

18012

1932

CO 533/419

KENYA

✓ PART II

18012

Locusts

Cont 1

Subsequent

Cont 2

18012

61. Gov. Kenya - Tel 157 - 29/32

States in reply to No 56 that experiments might suitably begin early in October probably in Meru area. Comments on Sudan experiments & in circumstances would be unwilling to commit Govt of Kenya to any expenditure locally or otherwise on such experiments without further information, but presumes that whole cost of experiments would be met from colonial development fund.

Laguer J.M.

This telegram is not particularly helpful, but I think we are entitled to regard it as not intended to be obstructive. The Kenya Govt. appear to have entirely lost the enthusiasm which inspired them to send off No.42, but it seems reasonable to assume that they will be prepared to accept a free grant from the C.D.F. (if approved) for this purpose and to provide the small amount of assistance by way of travelling, etc. for which they are asked.

I think the best course will be to reply by Wednesday's air mail as in the draft herewith, and to send a copy of the correspondence to the Economic Advisory Council for information LF. The Economic Advisory Council are sending me today two spare copies of the final Report for the purpose of enclosure to the despatch. In the meantime I append my copy of the draft Report for reference.

By Seed
2/9/32
M. K. L.
5/9/32
etc etc

By airmail
1/9/32

To Govt (ing. & P. Port) memo - 7 SEP 1932
61/157

To E.A.C. Comp W/C 61/62 - B16 - 7.9.32

Submitted by C.D.A.C.

579/32.

This copy of 5th Report of the Committee
is forwarded, as approved by Prime
Minister. Expenses hope that S.O.S.
will submit on behalf of Govt of Kenya
an application to C.D.A.C. for a grant
of £2,900 for C.D.F. for the purpose of
erecting the experiments to be carried out.

64. No action at the moment
Minimum priority for C.D.F. please

64. Mr. Freeston to see on return.
No action at the moment

Enclose copy of letter to D'Nairnhall.
re further expenditure necessary
on 28/9/61

Comment on 65 (enclosure)

I agreed with Mr. Freeston before
he went on leave to prepare the memorandum
for the C.D.A.C. when we had the Report of
the Locust Control Committee (now received
in 63). It then appeared that all that
would be necessary would be to lay the Report
before the C.D.A.C. with a short covering
memorandum

Subsequently, however, a
complication has arisen. On reference to
No. 45 in 1583/2/32 it will be seen that the
Locust Control Committee at their fifth
meeting, in addition to the proposals embodied
in

in their Fifth Report, decided (para. I(d) of minutes)
to set on foot certain further experiments in
this country of a chemico-physiological nature,
which would enable the results of the aeroplane
experiments to be applied on a larger scale in the
most economical manner. It appears that the Locust
Control Committee contemplated that these further
experiments would be carried out by the Chemical
Defence Research Department without further
expenditure and no reference is made to them in the
Fifth Report. When the experts got together,
however, they agreed that the Chemical Defence
Research Department would not be able to do the
whole work and that some further expenditure would
be necessary. A copy of the minutes of the experts'
meeting is enclosed with No. 66 and the position is
explained in Dr. Neave's letter to Sir Guy
Marshall enclosed with No. 65. Additional
expenditure of £350 is involved. The Locust Control
Committee, including its Secretary, Mr. Hemming,
is scattered abroad, and it will not be practicable
to refer this point to the Committee for formal
confirmation in time for the C.D.A.C. on the 28th
September; but it will be seen from 66 that the new
proposals are approved by Sir Guy Marshall, who acted
as Chairman of the Locust Control Committee for the
purposes of the Fifth Report.

In the circumstances it seems to me that
the best we can do is to submit this further
scheme to the C.D.A.C. as a subsidiary to the main
proposals in the Fifth Report, and I submit, for
consideration, a Colonial Office memorandum which

66A

Concurs in appn. being made to C.D.A.C. As to allocating portion of expd. to other territories. Experiment shd. be made as early as possible.

The first para. of this letter is all that really matters; the middle para. concerns lion hypothetical contingencies which can only be dealt with on their merits if & when they should arise.

No need to communicate to C.D.A.C. but a copy shd. go to Secy E.A.C. L.P.P. D. Neave

telling each

[Signature]
20.

I have seen a reference somewhere to a payment made by the Kenya Govt to some Kikuyu whose cattle ate some poisoned bran used for locust destruction. This may have inspired the present caveat. If a claim were made, I do not see against whom else it would lie but the Kenya Govt. But para 12 of the Locust Control (Kisumu) 5th Report (63) assures us that no danger to man, beast, or plant is likely. It might be as well to reply ^(by despatch) ~~(by letter)~~ the above out when

I have already shown to Dr. Neave. Mr. Poynton might note that Dr. Neave (in the absence on leave of Sir Guy Marshall and Mr. Hemming) is prepared to attend the C.D.A.C. meeting and speak to the members if required. Two copies of the memo. when approved for circulation to the C.D.A.C. might be sent to him for his information and for communication to Sir Guy Marshall.

Some technical representation was seen as well.

Done 8/9/32

G. J. Seel 10/9/32

[Signature] 17/9/32

[Signature]

12/9/32

DESTROYED UNDER STATUTE
EAC
Dr. Neave
Enclo copy of letter recd from Chemical Dept. Research Dept. of U.C.

N. Henderson (Economic Advisory Council) is taking action on 69. I. I. Henderson seen on Monday. (Henderson not present) his J. I. S. Kerrigan's return taken in connection with 'agreements' (the Treasury) 8/9/32

The L.F. action has been taken

J. Neel
to 24/9/32

Sir J. Campbell has a full idea

See: Thanks

Neel
23/9/32

L.F. as proposed.

As to the Seal's point, it
is surely to be said: 12 of the
report that the Governor
refers. I think we should
leave it alone.

J.N.
23.9.32
Neel

71 To EAC (w/c 70) }
72 - I. I. 8E (---) } M/A. 28 SEP 1932
(69 annual)

73 To Henderson (EAC) 16 Sept
Encls. copy of letter to W.D. re. experiments
by the Chemical Defense Research Ctr.

74 To Henderson (EAC) 23 Sept
Encls. copy of letter from W.D. in reply
to enc. in 73.

75 C.D.A.C. 1121 - 4/10/32
Recommended per grant of £3,350, but
suggest, for common, that it would be more
economical to carry out certain experiments
at Chemical Defense Research Dept before
entering on the experiments in Congo

76. Econ. Advisory Committee to - 7/10/32
The revised estimate of cost for the
airplane v. ground experiment, &
State views in regard to the suggestion
attaching to the C.D.F. Recommendation
in No 75.

77 To C.D.A.C. w/c 76 - 7/10/32. Con

77A. C.D.A.C. minute. 8/10/32
Concern in revised estimate
of the £2250

78 To Treasury (enc. to 76) Cons. 8' Petition

79 To C.A.C. - A/c.
80 " C.D.A.C. - w/c 78 - 12-10-32
81 " C.A.C. - 16

82 Treasury — 11/10/32
 Sanction a free grant of £1,000
 £8,250 from C.D.F.
 is being transferred from the fund
 to the credit of acct of Kenya with
 C.A. forthwith, as requested in 78.

83 Treasury — 11/10/32
 Ref. P. Paymaster General has been authorized
 to transfer sum of £1,000 from C.D.F.
 to C.A. for a credit of Kenya Post.

Spoke to Mr. Hemming, who agreed that
 the first step shd. be a letter of general
 authority to C.A. Dho; The proposal
 has occurred in para 4.

Recare to me by Friday
 morning; I am to discuss further
 steps with Mr. Hemming at 12-15

14/10/32

84 To C.A., - w/c und. to 76 - cons - 13-10-32

85 To COAC - 40000000 8.0

86 Kenya 776 - A.12 - 14.5.32

87 Taxes - w/c 40000000 8.12

88 EAC - B.12

S.F.A. Copy for Kharboun,
 relative to the Kenya employment

89

E.A.C. — 14/10/32
 To. —
 The in duplicate a draft Contract
 for Imperial Airways which His Ministry
 have drawn up for the hire of a suitable
 aeroplane for the tourist experiments in
 Kenya. Submits comments

E.A.C. — S/O — 14/10
 Summary action to be taken.

Drafts herewith; recare to me.

15/10/32

91	To J. J. E.	_____	}	17 10 32
92	" H. H. King	— cons. —		
93	" A. M.	} w/c of report & note - cons		
94	" W. O.			
95	" C. A.	— w/c draft letter & 92 —		

DESTROYED UNDER STATUTE

96 " H. K. Johnson — w/c 94 & unds —
 96A " C.A.C. S.O. (No. Co. 8791, 93, 94, 95) — 17/10/32 (Colony)
 97. Crown Agents (M.M.) — 07 Oct 32

Give details of quotation from Insurance Brokers for insurance
 of the bottles or request instructions regarding the insurance & date
 of 97/32.

97 I have replied by telephone, referring to 95.

98, The draft letter to I.A.C. wh. was sent to
 C.A. embodies various amendments wh. I have
 inserted after discussion with Mr. Hemming
 and Mr. Rambaut (A.M.). It is possible
 that I.A. will object to the amendments in
 § 2 & 3(b), but Mr. Rambaut thought it
 worth trying on.

As regards the second sentence of 3(g), this is, perhaps, not entirely in accord with what you said in 70. Sir C. Bottomley, however, to whom I spoke, agreed that we could not reasonably ask I.A. to foot the bill for any consequential poisoning of man or beast. When we write to Henry, this must be explained.

I have sent Mr. Hemming, 5-0, copy of 91-95 inclusive, explaining that some of the subsidiary details suggested in 90 has been disposed of by telephone in the next matter.

