. There are two further difficulties. What part of the farm is to be considered the undeveloped portion? Any part of it, so long as it makes a compact block with reasonable facilities for water. This applies to contiguous farms in a block as well as individual farms. What about the case of an owner who very fully develops a farm or block of farms in one area but does not sufficiently develop farms or blocks of farms in other areas? Development on one farm or block is not to count against lack of development elsewhere.

9. The generosity of the development conditions allows for a good many contingencies. The extra two acres for every acre of cultivation allows ample land for working oxen, for more developments and for labour. The extra acre for every acre stocked allows ample land for temporary losses of grazing for any reason, for further development and for a reasonable number of squatters, squatter stock and for indentured labour. It is emphasized that promises or proposals for future development within a reasonable time limit are to count as development. The proceeds of this tax should go towards financing settlement, or paying interest on settlement loans. These proposals for an actual form of Undeveloped Land Tax were not considered in detail by the Committee. They would require consideration by the Land and Settlement Board and by Government before a decision on an actual form of tax were made should such a tax become desirable.

10. I have made it clear that squatter stock are not to count for development. So long as illicit movements of squatter stock take place, the menace of disease will continue, as it will if no movements take place but the stock are not dipped. So long also as the number of squatter stock per family is abused the population of this country is not being honest about closer settlement, since I estimate that one-and-a-half million acres of alienated land are being used as additional grazing land for the reserves—most of the stock being uneconomic and merely a sign of wealth. Contented resident labour is desirable from every point of view, and under strict safeguards squatter families might be allowed a limited number of cows—say, two or three—to provide milk for the family. Strictly limiting the numbers by law will prevent abuse and the use of too much grazing, whilst the limitation of numbers facilitates the control of East Coast fever, both by dipping and preventing illicit movements. It is, of course, far better to abolish squatter cattle altogether and only allow small stock in limited numbers, and a small acreage for food crops, though in such cases milk for labour might well be provided from the farmer's own herd. This should be borne in mind when considering what land should be exempted from tax. Labour difficulties will not arise if the conditions, which must be reasonably good, are alike on all farms.

Note 3 (a)—Initial Capital Requirements

BY MR. J. L. THERON FOCKS AND MAJOR F. W.
CAVENDISH-BENTINCK

We can only subscribe to paragraphs 43 to 48 inclusive, subject to the following comments:—

(1) Paragraph 43 begins: "It would be wise to take this opportunity of refuting those critics who consider £2,000, apart from land purchases, to be a quite unnecessarily high figure to start farming . . ."

It is our considered opinion, borne out by experience (and in the case of one of the undersigned by "personal experience") that many young men who have been born on the land, and come from farming stock—and perhaps more especially from South African and Colonial farming stock—could make good on an amount of from £500 to £1,000 apart from the cost of the land (reference the latter portion of paragraph 41, paragraph 42, and Schedule No. 6).

We consider that the standard of living in Kenya, as compared with that of other agricultural countries, is on the average too high, and that the type of person to whom we refer, could work harder and live harder than is general in Kenya. A man born on the land, and of working farmer stock, is born with something in his make-up that can never be acquired by experience or teaching. Such people, we are convinced, would eventually be successful, would make really good citizens, and would prove an invaluable asset to the Colony. We therefore feel that every encouragement should be given to them.

(2) We also wish to place on record that in our opinion the careful attention of the newly created Land and Settlement Board should be directed towards investigating the extent to which the Settlement Scheme recommended in this Report could be applied to landless people of farming stock who are in Kenya to-day.

We suggest that the steps taken should be on the following lines:—

- (a) Considering to what extent "Scheme No. 1, Agricultural Settlement" might be made available to these persons.
- (b) Expediting the further investigations recommended in paragraph 145, into the problem of providing land and financial assistance on a small scale to those who have no capital.

We make these further observations as we foresee that unless the problem is tackled at an early date, the danger may arise that a class of "poor whites" will grow up in this Colony.

J. L. THERON FOCKS.

F. CAVENDISH-BENTINCK.

Note 3 (b)—Initial Capital Requirements

BY CAPTAIN F. O'B. WILSON AND MR. G. J. L. BURTON

We should like to associate ourselves with the above note, since there is nothing in it which has not been said already about the costs of farming, either in paragraphs 41 to 48 inclusive, or in the appropriate Schedules or their explanatory notes.

It seems necessary to repeat, however, that to make good on a smaller scale than the basic £2,000 demands three things; these are:—

- (a) A job of some sort, even if it is only intermittent, at the same time as, or previous to, farming.

- (b) A standard of living visualized in Schedule 6.
- (c) A fairly high-priced crop with an assured yield per acre such as that visualized in Schedule 6.
- (d) Some local or equivalent experience.

Item (c) can stand on its own (see Schedule 5) or in conjunction with (b) and (c). Items (b) and (c) would usually be in conjunction with each other.

The points it is wished to stress again are that Schedules 1 (a) and 1 (b) form a basis for prospective settlers to work on. Various factors within the power of Government or of the settler can reduce these capital costs. These are suggested in the body of our report; an obvious one is a reduction in the cost and standard of living, and a settler can judge for himself to what extent he can make reductions through this and other means after perusing our report (particularly the Schedules), or, better still, the Settlement Handbook to be issued. The sound thing is to give the facts and to avoid generalities. We all know of people who have started with less than £2,000 and succeeded, and of people who have started with more and failed. We maintain, and special personal investigations prove it, that those who have started and succeeded with less have fulfilled or made use of one or other of the three conditions itemized above. It is still open to anyone to-day, so long as wheat stands at its present price, to make a start and succeed in a good wheat district on £500 to £700, as shown in Schedule 6. This Schedule is based on actual cases which have been investigated, and not on generalities. Again, many of the people who started some years ago with £500 to £1,000, and are within the knowledge of us all, had the salaried employment first, and afterwards started farming whilst still remaining in employment. Some members of the Committee appear to think the order of starting can safely be reversed. We do not. It may be, but a farmer cannot be certain of finding outside employment; that must always remain a risk, and particularly so if large numbers of settlers arrive in a country where there are two other races with a lower standard of living. But a man in employment can be fairly certain of finding a farm, and an example of this is given in Schedule 5, where only £550 is required.

In our opinion it is unwise to argue from the particular to the general, and we have tried to avoid unduly gilding the lily. This report has not been written for an advertise-

ment of Kenya or as a sales bulletin. It has been written primarily, not as a guide to newcomers, but to draw Government's and the country's attention to what is needed to foster settlement, particularly that of newcomers, with the Schedules acting as a guide for the London Office. For this purpose facts are of paramount importance, and the possibilities, requirements and problems of increased settlement must be clearly stated, in order that difficulties may be removed, a solution found, and the necessary action taken. £2,000 remains the basis of capital costs, but in present circumstances the prospective settler can reduce these subject to certain conditions. The proposed handbook for settlers would be written in a different vein; it would only contain such matter as was helpful to settlers, state what assistance Government and other organizations were prepared to give, point out the advantages and attractions (and they are many and great) of settling in Kenya, and give a full account of the various aspects and prospects, financial and otherwise, of farming.