Director
18/10/32

98 Imperial Institute of Entomology — 18 Oct 32
Ackd. No 91

? but by

W. H. Killis

19.10.32

W. H. Killis

20.10.32

as usual

99 H. H. King 19 Oct 32
Requests further information regarding the special insurance, 70 notes will accept appointment provided that the insurance is for a sufficient sum.

100 H. Hemming 19 Oct 32
Encl. a copy of some minutes from An Ministry regarding experiments on straying locusts.

99. I have, after speaking to C.A. (Mr. Blackwood) and Mr. Hemming, who agrees that if there is no other way out, we shall have to take the extra £6 from "contingencies".

100. I have given C.A. the substance of Mr. N.H. Johnson's minute; they are going to ring him up. Put by.

Director
20/10

Note of the recorded
to Sir C. Bottomley when
action complete

101 to King 19 Oct 32

102 H. Hemming 19 Oct 32
DESTROYED UNDER STATUTE
Ackd. letter of 14 October 32

? but by

W. H. Killis

21.10.32
as usual

103 to C.A. }
104 Hemming } (encl. 99 9101)
21/10/32

Mr. Allen

Draft despatch herewith, of which
para. 3 is for comment.

W. Allen
24/10.

W. Allen
24/10/32

When I asked for this draft,
I wanted not only that the Gov
should be informed but that the
information should be taken to
higher authority of the
personnel to the person with the
draft comes, & is worked for
to arrive in mail, & I should
like the Gov. come, first. Reason to
me.

24.10.32

By air mail 25/10/32
To Gov. Conf (2) (4/10 schedule & sub mill) 25 OCT 1932
(70 answered)

To Col Sec - Conf - 24/10/32
(4/4 c's 105 & mill)

17 To C. A. - 4/105 amnd - B.1. } 26
C. A. C. }
C. D. A. C. } 4/105 amnd - B.1b. } 10
32

Mr. H. King 22nd Oct. 32
DESTROYED UNDER STATUTE
H. King No 101 states is taking action indicated therein.

111. Crown Agents 25th Oct. 32
Trans. for directions a copy of a letter from Imperial Airways
Ltd. regarding the proposed agreement, & enquires in what way
Imperial Airways are to receive information regarding construction
& installation of apparatus.

112 To A. F. Hemming 9/10 - 25th Oct. 32.

113. A. H. King 25th Oct. 32.
Accepts appointment & states is informing C. A.

114. A. F. Hemming (9/10) 25th Oct. 32.
arranging a meeting to discuss 111
DESTROYED UNDER STATUTE

The meeting was held this morning; we
shall receive a note in due course.

A. It was generally agreed that owing to the
unforeseen difficulties which have arisen in several
quarters it would be impossible to arrange for the
experiments to start in Kenya before December, and that
in the circumstances it would be wiser to defer the
whole scheme until the spring of next year.

This conclusion and the detailed reasons for
it will be communicated in an official letter from the
Secretary of the Locust Control Committee. On its
receipt it will be necessary to invite C.D.A.C. and
Treasury concurrence in the postponement and to tell
the Governor, the Crown Agents and the Service Depart-
ments. I have already warned the Crown Agents by
telephone.

B. The revised draft contract with Imperial
Airways (enclosed in No. 111) was considered clause by
clause. The attached letter to Mr. Boddis of the Air
Ministry Contracts Branch is self-explanatory. I have
told

116
told Mr. Lamont of the Crown Agents by telephone what is being done. The only point of substance in which the Colonial Office is concerned is summarised in the attached note, on which a decision is required.

W. Freeston

1/11/32

J. M. Allen

1/14/32

I have marked in pencil in para. 4 of the note the alterations proposed to be made in the clause since Mr. Freeston consulted me on the question of relieving the Company from the liability in question. As the clause then stood I agreed because it was clearly a choice between agreeing and abandoning an experiment to which the Economic Advisory Council attach great importance, not merely from the Kenya point of view, but from that of dealing with locusts generally.

The despatch to the Governor (see last para. of the note) was also sent with my authority.

There has been no earlier opportunity of sending forward the papers to show what the ^{proposed} condition is. The latest form insisted on by the Company is far more serious as it means that the ^{Government} Company is to be liable even if ^{or servant} certain of the Company by negligence upset arsenic powder in bulk over the country side of Kenya, and I am not prepared to agree to it on my own responsibility.

Apparently

9
Apparently, if the clause is not accepted, the experiment must be abandoned, and I think that we must leave it to the Economic Advisory Council to decide ~~for it~~, it being understood that the Government of Kenya will not be expected to bear the full liability if, indeed, any part of it.

As the Locust Control Committee believe that there is no danger (see para. 2 of the note) it ought to be possible to arrive at some such arrangement.

W. S. S.
2/11/32

Sir C. B. Stanley 4/11

We have discussed this. I do not think that we can advise in the arrangement now proposed, under which Kenya could be liable in toto for any damage, even if caused by action taken against the advice of the local officials.

I think that it should be put to the Locust Control Committee that, as the proposed experiment is of general interest and as the benefits to be derived from it will by no means be confined to Kenya, it is only fair and reasonable that the Colony should be indemnified — in

part at any rate - against possible
claims in respect of damage done
in the process.

W.S. 3/11/32

at once

I communicated the above decision to the Secretary
of the Royal Control Committee today; Sir
Glyn Sturges was also consulted by telephone.
A meeting of the Committee will be called,
if necessary; in the meantime I was
asked to point out that the Royal
Control Committee has no funds from
which an indemnity to the Kenya
Government could be implemented; and
to suggest, as a first step, that
Imperial Airways should be asked to
accept the following version of § 3(a):-

"The liability for damage to
property of third parties or to third parties
caused by the chemicals or other substances
carried in the aircraft for the express purpose

10
of the experiment, other than damage
resulting from your negligence or the negligence
of your servants, shall be borne by the
Government; and, subject to the above
reservation, the Government hereby agree to
release you of all such liability and
costs whatsoever connected therewith."

If Imperial Airways agree to this, the
liability of the Kenya Government would
be limited to damage caused:-

(a) by the residue of the dust settling on
the ground after discharge from the apparatus
in the normal way

(b) by as a result of a crash or
forced landing, not due to the pilot's
negligence or any defect in the machine.

? Sir Sturges may be asked to
press I. Airways to accept the above version
of 3(a)

W.S.
4/11/32

"We can try this: but if we add
to the risk
the substance of aircraft's crash, cover to
the point of coming off.

W.S.
7/11/32

117 A. L. Braden _____ 5-11-32

118 To Hemming (Encl.) (1117) Kenya 7/11/32

119 Economic Advisory Council _____ 4 Nov. 32

Trans. a copy of a report of the Committee containing
recommendations for experiments into the efficacy of discharging clouds
of brown dust from aircraft & hope that C.O.A.E. & the
Treasury may be communicated with in the course of these
recommendations.

120 Air Ministry _____ 3 Nov. 32

States that the provision of testing of containers & observation
& sampling of dust clouds will be undertaken at Tamboraugh.
Reports that sources of the H.E. Wimpies cannot be opened
for experimental work in Kenya.

121 Emma Byrne Tel 205 _____ 4 Nov. 32

Seeks approval of special warrant for £500 to
cover expenditure on lowest campaign up to the end of
the year.

(Copy for records - original on 18/11/32)

122 C.D.H.C. _____ 9th Nov.

(Concern in change of plan)

Dr. L.T.?

Printed
10/11/32

123 To Henry (11119) Cons. _____ 12/11/32

Ken. Gov. Tel. No. 210 Cap. _____ 12. 11. 32
Requests to be impl. of date of sailing of
the King. It has to be that as

to be before
to be before
to be before

120
126
127
128

W.O. _____
A.M. _____
B.A. _____
16/11/32

Recommenced for
leaf v. m. on 125
? other copies to be
impl. (see note on
list attached above of
See
10/11/32

Large diagonal line

C. O.

128^R

Mr. Priestman

14/11
15/7

18012/32 Kenya.

Mr. Allen

Mr.

Mr. Parkinson.

Mr. Tomlinson.

Sir C. Bottomley.

Sir J. Shuckburgh.

Permt. U.S. of S.

Party U.S. of S.

Secretary of State.

16 November, 1932.

Gentlemen,

I am etc. to refer to your

letter of the 25th October No.0/Kenya
61 and previous correspondence on the
subject of arrangements for locust
control experiments in Kenya.

(III)

2. I am to confirm the telephone
message from this Department of the
1st November notifying you that it has
been decided to postpone, until the
~~spring of next year~~, the flying tests
in Kenya in view of the difficulties
which have arisen in connection with
the designing of the apparatus
required for the discharge of the poison
dust from the aircraft, and of the

fact

DRAFT.

THE CROWN AGENTS

FOR THE COLONIES.

4 dfts.

fact that the period during which swarms of locusts would be available in Kenya this year is drawing to a close.

I am, etc.

(Signed) H. T. ALLEN

C. O.

Mr. Priestman *M/J*

Mr. Allen *15*

Mr.

Mr. Parkinson.

Mr. Tomlinson.

Sir C. Bottomley.

Sir J. Shuckburgh.

Permt. U.S. of S.

Party. U.S. of S.

Secretary of State.

18012/32 Kenya. 127
13

16 November, 1932.

Sir, *Sy*

I am etc. to refer to your

(120) letter of the 5th November, No. 201827/32/39, and previous correspondence regarding the arrangements for locust control experiments in Kenya.

2. I am to ^{*state for the Air Ministry that*} ~~say~~ that, in view

of the difficulties which have arisen in connection with the designing of the apparatus required for the discharge of the poison dust from the aircraft, and of the fact that the period during which swarms of locusts would be available in Kenya this year is drawing to a close, it has been decided to postpone ~~until the spring of next~~ year, the flying tests in the Colony.

I am, etc.

(Signed) H. T. ALLEN

4 dfts.

G. O.

page 126
an

Mr. Priestman

Mr. Allan

Mr.

Mr. Parbinson

Mr. Tomlinson

Sir C. Bottomley

Sir J. Shuckburgh

Permt. U.S. of S.

Partly. U.S. of S.

Secretary of State.

18012/32 Kenya.



16 November, 1932.

Sir,

Long

I am etc. to refer to the letter from this Department of the 17th October regarding a programme of experiments to be conducted with a view to determining the possibility of destroying flying swarms of locusts in East Africa by the discharge of poison dust from aeroplanes.

(94)

2. I am to state, for the information of the Army Council, that in view of the difficulties which have arisen in connection with the designing of the apparatus required for the discharge of the poison dust from the aircraft, and of the fact

that

DRAFT.

THE SECRETARY,
WAR OFFICE.

4 dfts.

that the period during which
swarms of locusts would be available
in Kenya this year is drawing to
a close, it has been decided
to postpone ~~until the spring of~~
~~next year~~, the flying tests in
Kenya.

I am, etc.

(Signed) H. T. ALLEN

C. O.

125

18012/32 Kenya.

Mr. Priestman 14/11

Mr. Allen 15 atance

Mr.

Mr. Fomlinson.

Sir C. Bottomley.

Sir J. Shuckburgh.

Sir G. Grindle.

Permt U.S. of S.

Parly U.S. of S.

Secretary of State.

Code sent 15/11/37
12.30pm

NO 239

Confidential Your telegram
My despatch of the
17th November NO 210 Confidential
25th October Confidential 2

(V. M. ...)

DRAFT. CODE TEL.

GOVERNOR NAIROBI

Rec'd ...

Mr. to Gov. Nye. ... (No. 182 on Pt. 3)

Locust Control. Flying tests
are being will be postponed until next
spring as technical difficulties
have arisen in connection with
design of apparatus. Despatch
follows.

SECRET.

4 dfts.

124

RECEIVED
14 NOV 1932

Telegram from Governor Kenya to the Secretary of State for the Colonies

Dated 12th November Received 4.1.p.m. 12th November 1932

No. 210 Confidential. Your despatch of 25th October Locusts. Grateful for information as to ship on which King is sailing and on which ship arsenite dust and air cylinder are despatched. If King has not already sailed suggest that he (group omitted) Director of Agriculture by air mail of general line of experiment particularly as to ground observations required and whether experiment could safely be conducted in populous area such as Nyansa Province.

N105

Ans. Tel. 15/11/32

G. O.

18012

17
123

Kenya

Mr. *Frederick W. G. G.*

Mr. *Parkinson*

Mr. *Tomlinson*

Sir *C. Bottomley*

Sir *J. Shackburgh*

Permt. U.S. of S.

Party. U.S. of S.

Secretary of State.

Answered 5/10/47 No. 129

150
NOV 11 1947

12th Nov. 47

~~Shackburgh~~

Sir

DRAFT.

Secy
T.Y.

82)

W. ref. to your letter

of the 11th Oct. (S3409/0240). I am
re. the Transmitt to you, to be read
before the L.C. of the Treasury, a
copy of a letter from the Economic
Advisory Council on the subject of
the experiments to be carried out
in Kenya, with the aid of a
grant from the Col. Development
Fund, in the control of locust
swarms by the discharge of
poison dust from aircraft.

From E.A.C. 4 Nov.

Wood
Copy to Shackburgh for
the

Make extra copies of sub-
letter of 4 Nov.
they will be wanted later
for CA. Copies already available
Nov. 4

2. It will be stressed
from the Hon. Member's letter that
unfavourable difficulties are being
experienced in providing the

no requisite apparatus, and that consequently, in
the opinion of the experts, it will be necessary
to postpone the field experiments in Kenya
until the spring of 1933.

(67)

3. In the application submitted to
the Col. Dir. Adv. C'ty (C.D.A. 1092) it was anticipated
that the full amount of the grant would
be expended during the current financial
year. It now appears probable, however,
that some portion of the expenditure will
not fall due until after the 31st Dec. 1933.

4. I am to request that the T. Handship
may be moved to signify their approval of
this change of plan, which appears
to the S. G. to be inevitable, and in
which the Acting Chairman of the Col. Dir.
Adv. C'ty has already expressed concurrence
on behalf of the C'ty.

(Signed) H. T. ALLEN

H. Nesbitt

Mr. Foynton

Locust poisoning in Kenya.

119

It will be seen from the attached letter from the Locust Control Committee that, owing to unforeseen technical difficulties in producing the apparatus, the experts are agreed that there is no prospect of completing arrangements for the experiments in Kenya until after the end of the present locust season - say December. It is therefore desired to postpone the field experiments until next year's locust swarms are available; they may be expected about the beginning of April. In the application to the C.D.A.C. it was stated that the full grant would be expended before the 31st of March 1933. The change of date now contemplated will probably result in carrying over a small proportion of the expenditure (e.g. subsistence allowance for the Entomologist) until 1933-4.

Will you be so good as to ascertain whether the Acting Chairman of the C.D.A.C. is prepared to agree on behalf of the Committee to the above modification of the original proposals.

H. Nesbitt

H. Nesbitt
7/11

Forwarded if you are prepared to agree on behalf of the Com. to the C.D.A.C. with the Treasury approval, I will include a notice about the matter in our Statement for the next meeting.

H. Nesbitt

Y. xi. 32

H. Nesbitt

I agree to the postponement on behalf of the Committee

Alfred...

7/11/32

~~Supra~~
Original on 18/11/32

RECEIVED
4-NOV-32
00L

17

Telegram from the Governor of Kenya to the Secretary of State for the Colonies.

Dated 4th November. Received at 9-58am 4th November 1932.

No 205.

~~10/11/32~~ Your telegram No 147. Grateful for sanction to issue of special warrant for £500 to cover expenditure on Locust campaign up to the end of the year. Expenditure now reduced to approximately £70 per month.

TEL. No. HOLBORN 3434.

Any communications on the subject of this letter should be addressed to:—

THE SECRETARY,
AIR MINISTRY,
ADAMSTAL HOUSE,
KINGSWAY
LONDON, W.C.2

and the following number quoted —
201827/32/S.9.



AIR MINISTRY,
LONDON, W.C.2.

5th November, 1932.

REC-10
17-NOV-1932
COCL

Sir,

Nog3

I am commanded by the Air Council to refer to Colonial Office letter No. 18012/32 dated 17th October, relating to the destruction of locusts in East Africa, and to inform you, for the information of the Secretary of State for the Colonies, that the Council is prepared to arrange for the provision and testing of containers and the observation and sampling of dust clouds. This work will be carried out at the Royal Aircraft Establishment, Farnborough.

And. 16/11/32

Bury & Co. G. 20/11

2. The sum of £450 shown in the estimate attached to the Committee's report forwarded with your letter will meet the cost of this work, but it is possible that some extra money will have to be provided for the filling, loan and transport of the cylinders. It is not clear whether item 2 (a) on the estimate sheet is intended to cover this expenditure as well as the transport to Africa.

3. With regard to the recommendation made in paragraph 18 of the fifth report of the Committee on Locust Control that Mr. H.E. Wimperis should be present during the experimental work in Kenya, I am to say that the Council have carefully considered this proposal but regret that they are unable to spare the services of their Director of Scientific Research for this purpose.

I am, Sir,
Your obedient Servant,

The Under Secretary of State,
Colonial Office,
S.W.1.

R. B. [Signature]

120²⁰

8

11921

2/c



Any further communication on this subject should be addressed to:—

THE SECRETARY,
ECONOMIC ADVISORY COUNCIL,
2, WHITEHALL GARDENS, S.W.1,
and the following number quoted.

ECONOMIC ADVISORY COUNCIL,

2, WHITEHALL GARDENS,

LONDON, S.W.1.

E. A. C. /449.

4th November 1932.

Sir,

No 63
5

I am directed by the Economic Advisory Council to refer to their letter of the 5th September last, transmitting a copy of a 5th Report prepared by their Committee on Locust Control, containing recommendations for certain experiments to be carried out into the efficacy of the discharge of clouds of poison dust from aircraft as a means of destroying the adults of the Tropical Migratory Locust.

2. The Secretary of State will recall that, on his recommendation, the proposals contained in the report of the Committee on Locust Control were favourably considered by the Colonial Development Advisory Committee, and that ultimately a grant of £3,350 from the Colonial Development Fund was approved by the Lords Commissioners of His Majesty's Treasury for the purpose of enabling the proposed experiments to be carried out.

3. When this proposal was under consideration, the Colonial Development Advisory Committee suggested that it might be desirable to undertake the physiological experiments before undertaking the field work in Kenya. This point was considered at an informal conference on locust control, held at the offices of the Economic Advisory Council on the 6th ultimo, (a copy of the minutes of which has been communicated to your Department as Committee Paper E.A.C. (L) 521, Annex 2), at which representatives of your Department, other Departments, and locust experts were present. That meeting took the view, after careful consideration, that it would be undesirable to postpone the field work until the completion of the physiological tests. They based this conclusion on two grounds. In the first place, unless the greatest dispatch was used, it would not be possible to undertake the field experiments in the present locust season. In the second place, they hoped that the field work would provide indications of considerable value to the physiological investigations, which in any case would occupy a considerable period.