We also entirely concur with the application of the Settlement Scheme equally to existing residents as to newcomers. This again has been fully and unequivocally dealt with in the main body of our report. (See paragraphs 11 (b), 23 (7a), 120 and 144 to 148.) Paragraph 120 specifically applies Scheme No. 1—Agricultural Settlement—to residents.

It has also been clearly assumed in the main Schedules that the £150 for passages and pupilages can be deleted for residents, and Schedule 6 actually shows the difference in costs between a newcomer and local resident.

F. O'B. WILSON.

G. J. L. BURTON.

FOOTNOTE TO NOTES 3 (a) AND (b) BY THE CHAIRMAN.

These notes were submitted after the Report had gone to press and there was no opportunity of consulting all the members of the Committee. Both notes emphasize from different points of view facts and recommendations which are embodied in the Report. I wish to stress that they do not represent any difference of opinion on the part of individual members of the Committee. The trend of the discussions during the meetings of the Committee showed that all the members were in agreement on the points advanced in the notes, and approved of the inclusion in the main Report of the paragraphs dealing with these subjects. The other members probably felt, however, that further emphasis was unnecessary.

C. E. MORTIMER, *Chairman*.

APPENDIX I

Scheme for Government-aided Purchase of Private Land for the Purpose of Settlement

See Section VI, Sub-section 1 (i)

Applications will be considered from intending settlers who desire to acquire land for their personal occupation, at present privately owned or leased, under the following main conditions:—

(1) The amount of the purchase price to be contributed by Government shall not normally exceed £1,500 (only in exceptional cases will this sum be exceeded and in no case will the Government contribution exceed £1,800). The Government contribution shall not exceed 90 per cent of the total purchase price. The contribution of one-tenth of the purchase price by the applicant is a minimum, and the Government may require in individual cases that the applicant contribute a larger proportion.

(2) Additional assistance for permanent improvements may be provided by loans through the Land Bank on a £ for £ basis subject to a Government guarantee; Advances for approved irrigation and water-boring schemes up to a total of £250 may also be made through the Land Bank on Government guarantee provided that such advances shall not exceed 25 per cent of the cost of the works.

The terms on which advances may be made under this section will be the subject of negotiation in each case or will be governed by Rules of general application.

(3) An option to purchase the farm must be obtained in favour of the Commissioner of Lands and Settlement for a period of two months.

(4) The purchase of land will not be considered unless a clear and unencumbered title can be transferred.

(5) Applications must be made in writing to the Commissioner of Lands and Settlement giving a full description of the land including the following particulars:—

L.R. Number.

Locality.

Area.

Owner's Name.

Title.

Development already effected on the land.

The total price to be paid;

and

Proof of ability to contribute at least 10 per cent of the purchase price, and to finance the development of the farm.

The applicant must also give full information of his financial position, farming experience and development proposals.

An option of purchase in favour of the Commissioner of Lands and Settlement must be enclosed with the application.

(6) An applicant must—

(a) be at least 21 years of age;

(b) be physically fit;

(c) intend to occupy, develop and work the holding;

(d) have had at least one year's farming experience in Kenya;

(e) be of good character;

(f) not be the registered holder of other agricultural land in Kenya;

(g) be accepted by the Land and Settlement Board as a suitable applicant for Government assistance.

(7) If after inspection of the holding Government approves of the purchase of the land the Commissioner of Lands and Settlement shall complete the purchase and obtain transfer of the title to Government, the purchase price being contributed in such proportions as may have been decided but in any case not less than 10 per cent being provided by the applicant.

(8) Title to the land in the form of a forty-eight years' lease will then be granted to the settler, the lease containing a proviso that on completion of the payment of the purchase price the term will be extended to the full period of 999 years or such other period as may be prescribed by the laws at that time in force governing grants of land for agricultural purposes.

If the land purchased is held on freehold title special provisions will be made to ensure that the settler obtains the benefits of the title acquired.

(9) The lease will be subject to the following main conditions:—

(a) Term—the term will commence on the first of the month succeeding the date of the transfer of the property to Government.

(b) Rent—at the rate of 20 cents per annum revisable as prescribed by the Crown Lands Ordinance.

(c) Purchase price shall include—

(i) the price paid for the land, less the amount contributed by the settler;

and as separate items,

(ii) the costs of the inspection of the property;

(iii) the costs of the transfer of the property to Government, including the prescribed stamp duty and conveyancing and registration fees, and any survey costs;

(iv) interest at the rate of.....per cent per annum on the 1st, 2nd, 3rd and 4th years of the lease, calculated on items (i), (ii) and (iii).

No payment of purchase price will be required during the first four years of the lease.

Purchase price (as previously defined) will be payable within the succeeding period of 44 years together with interest at the rate of...per cent on the outstanding balance by 87 equal half-yearly instalments on the 1st April and 1st October in each year, the first instalment being payable on the 1st April or 1st October (whichever is the earlier) next following the date four years from the commencement of the lease.

The purchase price together with interest due up to the date of payment may be paid off at any time during the term of the lease.

(d) Development conditions as prescribed by the Crown Lands Ordinance shall apply to all grants under this scheme.

These are as follows:—

Area of Farm	Minimum Value of Improvements to be Effected Within the First Three Years of the Lease	Nature of Improvements
300 acres or under	Sh. 20 per acre subject to a minimum of Sh. 600.	Permanent.
Over 300 acres ..	Sh. 6,000 and in addition Sh. 4 per acre in respect of every acre over 300 acres.	Permanent. Permanent and/or non-permanent.

Additional improvements to the extent of 50 per cent of the above figures under each heading are to be effected within a further period of two years, and the total development must be maintained for the remainder of the term of the lease.

- (e) Personal occupation for the first seven years will be required, subject to such absences as may be approved by Government.
- (f) Transfer—No transfer or hypothecation of the title shall be valid until the purchase price has been paid except with the special consent of Government and upon such conditions as Government may impose.

APPENDIX II

Systems and Acreages of Farming Applicable to Various Districts

This is a very brief summary only intended to give general guidance to the prospective farmer about the potentialities of the various districts in the highlands—and probably nowhere in the world do conditions vary so profoundly within distances of a few miles as they do in Kenya. A more complete and detailed guide to the various districts and conditions is in course of preparation by the Department of Agriculture.

Stock may be said to do well everywhere though cattle mature very much more slowly at the higher altitudes of 8,000 ft. and over. The importance of East Coast fever to the stock industry in Kenya will be apparent from the marginal notes showing the status of the different districts—the clean and dirty ones are indicated. The majority are unfortunately dirty and will remain so until the necessary steps are taken to clean them.

With regard to crops, there are differences not only in what can be grown at all, but, if the same crop is grown at all levels, the variety usually alters with altitude. The higher and moister areas are more suited to pyrethrum, peas and vetches, and to wheat rather than maize; so that from 7,500 ft. to 9,500 ft., wheat, pyrethrum, barley, peas, horse beans and vetches would be grown: from 6,000 ft. to 7,500 ft., maize, wheat, barley, peas, beans and vetches would suit: whilst from 5,000 ft. to 6,000 ft., maize, wheat, barley, coffee, sisal and beans would be staple crops. Grasses, both arable and natural pasture, are varied and different for all the main climatic zones.