4. In the period that has elapsed, further experimental work has been carried out at the Royal Aircraft Establishment, Farnborough, which has disclosed unexpected difficulties of a technical character in connection with the designing of the apparatus required for the discharge of the poison dust from the aircraft, and also in connection with the production of a cloud of a density sufficient to destroy locust swarms.

Copy to Treasury. 12/11/32
copy 16-12-32 (132)

No 12
15012/3/32

- (130)
- (137)
- (138)
- (139)
- (140)
- (141)
- (142)
- (143)
- (144)

copy to Treasury
copy to Secy

CONFIDENTIAL.

A.C.(L.)(K.)
Meeting.

Copy No. 11

ECONOMIC ADVISORY COUNCIL.
COMMITTEE ON LOCUST CONTROL.
KENYA EXPERIMENTS SUB-COMMITTEE.

CONCLUSIONS of the Second Meeting of the Sub-Committee, held at 2, Whitehall Gardens, S.W. 1, on Tuesday, November 1st, 1932, at 10.30 a.m.

P R E S E N T:

Mr. Francis Hemming, C.B.E.,
Joint Secretary, Economic Advisory Council. (In the Chair).

Mr. A. C. Boddie,
Air Ministry.

Mr. L. B. Freeston, O.B.E.,
Colonial Office.

Mr. A. E. Hayward,
Air Ministry,

Mr. N. K. Johnson,
Chemical Defence Research Department.

Mr. H. H. King,
Chief Government Entomologist,
Khartoum.

Sir Guy A. K. Marshall, C.M.G., D.Sc., F.R.S.,
Director, Imperial Institute of Entomology.

Mr. G. M. Rambaut, D.S.O.,
Air Ministry.

Major G. H. Welsford,
Chemical Defence Research Department.

Mr. D. H. F. Rickett Secretary to the Sub-Committee

PROGRESS OF
EXPERIMENTS.

1. THE COMMITTEE discussed the difficulties arising out of the experiments in progress at the Royal Aircraft Establishment, Farnborough, the purpose of which was to determine the rate of discharge of poison dust from the container required to produce a dust cloud of a given density. In the course of the work carried out, it had so far proved impossible to produce a cloud (of chalk) of more than 1/15th of the density specified by Mr. King as being, on a rough visual comparison, similar to that employed by him in his experiments in the Sudan.

POSTPONEMENT
OF WORK IN
KENYA.

2. The difficulties which had thus arisen might be capable of solution on various lines. On the one hand, it might be desirable to experiment with some poisonous substance other than sodium arsenite, e.g., paris green; or it might be found after further trial that the employment of liquid poison or poison gas was preferable. On the other hand it was possible that further experiments would enable Mr. King to determine more exactly the minimum density of a dust cloud which would be fatal to locusts. Apparatus for producing dust clouds had been constructed at the Chemical Defence Research Department at Porton, and locusts were being bred for experimental purposes by the Imperial Institute of Entomology in London.

Whatever the method to be pursued, however, these difficulties would require time for their solution and the Committee therefore agreed to recommend:-

- (a) That in view of the difficulties which had arisen in connection with the designing of the apparatus required for the discharge of the poison dust from the aircraft and of the fact that the period during which swarms of locusts would be available in Kenya was drawing to a close, it would be necessary to postpone flying tests in the colony until the spring of next year.

- 25
- (b) That the Economic Advisory Council should invite the Colonial Office to notify the Colonial Development Advisory Committee and the Treasury of the conclusion recorded in (a) above and to seek their concurrence and approval respectively for the expenditure, during the financial year 1933-34, of some part of the grant recommended by the Committee and approved by the Treasury for expenditure during the current year.
- (c) That as soon as possible experiments should be undertaken at the Chemical Defence Research Department at Porton to enable Mr. King to ascertain the effect upon locusts of poison dust clouds of varying density, and that in the light of these experiments, work should be continued at the Royal Aircraft Establishment, Farnborough, with a view to discovering whether it was possible to produce in the air, clouds of the density required.
- (d) That in the course of this experimental work close co-operation should be maintained between the Chemical Defence Research Department and the Scientific Research Department of the Air Ministry and that the Director of the Scientific Research Department of the Air Ministry should be responsible for notifying the Chemical Defence Research Department from time to time of any steps that required to be taken.

SUPPLY OF
POISON DUST.

3. The Committee was informed of the stage reached and of the difficulties encountered in the provision of a supply of poison dust. It had hitherto proved impossible to obtain from any firm sodium arsenite dust of the requisite fineness. Further tests of samples were being carried out at Porton, however, and it was hoped that it would prove possible to obtain eventually a dust which would satisfy the requirements to be laid down as the result of the experiments referred to in Minute 2(c) above.

DRAFT
CONTRACT.

4. The Committee considered a draft contract between the Crown Agents for the Colonies and Imperial Airways, Limited, together with certain amendments proposed by Imperial Airways.

The Committee examined this contract in detail and agreed:-

that certain amendments were desirable in the contract and that the Colonial Office should notify these to the Air Ministry with a request that their Contracts Branch should discuss them with Imperial Airways Limited.

NEXT
MEETING.

5. The Committee agreed:-

That ~~this~~ ^{then} next meeting should be held as soon as further decisions were required in connection with the experimental work in progress.

2, Whitehall Gardens, S.W. 1.

November 1st, 1932.

18012

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C. O.

C. D.
R 5-NOV
D 5.

Mr. *Freston* 4/11 p.

Mr. Parkinson.

Mr. Tomlinson.

Sir C. Boltonley.

Sir J. Shuckburgh

Permt. U.S. of S.

Parly. U.S. of S.

Secretary of State.

4 1/2 for me.

5 Nov 52

DRAFT.

A.C. Boddie Esq.

~~Handwritten scribble~~

Dear Mr Boddie

In continuation of my letter of Nov. 1st I write to say that

(a) it has been decided in the C.O. that the proposed recraft of Clause 3 (g), even as amended at the last Committee meeting, imposes an unfair burden on the Kenya Govt. and cannot be accepted,

(b) I discussed the resultant impasse with Henning, who also spoke to Sir Guy Marshall; the following alternative is now proposed:-

Copy to EAC (118) (Th. Henning) LF.

"The liability for damage to property of
third parties or to third parties caused
by the chemicals or other substances
carried in the aircraft for the express
purpose of the experiments, other than
damage resulting from your negligence
or the negligence of your servants,
shall be borne by the Government;
and, subject to this reservation,
the Govt. hereby agrees to release you
of all such liability and costs
whatevsver connected therewith."

(c) I am authorized to say that the
3 ~~the~~ above formula would be
acceptable to the Co., and to
ask you to use your best endeavours
in persuading Industrial Airways to
accept
~~accept~~ it.

(Signed) L. B. FREESTON

LOCUST DESTRUCTION IN KENYA.

The Committee on Locust Control of the Economic Advisory Council have elaborated a scheme for experimenting with the use of poisonous dust discharged from aeroplanes in order to destroy flying swarms of locusts. A grant has been obtained from the Colonial Development Fund for carrying out the experimental programme in Kenya.

End. 6/6/53
pam. 12.

2. The Locust Control Committee in their Fifth Report stated "no danger to human beings, crops or livestock is likely to arise as a result of the use in this way of poison dust against locusts in view of the fact that the natural dissipation of the cloud reduces its density in a short time to a point at which its effects are no longer poisonous."

70

3. The Governor of Kenya in a telegram notifying his acceptance of the grant said "I note opinion expressed that experiment is not likely to prove dangerous. Presume therefore Kenya Government will not be held financially liable for any compensation claim in unlikely event of such proving sustainable."

4. The flights are to be undertaken by Imperial Airways Ltd., and a draft contract is being negotiated with them for the purpose. A clause in the draft reads as follows:-

"The liability for damage to property of third parties or to third parties caused by the chemicals used in the course of the experiments [whether such damage is due to your fault or the fault of your servants or otherwise (except in so far as the damage may result from direct disregard by your servants of the instructions of Government or their representatives) shall ^{be} borne by the Government [and the Government

116-20

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Government

End. to 63
pam. 12.



Government hereby agrees to relieve you of all such liability and costs whatsoever connected therewith".

5. This clause of the contract was accepted as reasonable by the Locust Control Committee (with a reservation by the representative of the Colonial Office.) It is submitted, however, that in the unlikely event of any claim being sustained for the accidental poisoning of persons, livestock or crops compensation must be paid in the first instance by the Government of Kenya; and the draft clause may therefore be agreed to.

The Governor has already been informed that:

"in the event of a claim or claims being sustained against the Government on this account I shall be prepared to consider any suggestion which you may put forward for securing the whole or part of the sums disbursed; but it is of course relevant to remember that similar, if not greater, risks have been incurred by your Government in connection with the use of poison bran and similar baits".

G. M. ...
1/11/51

105
p.m. 3.

115-38
DOWNING STREET,

1st November, 1932.

Dear Mr. Boddis,

at this morning's meeting at 2 Whitehall Gardens, you were kind enough to undertake the personal negotiations with Imperial Airways on the draft contract for their services in connection with the locust poisoning experiments in Kenya. I now enclose:-

(a) a list of the alterations which the meeting agreed ^{to be} desirable in the revised draft which was before them:

(b) A fair copy of your own suggested redraft of Clause 10 with one or two trivial additions in manuscript suggested by the Committee.

As regards Clause 3(g) of the draft, I am not in a position to say that the Secretary of State for the Colonies accepts the revised phraseology, but I will let you know his decision as soon as possible.

It was understood that you would let me know in due course the upshot of your discussions with Imperial Airways so that we may issue appropriate

instructions

A.G. BODDIS, ESQ.

[Contract 4A

Alexander House
Aire Street, Liverpool]

instructions to the Crown Agents for the Colonies.

Yours sincerely,

CB

Clauses 1 and 2. Agree.

Clause 3(a) to (f). Agree.

Clause 3 (g). Omit "or other substances" in the 6th and 7th lines. Insert between "your servants or otherwise" and "shall be borne by the Government" the following:-

"except in so far as the damage may result from direct disregard by your servants of the instructions of the Government or their representatives."

Clause 3(i). Lines 4 and 5 should read "for filling any special containers to be carried on the aircraft with the chemical etc."

Clause 4. Agree.

Clause 5. Instead of "in November, 1932" read "to be subsequently agreed". After "not exceeding six weeks" insert "from the date of the first flight." Omit "subject to a minimum of 25 hours."

Clauses 6, 7, 8 and 9. Agree.

Clause 10. Substitute redraft as on sheet attached.

Clauses 11 to 15. Agree.

Clause 16. Insert "experimental" before "apparatus".

Clause 17. Insert before the phrase in brackets "carried on behalf of the Government for the purposes of the experiments". Add at the end of the Clause "No passengers or cargo shall be carried on any flight covered by this contract unless previously authorized in writing by the Government."

Clause 18. Read "In the event of any dispute arising in relation to this agreement the same shall be referred to the arbitration of two persons, one to be appointed by the Government and one by yourselves, or their umpire in accordance with the provisions of the Arbitration Act, 1889, or any statutory modification

or re-enactment thereof for the time being in force,
the provisions thereof shall apply as far as
applicable."

2(a).

The necessary ^{the} containers and air bottles for installation in aircraft will be issued ^{by loan} on loan. You will be required to modify the aircraft as necessary to permit of the carrying of the containers and air bottles including the supply of the necessary piping. A fair and reasonable price to be mutually agreed upon will be paid in respect of the work involved in the modification of the aircraft.

(b) The Government will furnish you as soon as possible with full details of the apparatus to be installed in your aircraft for ^{the} purposes of ^{the} experiments.

(c) The installation of the apparatus shall be executed ^{by you} so as to warrant the issue of a certificate of airworthiness for the aircraft as modified.

(d) On completion of the period of flying called for in Clause 5 and subject to Clause 6 the Government shall pay you a fair and reasonable sum to be mutually agreed upon for the removal of the apparatus and for the restoration of the aircraft to its original condition, if ^{modified} ~~modified~~ in any way to permit of the installation of the apparatus, and if such restoration is required by you.

(e) The containers and air bottles shall be returned to the Government on completion of the experiments in the same condition as when issued, except that due allowance will be made for fair wear and tear.

RECEIVED
20 OCT 1932

COLL. OFFICE

1133
~~1133~~

ACKD. BY P.C.

THE PARSONAGE,
OSPRINGE,
FAVERSHAM.

P.C. Tuesday 25 Oct/32

The Under Secretary of State
Colonial Office

Sir;

With further reference
your communication (No 15012/32
of 17 & 20 Oct.).

No 92
No 101

2. I have today been
informed by the Crown Agents
for the Colonies that the

Insurance Policy on my life and
be for the sum of
£12,000, for the period
of three months. I therefore
accept the appointment
offered on the terms
outlined in your memorandum
of the 17th October &
am advising the Crown Agents
to that effect

I am

Sir

Yours obedient servant

Howard K. P. King.

11236
~~107~~

Downing Street,

25 October 1932

Dear Henning,

I enclose the duplicate of a letter which has just reached us from the Crown Agents about the contract with Imperial Airways Limited. As the original draft was prepared by the Air Ministry after discussion with Imperial Airways, you will probably agree that it will be necessary to invite the Air Ministry's comments on the changes ~~to the proposal~~. Perhaps the quickest procedure would be a meeting between the Air Ministry Expert, you and myself.

I will wait to hear from you before taking any further steps.

Yours sincerely,



A. F. HENNING, ESQ., C. B. E.

ALL COMMUNICATIONS
TO BE ADDRESSED TO THE
CROWN AGENTS FOR THE COLONIES.
THE FOLLOWING REFERENCE AND THE
DATE OF THIS LETTER BEING QUOTED.



O/Kenya 81.

TELEGRAMS: "CROWN, LONDON."
TELEPHONE: 7730 VICTORIA.

4, MILLBANK,
WESTMINSTER,
LONDON, S.W.1.

25th October, 1932.

IMPORTANT.



Sir,

No 95

24.10.32.

With reference to your letter No.18012/32 of the 17th October respecting arrangements for locust control experiments in Kenya, I have the honour to transmit a copy of a semi-official letter received from Imperial Airways Limited, with enclosure thereto, regarding the proposed agreement with them and to request the Secretary of State's directions on the various points raised.

As regards sub-paragraph 6 of Imperial Airways' letter, as we ourselves are not so far concerned with the apparatus, beyond the hire and transport to Africa of the compressed-air steel cylinders, we conclude that the Secretary of State will inform us in what way Imperial Airways are to receive the necessary information regarding the design, construction and installation of the apparatus in question.

I have the honour to be,

Sir,

Your obedient Servant,

J. Lamont
FOR CROWN AGENTS.

The Under Secretary of State,
COLONIAL OFFICE.

*Copy to A. F. Plummer
S.O. 25/10/32
f.o. to Mr. Bodale. 11/11/32*

IMPERIAL AIRWAYS
LIMITED

7014/TCS/JGW.

AIRWAY TERMINUS,
VICTORIA STATION
(Continental Departure
London, S.W.1.

24th October, 1932.

Dear Mr. Lamont,

With reference to your letter of the 19th instant, and our subsequent telephone conversations, I am now returning the draft letter prepared by the Air Ministry and which you had received from the Colonial Office, and which sets out the proposed terms and conditions for an agreement between the Government of Kenya and ourselves relating to the charter of a "Hercules" type aircraft, in order to carry out an experimental anti-locust campaign.

I am returning the draft letter, and as it has been necessary for us to make considerable alterations I am enclosing a fresh copy of the draft showing our proposed alterations in red, and I have the following comments to make regarding the amendments:-

(1) The reason for the alteration of Clause 2 is that at Kisumu we have our main engineering staff for that area, and accordingly if the base of operations were changed to Nairobi or Juba it might be necessary for us to send extra staff to these points which might not be possible, depending on the exigencies of our services at the time.

(2) Clause 3 (1): In the original discussions the intention was that the Government of Kenya should supply the labour for loading the special containers, and also the

/personnel

personnel for operation of the special apparatus during flight, and we have altered this sub-clause accordingly.

(3) Clause 5: As I explained to you, it would be necessary to have some time limit on the charter, and I understand that on the assumption that operations can commence towards the end of November, a period of six weeks would cover your requirements. You will appreciate that without a limit of this kind, the maximum period of 50 flying hours could be spread over a very long period, by having a short flight of $\frac{1}{2}$ hour every two or three days. I think it is also reasonable that we should have a minimum of 25 hours, and perhaps you would consider this point.

(4) I think you appreciated the reason for the new Clause 7, which we have inserted.

(5) Clause 9: We think it will be best, in the event of the aircraft becoming unserviceable or unavailable due to the exigencies of our service to provide for the agreement being terminated, as it might be impossible for us to provide another aircraft, although if we could we should certainly be pleased to do so, and if such a contingency should arise then we think you will agree it would be best to leave the terms for the operation of such a substituted aircraft to be mutually adjusted. The position might be that in order to have a substitute available in Kenya we might have to bring it specially from say Capetown, and the costs of such a flight would need to be taken into consideration.

(6) Clause 10 (a): We understand your technical officers are concentrating on the design of the apparatus, and we shall expect to hear from you further about this matter, and as to whether you wish us to actually produce the apparatus or whether you will attend to that side of the matter.

(7) Clause 10 (b): The new sub-clause which we have inserted here is more in line with the conditions which we were discussing with the Air Ministry.

(8) Clause 11: We regret that we must ask for the deletion of this Clause, as we do not think we are likely to have a second aircraft available at Kisumu either next month or in December. In any case if we had a "Hercules" aircraft available we could not charter it at much less than the figure of £30 per flying hour for the first aircraft, and in reply to your enquiry we have no smaller aircraft in that area which we could charter at round about £10 per hour.

So far as we are able to judge we do not think you would wish to incur the additional cost of an extra aircraft, simply for wireless purposes, and if wireless communication were rendered temporarily impossible due to low flying in connection with the dusting operations, we do not see that this should result in much difficulty.

We have added fresh Clauses, Nos: 16, 17 and 18, to which we have no doubt you will be able to agree.

Due to the short time available I have not yet had an opportunity of consulting my management on all the points connected with this agreement, and in particular I should like to have an opportunity of further discussion with Mr. Wolley Dod who conducted the original negotiations, so that you will understand the enclosed draft is sent subject to any further points that we may find it necessary to raise, although I do not think we shall require any material alterations on the enclosed draft. If we do I should communicate these to you as quickly as possible.

Yours sincerely,

(Signed) T.C. Sutherland.

J.C. Lamont, Esq.,
Office of the Crown Agents for the
Colonies,
4, Millbank,
Westminster, S.W.1.

/P.S.

P.S.

There is just one other point and it is that we should like to have two weeks notice of the date when you require the aircraft at Kisumu, so that the necessary arrangements may be made.

Draft

October, 1932.