MOLO DISTRICT

ALTITUDE .. 8,500 ft. to 9,500 ft.
 DESIRABLE ACREAGE .. Moderate quality land—1,000 to 1,500 acres.
 STATUS FOR E.C.F. .. Clean.
 SYSTEM OF FARMING .. Wheat, pyrethrum, sheep, cattle, pigs and poultry; forage crops such as vetches, peas, horse beans. Temporary pasture leys of seeds and clover mixtures, rotated with cereals.

MOLO-MAU SUMMIT DISTRICT

ALTITUDE .. 8,500 ft. to 9,500 ft..
 DESIRABLE ACREAGE .. Better quality land—750 to 1,000 acres.
 STATUS FOR E.C.F. .. Clean.
 SYSTEM OF FARMING .. Wheat, pyrethrum, sheep, cattle, pigs and poultry, barley, forage crops as for Molo. Temporary pasture leys of seeds and clover mixtures, rotated with cereals.

THOMSON'S FALLS (NORTHERN AREA) DISTRICT

ALTITUDE About 8,000 ft.
 DESIRABLE ACREAGE .. 750-1,000 acres.
 STATUS FOR E.C.F. .. Clean.
 SYSTEM OF FARMING .. Intensive dairying and store raising of steers and wethers.

NOTE.—The Cattle Cleansing Ordinance is in force in the Thomson's Falls administrative district.

THOMSON'S FALLS (SOUTHERN AREA) DISTRICT

ALTITUDE About 7,500 ft.
 DESIRABLE ACREAGE .. 750-1,000 acres.
 STATUS FOR E.C.F. .. Clean.
 SYSTEM OF FARMING .. Much the same as the better class land in Molo.

MAJI MAZURI, TIMBOROA, AINABKOI, KIPKABUS, PARTS OF MAU SUMMIT, UPPER GILGIL (WEST ROAD) DISTRICTS

ALTITUDE About 8,000 ft.
 DESIRABLE ACREAGE .. 900 to 1,250 acres.
 STATUS FOR E.C.F. .. These districts are all dirty except Mau Summit and Upper Gilgil.
 SYSTEM OF FARMING .. Much the same as Molo-Mau Summit; better quality land, with dairying on a rather more extensive scale.

LUMBWA-LONDIANI DISTRICT

ALTITUDE 7,500 ft.
 DESIRABLE ACREAGE .. About 1,000 acres.
 STATUS FOR E.C.F. .. Dirty.
 SYSTEM OF FARMING .. Suitable for wheat with a little maize and pyrethrum. Very suitable for sheep and cattle.

ELBURGON-TURI DISTRICT

ALTITUDE 7,000 ft. to 8,000 ft.
 DESIRABLE ACREAGE .. 300 to 800 acres.
 STATUS FOR E.C.F. .. Half clean and half dirty.
 SYSTEM OF FARMING .. Intensive dairying on arable land and high quality grassland with pure-bred or high grade stock. Wheat, pyrethrum and almost any kind of forage crop can be grown. This country is very suited climatically to sheep. Maize can be grown.

BURNT FOREST (NANDI BORDER) DISTRICT

ALTITUDE 7,500 ft. to 8,000 ft.
 DESIRABLE ACREAGE .. About 800 acres.
 STATUS FOR E.C.F. .. Dirty.
 SYSTEM OF FARMING .. Wheat, primarily, with some maize; cattle, sheep, pigs and poultry; some pyrethrum; forage crops as for Elburgon-Turi.

NJORO-NAKURU DISTRICT

ALTITUDE 6,500 ft. to 7,000 ft.
 DESIRABLE ACREAGE .. About 800 acres.
 STATUS FOR E.C.F. .. Dirty (Movement in favour of Cattle Cleansing Ordinance.)
 SYSTEM OF FARMING .. Much as for Burnt Forest-Nandi but rainfall not so certain.

RONGAI VALLEY DISTRICT

ALTITUDE 6,000 ft.
 DESIRABLE ACREAGE .. About 750 acres.
 STATUS FOR E.C.F. .. Dirty. (Movement in favour of Cattle Cleansing Ordinance.)
 SYSTEM OF FARMING .. Maize, wheat, forage crops of Napier grass, cowpeas and beans; intensive dairying, sheep, pigs and poultry.

SOLAI DISTRICT

ALTITUDE About 6,000 ft.
 DESIRABLE ACREAGE .. 500 to 700 acres.
 STATUS FOR E.C.F. .. Dirty
 SYSTEM OF FARMING .. Much the same as Rongai but conditions are rather different in parts and coffee can be included.

SUBUKIA (LOWER) DISTRICT

ALTITUDE About 6,000 ft.
 DESIRABLE ACREAGE .. About 750-1,000 acres.
 STATUS FOR E.C.F. .. Dirty.
 SYSTEM OF FARMING .. Much as for Rongai—particularly suited to the fattening of cattle.

SUBUKIA (UPPER) DISTRICT

ALTITUDE About 7,000 ft.
 DESIRABLE ACREAGE .. About 750 acres.
 STATUS FOR E.C.F. .. Dirty.
 SYSTEM OF FARMING .. Maize, pigs, poultry, wheat and, possibly, passion fruit and tobacco; intensive dairying; sheep.

NANYUKI DISTRICT

ALTITUDE About 7,000 ft.
 DESIRABLE ACREAGE .. 4,000 to 5,000 acres.
 STATUS FOR E.C.F. .. Clean.
 SYSTEM OF FARMING .. Suitable for dairying, sheep, pigs; with small acreages of wheat in places and also forage crops.

MACHAKOS DISTRICT

ALTITUDE About 5,000 ft.
 STATUS FOR C.E.F. .. Dirty.
 DESIRABLE ACREAGE .. Here the acreages required are very variable and farming should be based on dairying with a little wheat, and sometimes coffee and citrus in addition.

UASIN GISHU PLATEAU (CENTRAL) DISTRICT

ALTITUDE About 7,000 ft.
 DESIRABLE ACREAGE .. 1,200 to 1,500 acres.
 STATUS FOR E.C.F. .. Dirty.
 SYSTEM OF FARMING .. Wheat can be grown on selected land in this district. If E.C.F. were controlled and sheep diseases also, it is high quality ranching country with excellent rainfall.

**TRANS NZOIA (HOBY'S BRIDGE, KIMININI, CENTRAL AND
CHERANGANI) DISTRICT**

ALTITUDE About 6,000 ft.
DESIRABLE ACREAGE .. 1,000 to 2,000 acres
STATUS FOR E.C.F. .. Dirty.
SYSTEM OF FARMING .. Maize is a suitable crop with, perhaps, a little
passion fruit. Also suitable for cattle,
sheep pigs and a wide range of forage crops.