Gentlemen,

The Crown Agents for the Colonies acting on behalf of the Government of Kenya (hereinafter called the Government) hereby offer to place a contract with you to cover the hiring of a "Hercules" type aircraft for the purpose of carrying out experiments in connection with the use of aeroplanes against locusts in Kenya. The contract shall be subject to the following conditions:-

- (1) Payment at the rate of £30 per flying hour shall be made in respect of flights to and from the selected bases in connection with the experiments. For purpose of payment, a flight shall be reckoned as commencing immediately the aircraft leaves the ground solely for flying in connection with the experiments and terminating on the landing of the aircraft.
- (2) The aircraft shall operate normally from Kisumu but if the exigencies of your services permit the aircraft may by agreement with you be operated ~~may operate at the discretion of the Government from Nairobi or Juba or from such other bases as you may agree to not more than one flying day's journey from Kisumu.~~
- (3) Payment under clause (1) shall include:-
 - (a) The cost of originally transporting the aircraft and crew to Kisumu or other initially agreed ~~selected base~~, but after the commencement of operations the transfer of the aircraft from one base to another shall be charged for at the said rate of £30 per flying hour.
 - (b)

- (b) The provision of fuel and oil for the flights.
- (c) The salary of the crew operating the aircraft other than that of the representatives of the Government engaged in the experiments.
- (d) The maintenance of the aircraft in an airworthy condition throughout the period covered by this contract.
- (e) All housing and landing fees arising as the result of the operations or alternatively and the provision of the necessary labour for handling the aircraft on the ground.
- (f) All wireless services other than those which are the subject of special charge by the Postal or other Authorities.
- (g) All risks arising to the aircraft and the crew and to third parties other than representatives of the Government engaged in the experiments. The liability for damage to property of third parties or to third parties caused by the chemicals [or other substances] used in the course of the experiments whether such damage is due to your fault or the fault of your servants or otherwise shall however be borne by the Government, and the Government hereby agrees to relieve you of all such liability and costs whatsoever connected therewith.
- (h) All ground running of engines incidental to the flights and all flights ancillary to the main flights except in so far as such

flights

*except where with damage
may result from direct or indirect
disregard of the instructions
of the Government's representatives*

*in the form of the
first or its up to*

flights cover the flying of the aircraft from the selected base to the scene of the experiments, or are flights required for the testing of the apparatus required for the experiments.

(1) Labour necessary for preparing the aircraft for the flights but the Government will provide the personnel necessary and for ^{filling} [loading on to] any special containers ^{to be} carried in the aircraft ^{with} the chemicals to be used for the experiments, and also for the operation of such apparatus during flight if required.

(4) You will endeavour to provide a first pilot who has had experience of flying of the type called for by these experiments and who will be available throughout the flights subject to the exigencies of maintenance of your regular air services.

7 April 1933

(5) The aircraft together with the necessary crew, ground parties fuel and oil shall be available on a date ^{to be subsequently agreed} ~~in November 1932~~, to be subsequently decided upon and shall, subject to Clause (6), remain available during such period not exceeding ^{from the date of the first flight} six weeks [as to permit of a maximum of 50 hours flying in connection with the experiments or such less number of hours [(subject to a minimum of 25 hours)] as may be determined by the Government.

(6) You shall have the right to recall the aircraft if necessary in order to permit of the normal operation

operation of the South African Division of the Air Route to Capetown. In this event, the cost of the return of the aircraft from the base at which it is operating at the time to its normal base and of its subsequent return to the base at which the experiments were proceeding at the time of recall shall be borne by you.

*any work
required for any
to the above*

(7) In the event of the aircraft as the result of these experimental operations having to remain overnight at a place other than one of your stations the Government will bear the cost of the accommodation of your crew.

(78) In the event of interruption of the experiments under Clause 6, the contract may at the option of the Government either be terminated at the date of such interruption or may be continued for a further period (proportionate to the original maximum period of six weeks in relation to the number of flying hours required to make up the maximum of 50 flying hours) ~~sufficient to complete the maximum period of 50 hours flying~~ when the aircraft becomes again available.

(89) In the event of the aircraft becoming unserviceable during the period defined in Clause (5) or not being available within one month for continuation of the experiments as provided in Clause (78) this agreement shall thereupon be terminated but you will endeavour to provide another aircraft for completion of the experiments on terms to be mutually agreed. ~~you shall without charge~~

to the Government make available for completion of the contract at the base from which operations were proceeding at the time the aircraft became unserviceable and at the earliest date practicable, and aircraft equally suitable for the experiments and shall install therein without charge to the Government any apparatus necessary for the carrying out of the experiments.

(10) (a) The Government shall adjust with you furnish as soon as possible the full details particulars of the any apparatus they desire to be installed in your aircraft for the purpose of the experiments.

(b) The Government will pay the cost of such apparatus, and of having it installed in the aircraft and also the cost of executing such modifications to the aircraft as may be necessary in connection with such installation. ~~In the event of your being required to instal such apparatus the Government shall pay a fair and reasonable sum to be mutually agreed upon for such installation.~~

(c) ~~If you are called upon to instal the apparatus~~ The installation of the apparatus shall be capable of being executed so as to warrant the issue of a Certificate of Airworthiness for the aircraft so modified.

(d) On completion of the period of flying called for in Clause 5 and subject to Clause 6 the Government shall pay you a fair and

reasonable

reasonable sum to be mutually agreed upon for the removal of the apparatus and for the restoration of the aircraft to its original condition if modified in any way to permit of the installation of the apparatus and if such restoration is required by you.

(10-11) Subject to Clause 2 the actual locations selected for the experiments shall be at the discretion of the Government. The periods of the flights and times at which flights shall be made (so long as no considerations of safety of the aircraft and its personnel are involved) shall also be at the discretion of the Government. Subject to Clause 7 10 (c) your representative in charge of the aircraft shall have sole discretion on all matters of safety for flight.

(11) In the event of any flight being carried out at or below an altitude so to preclude the operation of the wireless apparatus fitted in the aircraft you shall arrange under the same terms and conditions for a second aircraft to be available solely for wireless services. Payment in respect of the second aircraft shall be made at the rate of \$10 per flying hour.

(12) The cost of supplying and transporting to the operating bases the chemicals to be used in the experiments shall be borne by the Government.

(13) You will be precluded from publishing or causing to be published any advertisement of which this contract

contract or its execution forms directly or indirectly the subject, without the written permission of the Government.

(14) The Government may at their sole discretion publish or authorise the publication of reports on these experiments on the understanding that any such publications shall in no way be detrimental to your interests.

(15) Claims for payments due under Clauses 1, 7 9, and 10 44 shall be rendered to the Government in Nairobi, accompanied by a certificate of accuracy and satisfactory performance signed by the accredited representative of Government who accompanies the flight. Payment shall be made to you ~~Messrs. Imperial Airway Limited~~ without delay in London by the Crown Agents for the Colonies being duly authorised thereto by the Government.

(16) It is understood that you accept no responsibility for the proper functioning of ^{the apparatus} the apparatus or otherwise for the success of the experiments, although so far as lies in your control you will do your best to ensure satisfactory results.

(17) The Government hereby indemnifies you against any claims in respect of loss or damage to passengers and/or cargo ^{carried on behalf of the Government} (other than your own crew) arising as the result of an accident.

All No passengers or cargo shall be carried on any flight covered by this contract unless the ^{provisions contained in order by flight} provisions contained in order by flight. (18) of the experiment

(18) In the event of any dispute arising in relation to this Agreement the same shall be referred to arbitration.

I am, etc.

12. Arbitration.—Every dispute, difference or question the settlement or determination of which by arbitration is herein provided for or is agreed between the Contractor and the Secretary of State, shall be referred to the arbitration of 3 persons, 1 to be appointed by the Secretary of State and 2 by the Contractor, or their Umpire in accordance with the provisions of the Arbitration Act, 1889, or any statutory modification or re-enactment thereof for the time being in force, the provisions whereof shall apply as far as applicable.

CROWN
STANDARD
PRINT

Messrs. Imperial Airways Ltd.,
Airways House, Airway Terminus,
Charles Street, Victoria Station,
S.W.1. London, S.W.1.

1801/32 Kenya. 119 a 58

706

C. O.

Mr. ^{26/10/32} Tooty
Mr. ^{26/10/32} Manning
Mr. ^{26/10/32} [Signature]

- Mr. Parbinson.
- Mr. Tomlinson.
- Sir C. Bottomley.
- Sir J. Shackburgh.
- Perm. U.S. of S.
- Parly. U.S. of S.
- Secretary of State.

1007
26 OCT
10

Confidential.

DRAFT. 3/2

The U.S.O. of 20
for the sake
presents his comp.
to the U.S.O. of
of Kenya, and
begs to transmit
four copies of
the U.S.O.'s
despatch 1007 (3)
of the 25th October,
with enclosure,
regarding the
scheme for
experimenting in
the control of
land revenue by

To Sec. Gen. (3) 25.10.32
(100.105 with schedule
and sub. encl. -
4 copies)

and 3 off.

recommendation of the C.D.A.C.,
have approved a free grant of
£3,250 for the purposes of the
scheme, and that arrangements
are in train which, it is hoped,
will permit of the inception of
the experiment in Kenya before
the end of November.

My comments will, for the
present, be limited to the follow-
ing points.

~~Para~~ (3) In your telegram under
reference you express the pre-
sumption that the Government of
Kenya would not be held financially
liable for any compensation claim
arising from the poisoning of
persons or livestock by the
disseminated sodium arsenite.