TRANS NZOIA (ELGON AND ENDEBESS) DISTRICT

ALTITUDE 6,500 ft. to 7,000 ft.
DESIRABLE ACREAGE .. 500 to 1,000 acres.
STATUS FOR E.C.F. .. Dirty.
SYSTEM OF FARMING .. Very suitable for maize with perhaps a little
wheat and coffee. Excellent for all kinds
of stock.

TURBO-KIPKARREN DISTRICT

ALTITUDE About 6,000 ft. to 6,500 ft.
DESIRABLE ACREAGE .. 1,000 to 1,200 acres.
STATUS FOR E.C.F. .. Dirty.
SYSTEM OF FARMING .. Similar to that in the Central Trans Nzoia with
rather more emphasis on cattle than on
maize.

NANDI DISTRICT

ALTITUDE About 7,000 ft.
DESIRABLE ACREAGE .. About 1,000 acres.
STATUS FOR E.C.F. .. Dirty.
SYSTEM OF FARMING .. Suitable for maize, tea, Napier grass, vetches,
etc.; also for cattle and pigs. Rainfall is
assured.

SOTIK DISTRICT

ALTITUDE About 6,000 ft.
DESIRABLE ACREAGE .. About 1,200 acres.
STATUS FOR E.C.F. .. Dirty.
SYSTEM OF FARMING .. Very suitable for cattle and pigs; also for
maize and passion fruit.

APPENDIX III

Memorandum on Water Finding in Kenya

Contributed by Mr. A. E. M. Tetley, B.Sc., Hydrographic Surveyor

The map in the back cover is reproduced from "The Underground Water Resources of Kenya Colony" by Mr. H. L. Sikes, C.B.E., B.A., B.E., M.INST.C.E., F.G.S., F.R.G.S., from which valuable publication much of the information given in this appendix has been drawn. In addition to showing the distribution of the boreholes, the main geological formations are shown while the section, at the foot of the map, illustrates clearly the typical configuration of the Colony. Starting at sea level from the shores of the Indian Ocean, the land rises gradually to the top of the eastern escarpment of the Rift Valley, which in the Highlands of Kenya is generally 7,000 feet or more above sea level. The country then falls rapidly for about 2,000 feet to the floor of this great valley and rises up to about 8,000 feet at the top of the Mau or western escarpment, from which point it again drops gradually to the level of Victoria Nyanza at an elevation of about 3,750 feet. Although in the following paragraphs of this appendix certain geological terms are used conveniently to describe certain areas, the reader need not be dismayed as a glance at the map will quickly show him the area or areas being discussed.

2. The surface drainage of Kenya consists of three main systems. One westward and one eastward from the western and eastern margins of the Rift Valley respectively and between these lies the Rift Valley, which may be compared to a long elevated trough running north and south. Except in the vicinity of the snowcapped Mounts Kenya and Kilimanjaro, practically all the dry weather flow is dependent on the ground water storage and hence the presence of permeable rocks and their covering soils is important. In the three drainage areas referred to above, the conditions which establish the ground water reservoirs are due to the existence, at high elevations and where rainfalls are comparatively high, of readily decomposable volcanic rocks, which give rise to deep soil and subsoil coverings. Further, old land surfaces, with their associated decomposed rocks, soil and superficial deposits (which were later covered by subsequent lava flows) afford further ground water storage. These reservoirs of ground water frequently augment the flows of streams where

these old land surfaces have been cut into by the present day streams. These conditions apply to the Highlands generally and give rise to many springs, but where the surface does not decompose readily such as on the Plateau lavas of Laikipia, the Uasin Gishu, and the Athi and Kapiti plains there is but little dry weather flow. Of the rain which falls in the Rift Valley drainage area, none flows out and the dry weather discharges are small; although numerous streams descend into this Valley from the escarpments which flank it, most of these streams rapidly disappear underground whilst others flow into lakes, few of which are fresh.

3. In the Eastern Drainage System all the major river systems, such as the Tana, Athi, Tsavo and Uaso Nyiro originate in, and receive practically all their dry weather flows from the volcanic areas but as soon as these rivers enter the area shown as "Pre-Cambrian" on the map, they begin to lose water rapidly. In this last mentioned area small dry weather flows are obtained from elevated masses with a fair rainfall such as the Teita and Machakos Hills but when the streams debouch on the plains these small flows are rapidly lost.

4. In the Western Drainage Area the rainfall is higher and has a better distribution. In addition the rocks of Pre-Cambrian age in this area (see map) belong to two systems classified by geologists as the "Basement Complex" and the "Muva Ankole System"; the latter weather readily and thus afford good ground water storage and so augment the dry weather flows of the streams.

5. In areas where all the year round supplies are available, the question of water supplies is not a difficult one, although in certain circumstances resort may have to be made to gravity or pumped supplies, depending on local conditions; the latter may be by hydraulic ram, windmill, ox-gear, or by a pump operated by a suitable engine or other means.

6. In the less fortunate areas where the streams do not flow continuously throughout the year, the cheapest form of water supply in certain areas may prove to be the storage of flood waters by means of small dams. The possibilities for large dams are comparatively few as generally the prevailing slopes are steep and in certain parts of the volcanic areas the geological conditions and the general porous nature of the rock are not favourable conditions for large dams, while in the Pre-Cambrian areas large quantities of sand are carried

in the rivers in times of floods which would tend to fill the reservoirs. Nevertheless in most parts of the Colony it is possible to build small dams, of which many successful examples are to be seen throughout the settled area, and much can be done in this respect by, and every inducement should be given to, the construction of small dams and tanks, either filled from their own catchment areas or by furrows or other means from large streams which have good flood flows.

7. On the plan is shown a summary of the statistics of the boreholes drilled by the Public Works Department up to the end of 1932. Since that date further boreholes have been drilled by both the Public Works Department and by drilling contractors. The revised statistics are shown on the sub-joined table which, however, does not fully reflect the actual position as the details of a few holes drilled by private contractors have not yet been obtained.

8. Drilling was mainly carried out in the Pre-Cambrian (Basement Complex) and the Kainozoic volcanic rocks; both are formations which cover the greater part of the Highlands. 101 holes have been drilled in the former and 106 in the latter formation. The percentage of successful holes in these formations are 63.3 per cent and 63.2 per cent respectively but if those holes which were abandoned owing to drilling difficulties and those which were abandoned by the hirers of the plant at depths too shallow at which to expect water these figures would be 82.1 per cent and 83.9 per cent respectively.

9. The results of boring in the various geological formations will be dealt with in slightly greater detail below. In the Pre-Cambrian rocks, results from boreholes north of Nanyuki in the vicinity of boreholes Nos. 124, 126, 139 and 162 show that of eleven boreholes sunk four were successful; the average depth at which water was struck was under 200 feet and the average tested yield of the successful holes was 14,300 gallons per twenty-four hours. It may be emphasized that five of these holes were abandoned by the hirers of the drill at depths too shallow at which to expect water. North of Kitale five boreholes, Nos. 83, 119, 99, 176 and 179 show that water was found in the first two at an average depth of 76 feet, the average yield on test was 7,680 gallons per day, and the water rose to within 50 feet of the surface. In borehole No. 99 the yield was 2,268 gallons per day from a depth of about 85 feet but this borehole was abandoned at 242 feet owing to drilling difficulties.

**STATISTICS OF BOREHOLES
ACCORDING TO GEOLOGICAL FORMATIONS**

	A	B	C	D	E	F
1. Geological Formation	Basement Complex	Duruma Sandstone (Terrestrial)	Jurassic System (Marine)	Kainozoic Volcanic Series	Kainozoic Sedimentary (Coastlands) Marine and Terrestrial	Kainozoic Sedimentary (Inland) Lacustrine, Fluviatile and Aeolian
2. Number of successful boreholes	64	6	1	67	2	6
3. Aggregate depth of successful boreholes ..	13,713 ft.	1,487 ft.	443 ft.	20,467 ft.	524 ft.	1,506 ft.
4. Average depth of successful boreholes ..	214 ft.	248 ft.	443 ft.	305 ft.	262 ft.	251 ft.
5. Average depth of water	149 ft.	226 ft.	386 ft.	250 ft.	253 ft.	150 ft.
6. Average depth from surface to which water rose in boreholes	102 ft.	74½ ft.	146 ft.	152 ft.	111 ft.	101 ft.
7. Total yield in gallons per 24 hours	2,436,000	172,900	29,000	1,784,300	49,600	242,100
8. Average yield per borehole in gallons per 24 hours	38,000	28,816	29,000	26,600	24,800	40,360
9. Number of boreholes which yielded water too saline for use for the intended purpose ..	1	—	1	—	8	—
10. Number of boreholes drilled to reasonable depth but yielding water less than one gallon per minute or without yield of water	17	1	—	14	—	—
11. Number of boreholes abandoned by hirers of drills before probable water table reached	8	—	—	12	—	—
12. Number of boreholes abandoned owing to drilling difficulties before probable water table reached.. .. .	11	—	—	10	—	—
13. Number of boreholes abandoned owing to striking steam or gas	—	—	—	3	—	—
14. Total number of boreholes sunk	101	7	2	106	10	6

10. In the Kainozoic volcanic rocks surrounding Nairobi thirty-eight boreholes have been sunk, and of these twenty-six were successful, yielding on test an average of just over 24,600 gallons per day per borehole from an average depth of 300 feet and the water rose on the average to within 160 feet of the surface. In connexion with the twelve unsuccessful holes, six were abandoned by hirers at depths too shallow to expect water. Under the Athi Plains there appears to be an old lake bed, the outcrop of which is shown on the map near Athi River. The top level of this lakebed is just over 5,000 feet above sea level. It appears that under the Athi plains at depths of 300 to 400 feet below the surface there are good prospects of finding substantial quantities of water; only one hole in this formation has not been successful at depth.

11. In the Plateau lavas (mentioned above) nine boreholes were sunk in Laikipia and four in Uasin Gishu. In Laikipia six were successful, yielding on test 16,700 gallons per day at an average depth of 230 feet and the water rose to an average depth of 95 feet below the surface. In the case of the holes in the Uasin Gishu the corresponding figures were four successful holes out of five sunk, 31,200 gallons per day, 245 feet and 52 feet.

12. On the Kinangop Plateau, on the eastern flank of the Rift Valley, five boreholes were sunk of which only one, No. 65, was successful and yielded 11,000 gallons per day at a depth of 295 feet. Generally, boring is not recommended on the Kinangop, where the rainfall is high and in consequence, in the majority of cases, water supplies can be obtained by dams impounding flood waters and in some cases by shallow wells where sites are favourable.

13. In the Rift Valley (excluding the Kinangop Plateau which has been dealt with above) the results were:—

- (1) Two boreholes Nos. 84 and 120 yielded an average of 43,000 gallons per day at a mean depth of 127 feet and rose to an average of 35 feet from the surface.
- (2) Nos. 16, 23, 52, 53, 61 and 148 yielded an average of 17,000 gallons per day at a mean depth of 400 feet. Borehole No. 53 in the Kedong was sunk to a depth of 727 feet before water was struck, and the test yield was 7,200 gallons per day; the water rose to 700 feet from the surface.

- (3) Borehole No. 131 did not encounter water although drilled to 274 feet, whilst drilling was stopped by the hirer at 146 feet, without finding water, in the case of borehole No. 122.
- (4) Three boreholes were abandoned owing to striking steam and Nos. 37, 42, 88 and 112 were abandoned owing to drilling difficulties, whilst boreholes Nos. 71, 101 and 138 were sunk to depths of 623, 320 and 369 feet respectively without striking water.
- (5) On the western edge of the Rift Valley six holes have been sunk by drilling contractors, five of which have been successful. Full details of these holes are not available, but the average depth to which the successful holes were sunk is 323 feet, and the average yield is approximately 4,000 gallons per day. The unsuccessful hole was carried to depth with no result.

Boring in the Rift Valley must be considered as highly speculative as one of the requisites for a successful borehole is an impervious medium at comparatively shallow depth which will hold up the water in the previous formation above it.

14. The Durumu Sandstone series is a good water carrier but the water is very hard, and sometimes too saline for use.

15. In the Kainozoic Sedimentary series (coastlands), water is obtained at shallow depth but chances of obtaining a potable water are slight. The same remarks apply to the Jurassic rocks near the coast.

16. On the Kainozoic Sedimentary (inland) formations prospects of finding at least small quantities of water are good and in some areas copious supplies are obtainable, e.g. borehole No. 102 yielded 72,000 gallons per day from a borehole 109 feet deep, water being struck at a depth of 70 feet and rose to 42 feet from the surface. It is in this same deposit that good supplies beneath the Athi Plains (already referred to) are found. The five boreholes (numbers 152, 158, 163, 164 and 167 on the plan) in this formation, in the neighbourhood of Nanyuki, yielded an average of 22,600 gallons per day at a mean depth of 170 feet.

APPENDIX IV

Scheme for Residential Settlement of Retired Indian Army War Block Officers

(1) Applications will be considered only from retired Indian Army War Block Officers of pure European descent.

(2) Applicants should, in the first instance, submit their written applications to be recognised as participants in the scheme of residential settlement but no definite application for a grant of land will be considered until the applicant has spent at least three months in Kenya Colony acquiring experience of local conditions.

(3) Areas of land applied for should be selected from a Schedule to be obtained from the Commissioner of Lands and Settlement.

(4) Allotments of land will be made to successful applicants on the recommendation of the Advisory Land Board free of stand premium. The main conditions of the grant will be: —

Term.—99 years from the date of the grant.

Rent.—Sh. 10 per annum.

Development conditions.—A dwelling house constructed of permanent materials to be erected to the satisfaction of the Commissioner of Lands and Settlement, within two years of the commencement of the grant.

(5) Land grants for residential purposes allotted under this section of the scheme are intended for the personal occupation and use of the allottee and must be personally occupied by him for a period aggregating three years within the first five years from the date of allotment.

(6) No transfer, mortgage or sub-lease of the land will be permitted within five years from the date of allotment except with the written consent of the Commissioner of Lands and Settlement, and subject to such conditions as he, on the advice of the Advisory Land Board, may prescribe.