You will recognise, however, that
it was out of the question to
inflate ^{the} grant sought from the
C.D.A.C. by ^{provision for} so remote a contingency. //

*It was equally without to exempt the
Contractors for the flights from the 50
risk, and in*

end to 95)

(2)
In para. 3(1) of the draft letter
of contract with Imperial Airways
Limited, it is ~~contemplated~~ ^{provided} that the
Company shall be expressly excluded
from such liability in respect of
third parties or their property.

In the event of a claim or claims
being sustained against the Govt.
of Kenya on this account, I shall
be prepared to consider any

suggestion which you may put forward
for securing a refund of the whole
or part of the sums disbursed; but
It is, of course, relevant to remember
~~I shall, of course, bear in mind~~

~~the fact that similar, if not~~
greater, risks have been incurred
by your Government in connection
with the use of poison bran and
similar baits.

4. You will ^{note} know that approval
has been given for the payment of £

Mr.

Mr. H.H.King of a subsistence allowance while in Kenya at the rate of £1 per diem and of 5/- per diem while on the sea. It will no doubt be convenient that payment on this account should be paid locally to Mr. King and a corresponding debit entered in the accounts of the Kenya Govt. with the C.A. for the C. Apart from this item, it is contemplated that all payments in connection with the scheme should be made by the C.A. in London and you will observe that special directions have been given to them in respect of the presentation of a final account for audit.

(95. last year)

I have etc.

(Sgt.) P. CUNLIFFE-LISTER

9c 53

Not to be copied.

- 1. Memo. submitted to C.D.A.C., 16th Sept. 67 (copies in registry) ✓
- 2. Letter from C.D.A.C., 4th October. 75 -do- ✓
- 3. C.O. to Treasury, 8th October. 78 (without enclosure) ✓
- 4. Note by Secretary, Locust Control Committee, 11th October. 12 on 18012/3 (Copies in registry) ✓
- 5. Treasury to C.O., 11th October. 82
- 6. C.O. to C.A. 13th October. 84 (with encl.)
- 7. C.O. to C.A., 17th October, enclosing:- 95 (without encl)
- 8. Draft letter to Imperial Airways. Encl. to 95 (spare copies in file)
- 9. Letter offering appointment to Mr. H.H.King, 17th October. 92.

O.O.

Mr. *Fursten 20/10/32*

Mr.

Mr. Tomlinson.

Sir C. Bottomley.

Sir J. Shuckburgh.

Sir G. Grindle.

Permt. U.S. of S.

Parly. U.S. of S.

Secretary of State.

18012/32

99 *LD1* *51*

Kenya
OCT 20

S/S Sir

20 Oct. '32

I am en. to ask

the rec^d of yr. letter of the 19th Oct., from which he is glad to learn that, subject to the conclusion of satisfactory arrangements in regard to the insurance policy on your life, & you are prepared to accept the appointment proposed in the letter from this Office of the 17th Oct.

DRAFT.

H. H. King

Copies to Mr. Hemming (S.A.C.)

Copy 99 & this to CA

EAC (Mr. Hemming)

10 3/4

LFi.

92)

2. As regards the Insurance Policy, I
am to suggest that you should
get into touch with the member
of the Crown Agents' staff (Mr.
J. A. Blackwood) who has
conducted the preliminary negotiations
in the matter with the
Insurance Company

(Signed) H. T. ALLEN

2. As regards the Insurance Policy, I
am to suggest that you should
get into touch with the members
of the Crown Agents' staff (Mr.
J. A. Blackwood) who has
conducted the preliminary negotiations
in the matter with the
Assurance Company

(Signed) H. T. ALLEN

100³⁵

E. A. C. /425.

RECEIVED
20 OCT 1932
COL. OFFICE

19th October 1932.

Dear Freeston,

I enclose herewith a copy of some minutes which have been sent to me by Wimperis of the Air Ministry about our locust affair. I think you will agree that the people concerned seem to be getting ahead satisfactorily. If as I believe to be the case there are no locusts at present available, Mr. Johnson's idea that King will shortly be able to get busy at Porton is likely to be disappointed. However, I do not think we need say anything about that at present.

Yours sincerely,

Francis Hemming

L. B. Freeston, Esq., O.B.E.,
Colonial Office,
S.W.1.

Copy.

Copy to Secretary, Committee on Locust Control,
2 Whitehall Gardens,
S.W.1. 201827/32/R.D.R.2.

Chief Superintendent,
Chemical Research Department,
14 Grosvenor Gardens, S.W.1.

Experiments in Spraying Locusts.

At a Meeting of the Locust Committee on October 6th, I was asked to remind you that the Committee would be glad to be informed as soon as you are in a position to do so, as to the probability of two or three tons of sodium arsenite, in the form specified by Mr. King being supplied in Kenya by the middle of November.

Mr. King informed me that he understood that

W.J. Craven,
49, Port Street, Evesham,
would probably be able to supply. Have you tried this firm?

Mr. King also pointed out that he is available to attend at Porton, if required, on connection with the physiological experiments on live locusts, as soon as the Commandant is ready to have him. His address is:-

The Parsonage,
Ospringe, Faversham, Kent.
and he suggests that the Commandant should be instructed to get into direct touch with him regard to his attendance.

8.10.32. (Int.) H.E.W.
D.S.R.

D.S.R. 2. K.4656.
Air Ministry.

We have approached ten firms, including Messrs W.J. Craven, but only two are in any way promising, viz. The Acme Chemical Coy. of Tonbridge, and the Hopkins Chemical Coy. of Gunnislake. A sample obtained from the first of these firms appears to be fairly satisfactory, although it exhibited some tendency to cake. Experiments just completed have shown that this tendency can be reduced either by using the material in a bone dry condition, or by adding to it one or two per cent. of French chalk.

In view of the urgency of the matter, I am arranging for a representative to visit one or both of these firms, with a view to ascertaining how soon, and at what price, a quantity of 2 to 3 tons of suitable material can be supplied.

I will inform the Locust Committee immediately
/these

51

/these preliminary negotiations have been made, so that a contract can be prepared for submission to the Crown Agents for the Colonies.

With regard to the physiological experiments at Porton, it is expected that the apparatus required for the experiments will be completed by the end of the week. As soon as it has been given a trial run to satisfy us that it functions correctly, we will get into direct touch with Mr. King, so that his experiments may proceed forthwith.

I am sending a copy of this reply to the Secretary of the Locust Committee to keep him informed of the present position of these aspects of the work.

(Sgd.) N.K. JOHNSON.

Chief Superintendent.

14.10.32.

C. D. E. D., War Office,
14 Grosvenor Gardens,
London, S.W. 1.
NKJ/HS.

The Passenger 99⁵
Osprey
Loughran

Wednesday 19 Oct/32

The Hon. Secretary of State
Colonial Office P.C.
London S.W.1

Sir,

39/ P.C.

I thank you for your

no 92 communication to 18012/32 of
the 17th inst.

2. May I request further

information on the subject of

the special insurance policy
of life, referred to in para 3.

The amount of the premium is
given but not the sum assured.

And. 20/10/32
copy to
C. A. King

at the expiration of my lease I shall
be in receipt of a pension of £1000-
per annum from the Sudan Government
— in the event of my death my
widow would receive a pension of
£240.

At a meeting of the
Joint Control Committee it was
resolved that the sum to be
annexed was the purchase price
of an annuity of £750 for a period
of 26 years (on normal expectations
of life). This purchase price is, I
believe, in the neighbourhood of
£12,000

3. Amongst that the special
insurance policy is, on a sufficient
sum, as well as to accept the
advantages on the terms outlined

in your communication

I am

Sr

Your obedient servant

David H. Hill

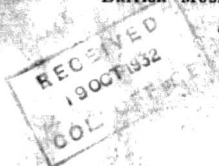
98⁶⁰

INSTITUTE
Imperial Bureau of Entomology

Head Office at—

Sir GUY K. MARSHALL, C.M.G., D.Sc., F.R.S.
Assistant Director:
S. A. NEAVE, D.Sc.

BRITISH MUSEUM (NATURAL HISTORY),
CROMWELL ROAD, LONDON, S.W. 7



18th October, 1932.

Sir,

No 91. I have the honour to acknowledge the receipt of your letter No. 18012/32 of the 17th October advising me that the necessary authority has been given for the grant of £3,250 from the Colonial Development Fund for the special experiments to be conducted in Kenya in controlling locusts by poison dust.

2. I note that in connection with our work in breeding a supply of locusts for experimental purposes, the Crown Agents for the Colonies have been authorised to meet claims up to £100.

I have the honour to be,

Sir,

Your obedient Servant,

Guy Marshall

Director.

The Under Secretary of State,
Colonial Office,
Downing Street,
S.W.1.

17.

Mr. Freeston,
Colonial Office.

With reference to our recent telephone conversation regarding the proposed insurance of Mr. H.H. King while investigating the possibility of controlling flying swarms of locusts by dusting powdered arsenic from an aeroplane, we have received the undermentioned quotation from our Insurance Brokers for the insurance of the 100 Air Bottles which are to be forwarded to Kenya in this connection.

"Against All loss &/or damage from whatsoever cause arising irrespective of percentage. Including full War & Strike Risks and Malicious Damage.
From time of leaving U.K. - To Kenya Colony, whilst there and back to U.K. - limit 3 months in all or held covered.
Including whilst in use during flying operations over Kenya Colony in Imperial Airways 3-engine 'plane - in charge of qualified pilot and mechanic.
It being understood that the Bottles are to be used by a Government Entomologist in connection with the spraying of locusts with arsenic from the air - only two bottles being taken up in the aeroplane on any one flight.
Underwriters not liable for any loss of air out of the bottles
Rate : 1%."