(7) The costs incidental to the preparation and issue of the title will be payable by the allottee; these will be approximately:—

Survey fees on a sliding scale, e.g. 1 to 20 acres, Sh. 80; 20 to 25 acres, Sh. 90; 25 to 30 acres, Sh. 100.

Conveyancing fee.—Sh. 100.

Registration fee.—Sh. 20.

Stamp duty.—1 per cent of the annual rent, subject to a minimum of Sh. 2.

(8) The scheme will be open for application up to the 31st December, 1938.

Applications must be submitted in writing to the Commissioner of Lands and Settlement, P.O. Box 89, Nairobi, Kenya Colony.

APPENDIX V

European Education in Kenya

The following note has been supplied by Mr. R. H. W. Wisdom, the Acting Director of Education:—

“There are 2,000 European children at school in Kenya of whom approximately 1,100 attend Government schools and the remaining 900, private schools. There are two Government Secondary schools—the Prince of Wales School, Kabete, five miles from the centre of Nairobi, for boys, and the Kenya High School for Girls in Nairobi. The Prince of Wales School, which is conducted on public school lines, takes boys up to the standard of the Higher School Certificate Examination, and the Kenya High School provides courses for girls up to the Cambridge School Certificate standard and also has a well equipped domestic science department. Government Primary boarding schools for boys and girls have been established at Nairobi, Nakuru, Eldoret and Kitale. These schools provide an 8-year course of general education. The boarding houses in all these schools are well designed modern buildings in the healthiest parts of the Kenya Highlands. In the Nairobi suburbs there are two Government day schools providing a 6-year course, a school for small children in Mombasa and two small farm schools on the Eldoret Plateau. In the Government Secondary schools the tuition fees are £15 per annum and in the Primary schools £4/10 per annum. The boarding charge in all schools, whether Secondary or Primary, is £45 per annum. Upon application to the appropriate School Committee all fees can be reduced or remitted altogether in cases of financial difficulty. Kenya Government bursaries are awarded annually to boys and girls of Kenya schools who, having matriculated, wish to take a professional course overseas. Up to date 17 such bursaries have been awarded of various amounts, a maximum bursary being worth £150 per annum.

“There are twenty-one European private schools in the Colony and they fall into three categories. The first consists of three preparatory boys' boarding schools where the aim is to prepare boys for entrance to public schools overseas and to the Prince of Wales School, Kenya. Fees at these schools average £130 per annum for board and tuition. Two of these

schools are in Nairobi and one is at Gilgil, in the Nakuru area. There are three girls' schools under Church auspices, which provide a full course up to Matriculation standard. Two are Catholic Loreto Convents—one at Nairobi and one at Eldoret—and the third, at Limuru, eighteen miles from Nairobi, is connected with the Church of England. The remaining fifteen private schools are mainly for young children from four years of age upwards. They are situated in Nairobi, Nakuru, Eldoret, Turi, Kijabe, Naivasha and Kitale.

“In Nairobi night continuation classes have been organized by the Municipality and they provide specialized courses in various commercial and other vocational subjects.”

APPENDIX VI**Extracts from the Report and Recommendations on Closer
Land Settlement in Kenya****By****Lt.-Colonel C. H. Hoy, D.S.O.****1820 MEMORIAL SETTLERS' ASSOCIATION, SOUTH AFRICA****Dated 1929****(5) *Propaganda.***

The first step in attracting a desirable type of settler to Kenya is the dissemination of information setting forth the attractions and economic possibilities of a rural life in the Colony. Such information should be accurate, and reliable so that a spirit of confidence between the Government and settlers shall be established. Once this is accomplished the flow of settlers will increase automatically through reports sent to Great Britain by those who have experienced the working of the Settlement Scheme. London will naturally be the centre from which recruiting operations will be conducted and the selection of the staff on whom this duty will devolve should receive careful attention. I am of the opinion that this staff should include at least one member with an intimate knowledge of the Colony and he should, preferably, be one who has actually conducted farming operations here. He should be able to discuss technically and economically agricultural and stock farming in order that the practical inquirer can be satisfied as to the prospects. Considerable competition with the Dominions for the type of settler suitable to Kenya will be experienced. Advertising and propaganda through the Press is very expensive in Great Britain and the official in charge of this work must have funds put at his disposal. If possible this official should have the gift, if not to write attractively himself, to collate suitable material for publication and, through the contribution of news items of the Press, keep Kenya's Settlement Scheme before the British public, agricultural schools, public schools and the universities should be visited by arrangement and addresses given on Kenya. Settlers visiting England from time to time might be induced to address such meetings. This type of speaker proves effective as the knowledge that he has actually experienced the Colonial life adds interest and establishes confidence.

(6) *Selection of the Settler.*

It is of the greatest importance that the settlers established in a territory with a preponderating native population shall be of a type to maintain the prestige of the Europeans. For this reason selected immigration is the only wise form to be followed and I would state the qualifications in sequence of their relative importance:—

(a) *Character.*—The character of the settler accepted for inclusion in a land settlement scheme for Kenya comes first. I am strongly of the opinion that men of positive character only should be accepted: by this I mean men with the will and determination to succeed. Their morals should be unquestionable and they should hold a high code of justice. Every precaution should be adopted to preclude the acceptance of men who have proved failures in other callings from lack of application. Interested relatives will endeavour to send misfits and ne'er-do-wells to the Colony under the proposed scheme and I consider that those responsible for the selection of settlers should be warned of this danger.

(b) *Education.*—Men selected should have had at least a good secondary education and when possible some technical education in engineering and the handling of machinery. The tendency in Kenya to-day, owing to the difficulty of engaging competent ox-drivers, and the incidence of stock disease, is towards mechanical traction, cultivation and harvesting and the settler with knowledge of engines and with a mechanical bias will be at a distinct advantage. A knowledge of book-keeping and recording will also be a great help. Farmers as a whole are probably the poorest book-keepers among those engaged in any business undertaking and there exists for any rural calling the same necessity for accurate accounts as in any trading occupation.

(c) *Health and Physical Fitness.*—In the selection of settlers I consider that physical fitness, good development, and freedom from disease should be insisted upon. I recommend that no applicant be accepted until he furnishes a satisfactory medical certificate and the responsible official is satisfied of the candidate's physical fitness and development.

(d) *Tuition.*—In many settlement schemes in the past the necessity for tuition in agricultural and stock-farming before the settler takes up land, has been overlooked. It must be realized that farming is a technical calling requiring diversified knowledge to a greater degree than in many other occupations.

It will be of distinct advantage to this Colony to obtain as many men as possible, who have been born with the instinct for the land and animals. I therefore consider that previous training and experience should receive consideration in selection of settlers for this Colony. Plans for giving settlers training in Kenya and knowledge of local conditions will be dealt with under a separate heading.

(e) *Capital*.—The capital required by a settler in order that he may successfully establish himself in this Colony must depend upon the following factors:—

- (1) The amount of financial assistance which will be made available to him by the Government.
- (2) The frugality and standard of living of the settler.
- (3) His family responsibilities, immediate and prospective.
- (4) The type of farming which he decides to adopt.

(8) *Dealing with the Settler Pupils after Acceptance.*

As soon as settlers are accepted by the London Office, full particulars together with prospective time of arrival at Mombasa should be forwarded to both the Reception Officer at Mombasa and to the Director of Land Settlement, Nairobi, in order that suitable arrangements can be made to deal promptly with new arrivals at this end. I recommend that arrangements be made for the transfer of settlers' capital, free of exchange, to Nairobi and that they have the privilege of leaving it on deposit with the proposed Land Bank and that they receive interest on the deposit at a rate equal to that paid by the Bank for its funds.

Settler-pupils after acceptance by the London Office should be assisted by the staff in that office in arranging passages to Mombasa under the most favourable terms. They should be advised as to necessary kit suitable to Kenya Colony. On arrival at Mombasa the settlers should be met by a responsible Government official who should facilitate their landing, and passing through the Customs, and arrange for transportation to Nairobi. I would suggest that settlers should be allowed to pass through Customs free of duty all personal requirements and bona fide settlers' effects up to a value of £200 for each adult settler, with an additional amount of £50 free of duty for each minor child. On arrival in Nairobi arrangements should be made by the Settlement Office to meet all settlers and direct them, if desired, to moderately-priced boarding accommodation. Every endeavour should be

made to save the settlers unnecessary expenditure and arrangements for their early allocation for tuition should be expedited. I would also suggest that a local reception committee possibly to include some ladies, of suitable people should be organized in Nairobi and to its members newly arrived settlers should be introduced, so that suitable friends shall be made and a welcome to the Colony extended to the new comers. Local patriotic societies such as the Caledonian Society might assist in this phase.

(9) *Tuition for the Settler before the Allotment of Land.*

In para. 6 (d) I emphasized the necessity for tuition for settlers and I am strongly of the opinion that each settler should have a knowledge of local conditions, values, markets, and the handling of native labour, as well as sufficient technical training to enable him to conduct his farming operations moderately well, before he takes up land on his own accord.

Tuition with approved experienced Farmers

Under this system suitable farmers established in the Colony should be invited to accept settler-pupils on the following terms and conditions:—

(1) The settler-pupil will proceed to the farmer for a probationary period of one month. The continuation of the arrangement will be at the discretion of both parties. At the end of the month the farmer and the settler-pupil are requested frankly to discuss the arrangement and if both parties are satisfied the settler is expected to agree to remain for one year with the farmer. Should the farmer be dissatisfied with his settler-pupil he can request the Settlement official to withdraw the settler-pupil and provided the settler-pupil's conduct has been good he will be placed with another farmer. If the settler-pupil is dissatisfied with the conditions on the farm he can apply to the Director of Land Settlement to transfer him to another farm and if his reasons are sound this should be done. The object of this system is to ensure that both the settler-pupil and the farmer are satisfied and that the settler-pupil is getting the experience he requires before a permanent arrangement is agreed to. If an agreement is reached it may be verbal or written at the discretion of the parties thereto and the Director of Land Settlement should be notified by both parties.

(2) During the whole term of tuition the settler-pupil must work regular farm hours and perform all duties assigned to him. He must not absent himself from the property without

the consent of the farmer. In other words, the settler-pupil must give his best services to the farmer during this year.

(3) During this year the settler-pupil shall receive from the farmer, free board and lodging and soft laundering, and such practical tuition as may be obtained in the working of the farm.

I suggest that no money payments should be made by either party excepting that in cases where the farmer considers the services of the settler-pupil are of sufficient value, he may make some remuneration. It is not desirable that settler-pupils be asked to pay premiums or board as it has been found under such circumstances that some settler-pupils feel themselves under no obligation to render their best services. Some difficulty may be experienced in finding farmers willing to accept married settlers on these conditions but it may be arranged on those farms, where suitable accommodation exists, on the following lines: If the settler's wife is agreeable to undertake duties in the household of the farmer the arrangement is made easy. In other cases farmers are asked to put suitable separate accommodation at the disposal of the couple and they carry on their own housekeeping, the farmer providing such seasonable produce as may be available such as vegetables, butter, milk, while the other necessities are provided by the settler. Considerable variations will be necessary to accommodate different married couples and this is best done by treating such cases as special ones and negotiating an arrangement to suit the particular case. However in all cases the services of the settler-pupil should be at the disposal of the farmer as in the case of single settlers. This system of tuition is recommended for settler-pupils of responsible character and age without previous farming experience and for experienced farmers new to Colonial conditions.

It is important that the conditions under which the settler-pupil proceeds to the farmer are made clear to both parties at the time the arrangement begins, and I consider that suitable circulars should be prepared and given to both parties at that time.

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(10) *Allocation of Land to Settlers.*

In the alienation of Crown land farms to settlers I recommend that the following rules be followed:—

- (1) That farms shall be alienated only to settlers who are considered by the Land Board fitted as described in this report to make full economic use of such farms.

- (2) That personal occupation within six months of alienation be a compulsory condition.
- (3) That progressive development year by year be required on a reasonable scale and steps be taken to ensure such development.
- (4) That transfers of leases or other titles of land alienated shall be possible only with the consent of the Land Board which should ensure that speculative profit-making on the land is eliminated.

Land for settlers under this scheme should be in clean areas in reference to stock diseases and steps must be taken to guard against tick-borne diseases by ring fencing such settlement areas and the provision of dipping facilities with rules for compulsory dipping and effective control of stock movements. I would emphasize the necessity for these steps, and submit the following reasons:—

- (1) If settlers are to achieve early production dairy cows are essential in any closer settlement scheme of this nature.
- (2) Only by diversified farming can the settler maintain the fertility of the land.
- (3) By diversified or mixed farming is the settler's financial risk spread and a fair average income assured.

In this regard it should be realized that this scheme is for men with very limited capital, and failures by settlers will cause embarrassment and financial loss to the administration, as it is proposed to make loans to them. Losses from stock diseases may prove critical to the settler's success. The land should be in areas with a 30 in. to 40 in. rainfall.

The method of cutting up Crown lands into suitable farms should receive careful attention and should be done in such a manner as to make the most economic use of the land available and ensure that each farm has the possibilities for success of the settler. I recommend that when Crown lands are being subdivided into farms, this should be done by a surveyor in consultation with a competent official capable of judging the quality of the land, so that each farm shall have sufficient good agricultural land. In these surveys precautions should be taken to ensure household and stock water. In cases where open water cannot be obtained for each farm, water should be secured by boring before such farm is alienated.

With regard to the extent of farms for this type of farming, I would recommend that 500 acres be the approximate unit, but that provision be made for reasonable increase of area for settlers who are later considered by the Board to have made good use of the land first allotted.

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I consider that the following method of allocation of farms to settlers should be followed:—

All farms ready for allocation to settlers should be gazetted with a full description and applications from settlers invited. All applications received should be submitted to a Land Board (*vide* "Organization"), which will consider these in the light of recommendations made in this report, and recommend the allotment of the farms to applicants. Such recommendations should be referred to the Director of Land Settlement for endorsement and submission to the Executive Council for confirmation or other action. I recommend that all allocations made should be published in the Government gazette. I consider that the above procedure should be followed when any Crown land or Crown farms whatever are alienated.

There is in the Colony at present much land held by private individuals which in my opinion should be made available for settlement. I submit that this may be accomplished by the granting of facilities by the proposed Land Bank to enable settlers to purchase farms or subdivisions on extended terms of payment at low interest rates. Powers should be given to the proposed Land Bank to make advances up to 75 per cent of the value of the farm, such advances to be repaid on easy terms over twenty years, and repayments deferred for a period of two years to enable the settler to bring the farm to production. All applications made for advances of this kind should be submitted to a Board, and such advances made should be recommended by it and agreed to by the Manager of the proposed Land Bank. I am of the opinion that if such powers are given to the proposed Land Bank much land now held by speculators and farmers at present embarrassed financially will come into economic occupation and the production of the Colony materially increased. Assistance in the purchase of land from private owners should be granted by the proposed Land Bank only to those possessing such qualifications as are required of settlers to whom Crown lands are alienated.

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(11) *Organization.*

I consider that an efficient department must be constituted to make this closer settlement scheme work smoothly and gain the confidence of settlers, and recommend the following organization:—

- (a) Director of Land Settlement and staff.
- (b) Land Board.
- (c) Qualified Official and Honorary Committee in London.
- (d) Reception Officer at Mombasa.
- (e) Honorary Committees in local rural areas.
- (f) Training Farm Superintendent and staff.

Director of Land Settlement.—Such an officer should be an enthusiast and be intimately acquainted with the Colony and have practical knowledge of farming practice and stock-farming in all its branches. He should have an appreciation of the difficulties and pitfalls with which pioneer settlers have to cope and be able to meet difficulties submitted to him in a sympathetic manner. He should be responsible to the Government directly for the administration of this department and for the successful working of the settlement scheme. He will require a carefully chosen personal assistant. Whether or not this duty should be a whole-time one will depend upon the scale on which the Government proposes to carry out the scheme, but under no circumstances should this position be considered of secondary importance.

Land Board.—This Board should consist of five members and should meet periodically and when special business arises. Its function should be advisory, but no Crown lands should be alienated in any form excepting on its recommendation. To it should be submitted all applications from settlers for Crown lands and all matters regarding land settlement should be referred to it and receive its recommendation before action is taken. The majority of the personnel should consist of men having an intimate knowledge of land, land values and farming matters, and a sound financial man should be included. The Director of Lands' personal assistant could act as Clerk to this Board. I am of the opinion that the Director of Land Settlement should not be a member of the Board but should be able to call meetings of the Board when business arises and would attend meetings. This Board should be appointed by the Government.

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Reception Officer at Mombasa.—As the duties of this official will be intermittent and light, I suggest that a Harbour or Railway official might be detailed to carry out the necessary duties under arrangements with the Department concerned. Such an official would be acquainted with landing, customs and transportation practice and could be of great assistance to newly arrived settlers. He should be notified of the names and probable dates of arrival by the Director of Land Settlement.

Honorary Committees in Rural Areas of the Colony.—In order to assist the Director of Land Settlement, I suggest the appointment of local honorary committees in those districts of the Colony where settlers are sent for tuition and in which land is made available for settlement. The personnel should consist of experienced residents of the district whose advice can be relied upon. Their duties would be: the selection of farmers to whom settler-pupils could safely be sent, the reception and directing to their destination of new settler-pupils arriving, consultation with the Director in the selection of land, and negotiation with farmers for the reception of married settler-pupils. They could also act as intermediaries when differences arise between farmers and settler-pupils and could value and report upon land when settlers contemplate the purchase of privately owned farms. I feel that the establishment of such committees would avoid the appointment of officials to carry out district duties, at least until the volume of settlement work warrants such appointments. Great care should be taken that only such persons as will put the interests of the settler first should be selected, and this should be done by invitation of the Director of Land Settlement.

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(13) *General.*

From investigations made I feel that the present incidence of stock diseases and scab in the Colony are most inimical to comprehensive land settlement. At present the risk to those who invest money in stock of any kind is too great to induce stock farmers to settle here. It is true that native stock can be kept with some success, although the natural increase is small, but if the Colony is ever to export cattle or mutton sheep grading-up is essential and this cannot be done at present without undue risk. I consider that no land but that in clean areas should be alienated at present for mixed farming settlement. Looking at the matter from a practical standpoint, I

think that in order to prepare more land for settlers suitable large blocks of country should be ring-fenced and compulsory and universal dipping enforced within such areas. Effective stock movement restrictions should also be enforced so as to remove the danger of reinfection from tick-borne diseases. These areas could be increased as financial resources allowed and land is required for settlers.

As affecting settlement, I consider that greater facilities should be provided for boring for water. If these facilities were provided on easy terms of repayment much land now unavailable for settlement through lack of water could be made use of and graziers could make more economic use of the land which they now hold.

My observations teach me that from a grain-growing point of view Kenya Colony secures on the average better yields per acre than most countries where settlers can go. It should, however, be realized that grain farming alone depletes the fertility of the soil, even when chemical fertilizers are used, and the only sound type of farming is one which includes stock. It is therefore essential that the introduction of good stock and grading up of native stock be made economically possible over the Colony by the elimination of stock diseases. Only by these means can a sound practice in farming be established and successful land settlement fully realized.

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APPENDIX VII

Acknowledgments

The following Government officers and members of the public and associations gave oral and/or written evidence or personal service to the Committee:—

Mr. W. A. C. Bouwer.

Mr. T. J. Broatch.

Mr. R. S. Ball (Agricultural Officer).

Mr. and Mrs. E. Powys Cobb.

Mr. S. Thornton (Secretary, Land Bank).

Mr. Asaph Grasovsky, M.B.E. (Senior Horticultural Officer, Palestine).

Mr. H. M. Gardner, O.B.E. (Conservator of Forests).

Major A. G. Keyser.

Colonel Knaggs (Kenya Agent).

Mr. J. I. Lipscombe.

Mr. E. N. Millington.

Mr. T. J. O'Shea.

Mr. C. O. Oates (Agricultural Officer).

Mr. Mervyn Hill (Secretary, Royal Agricultural and Horticultural Society of Kenya).

Mr. Christopher Todd.

Colonel R. B. Turner, C.M.G., D.S.O. (Commissioner for the Union of South Africa).

Major H. F. Ward.

Mr. A. E. M. Tetley (Hydraulic Engineer and Hydrographic Surveyor, Public Works Department).

Mr. S. H. Powles.

Lord Howard de Walden.

Lord Egerton of Tatton.

Mr. G. R. Morrison.

Mr. F. J. Couldrey.

The Rt. Hon. Earl of Erroll.

Mr. J. M. Silvester.

Mr. R. J. Mitchell.

Mr. L. A. Elmer.

Mr. G. W. Reynolds.

Major Harold Hill.

Mr. A. B. Duirs.

Mr. C. A. Thornton.

Mr. H. Coltart.

Mr. H. Barclay.
Hon. Mrs. Grant.
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Mr. C. L. Wace.
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