We presume we shall receive your instructions both as regards the insurance of Mr. King and of the Air Bottles, in due course.

2/10/32

J. W. Macarones
Shipping Department,
Crown Agents for the Colonies,
16th October, 1932.

Mr. Freeston 15/2
Mr.
Mr.

18012/Kenya.

Mr. Parkinson.
Mr. Tomlinson.
Sir C. Bottomley.
Sir J. Shackburgh.
Form. U.S. of S.
Party, U.S. of S.
Secretary of State.

Imperial ~~St. X~~

October, 1932.

Gentlemen,

With reference to the letter

from this Office of the 13th October on the subject of a programme of Insect control experiments to be carried out in Kenya, I am etc. to convey to you the following summary of arrangements to be made, set out in reference to the revised estimate of expenditure shown in the enclosure to the Colonial Office letter under reference.

Items 1 and 2(b).

The enclosed draft letter has been prepared by the Air Ministry after consultation with Imperial Airways Limited, who are understood

to

copy to send to Mr. Gifford 25 OCT 1932

DRAFT.
THE CROWN AGENTS
FOR THE COLONIES.

X To Insp. Army
(dit. Norwich) attached.

To King
Comp 2 Ht.

X already copied, except that a correction is required of page 15.
Copy, with gnd. to E.A.C. & C.H.

to have accepted ^{it in} ~~the~~ substance.

I am to request you to conclude an agreement on behalf of the Govt. of Kenya with Imperial Airways Limited on the lines of the draft.

Item 2(a).

It is understood that you are already in communication with the Air Ministry (^{Directorate} ~~Department~~ of Scientific Research), and I am to authorise you to carry out such arrangements (within the limits of the sum provided) as you may judge to be best calculated to give effect to the requirements ^{of the case}

Items 3 and 4.

A copy is enclosed, for your information and guidance, of a letter which is being addressed to Mr. H. H. King, the Entomologist who will conduct the experiments

in Kenya. Mr. King's present address is:-

The Old Parsonage,
Ospringe,
Faversham,
Kent.

As regards the insurance policy on Mr. King's life I am to invite attention to the semi-official correspondence with your Office under your reference S.44/9.

Item 5.

The date of Mr. King's embarkation for Kenya must largely depend on the date by which it proves possible to ship to the Colony the apparatus referred to under Item 2(a) and the poison dust included in Item 7. It is anticipated that a return passage may also be required for a representative of the Air Ministry; you will be further notified on this point in due course.

Item7.

Gentlemen,

The Crown Agents for the Colonies acting on behalf of the Government of Kenya (hereinafter called the Government) hereby offer to place a contract with you to cover the hiring of a "Hercules" type aircraft for the purpose of carrying out experiments in connection with the use of aeroplanes against locusts in Kenya. The contract shall be subject to the following conditions:-

- (1) Payment at the rate of £30 per flying hour shall be made in respect of flights to and from the selected bases in connection with the experiments. For purpose of payment, a flight shall be reckoned as commencing immediately the aircraft leaves the ground solely for flying in connection with the experiments and terminating on the landing of the aircraft.
- (2) The aircraft shall operate normally from Kisumu but may operate at the discretion of the Government from Nairobi or Juba or from other bases not more than 1 flying day's journey from Kisumu.
- (3) Payment under clause (1) shall include:-
 - (a) The cost of transporting the aircraft and crew to Kisumu or other selected base.
 - (b) The provision of fuel and oil for the flights.
 - (c) The salary of the crew operating the aircraft other than that of the representatives of the Government engaged in the experiments.
 - (d) The maintenance of the aircraft in an airworthy condition throughout the period covered by this contract.
 - (e) All housing and landing fees arising as the result of the operations or alternatively the provision of the necessary labour for handling the aircraft on the ground.
 - (f) All wireless services other than those which are the subject of special charge by the Postal Authorities

Draft.

October, 1932.

Gentlemen,

The Crown Agents for the Colonies acting on behalf of the Government of Kenya (hereinafter called the Government) hereby offer to place a contract with you to cover the hiring of a "Hercules" type aircraft for the purpose of carrying out experiments in connection with the use of aeroplanes against locusts in Kenya. The contract shall be subject to the following conditions:-

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 - (a) The cost of transporting the aircraft and crew to Kisumu or other selected base.
 - (b) The provision of fuel and oil for the flights.
 - (c) The salary of the crew operating the aircraft other than that of the representatives of the Government engaged in the experiments.
 - (d) The maintenance of the aircraft in an airworthy condition throughout the period covered by this contract.
 - (e) All housing and landing fees arising as the result of the operations or alternatively the provision of the necessary labour for handling the aircraft on the ground.
 - (f) All wireless services other than those which are the subject of special charge by the Postal Authorities

(g)

(g) All risks arising to the aircraft and the crew and to third parties other than representatives of the Government engaged in the experiments. The liability for damage to property of third parties or to third parties caused by the chemicals used in the course of the experiments shall however be borne by the Government.

(h) All ground running of engines incidental to the flights and all flights ancillary to the main flights except in so far as such flights cover the flying of the aircraft from the selected base to the scene of the experiments.

(1) Labour necessary for preparing the aircraft for the flights and for loading on to any special containers carried in the aircraft, the chemicals to be used for the experiments, and the operation of such apparatus during flights if required.

(4) You will endeavour to provide a first pilot who has had experience of flying of the type called for by these experiments and who will be available throughout the flights subject to the exigencies of maintenance of your regular air services.

(5) The aircraft together with the necessary crew, ground parties fuel and oil shall be available on a date in November 1932, to be subsequently decided upon and shall, subject to clause (6), remain available during such period as to permit of a maximum of 50 ^{hours} flying in connection with the experiments or such less number of hours as may be determined by the Government.

(6) You shall have the right to recall the aircraft if necessary in order to permit of the normal operation of the South African Division of the Air Route to Capetown. In this event, the cost of the return of the aircraft from the base at which it is operating at the time to its normal base and of its subsequent return to the base at which the experiments were proceeding at the time of recall shall be borne by you.

(7) In the event of interruption of the experiments under clause 6, the contract may at the option of the Government either be terminated at the date of such interruption or may be continued for a period sufficient to complete the maximum period of 50 hours flying when the aircraft becomes again available.

(8) In the event of the aircraft becoming unserviceable during the period defined in clause (5) or not being available for continuation of the experiments as provided in clause (7), you shall without charge to the Government make available for completion of the contract at the base from which operations were proceeding at the time the aircraft became unserviceable and at the earliest date practicable, an aircraft equally suitable for the experiments and shall instal therein without charge to the Government any apparatus necessary for the carrying out of the experiments.

- (9) (a) The Government shall furnish as soon as possible full particulars of any apparatus they desire to be installed for the purpose of the experiments.
- (b) In the event of your being required to instal such apparatus the Government shall pay a fair and reasonable sum to be mutually agreed upon for such installation.
- (c) If you are called upon to instal the apparatus, the installation shall be executed so as to warrant the issue of a Certificate of Airworthiness for the aircraft so modified.
- (d) On completion of the period of flying called for in clause 5 and subject to clause 6 the Government shall pay you a fair and reasonable sum to be mutually agreed upon for the removal of the apparatus and for the restoration of the aircraft to its original condition if modified in any way to permit

permit of the installation of the apparatus and if such restoration is required.

(10) Subject to clause 2 the actual locations selected for the experiments shall be at the discretion of the Government. The period of the flights and times at which flights shall be made (so long as no considerations of safety of the aircraft and its personnel are involved) shall also be at the discretion of the Government. Subject to clause 9 (c) your representative in charge of the aircraft shall have sole discretion on all matters of safety for flight.

(11) In the event of any flight being carried out at so low an altitude as to preclude the operation of the wireless apparatus fitted in the aircraft you shall arrange under the same terms and conditions for a second aircraft to be available solely for wireless services. Payment in respect of the second aircraft shall be made at the rate of £10.0.0. per flying hour.

(12) The cost of supplying and transporting to the operating bases the chemicals to be used in the experiments shall be borne by the Government.

(13) You will be precluded from publishing or causing to be published any advertisement of which this contract or its execution forms directly or indirectly the subject, without the written permission of the Government.

(14) The Government may at their sole discretion publish or authorise the publication of reports on these experiments.

(15) Claims for payments due under clauses 1,9 and 11 shall be rendered to the Government in Nairobi, accompanied by a certificate of accuracy and satisfactory performance signed by the accredited representative of Government who accompanies the flight. Payment shall be made to Messrs. Imperial Airway Limited in London by the Crown Agents for the Colonies

being

permit of the installation of the apparatus and if such restoration is required.

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being

being duly authorized thereto by the Government.

I am, etc.

Messrs. Imperial Airways Ltd.
Airways House,
Charles Street,
S.W.1.

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(13) You will be precluded from publishing or causing to be published any advertisement of which this contract or its execution forms directly or indirectly the subject, without the written permission of the Government.

(14) The Government may at their sole discretion publish or authorise the publication of reports on these experiments.

(15) Rendering of bills

(a) to whom.

(b) who shall certify -

(i) as to accuracy of amount.

(ii) as to satisfactory performance.

I am, etc.

substantive
as per
attached
page
sent 4 pages
(other files)

Messrs. Imperial Airways Ltd.,
Airways House,
Charles Street,
S.W.1.

DRAFT. para. 15.

15. Claims for payments due under Classes 1, 9 and 11 shall be rendered to the Government in Nairobi, accompanied by a certificate of accuracy and satisfactory performance signed by the accredited representative of agents who accompany the flights. Payment shall be made to Messrs. Imperial Airways Ltd. in London by the Crown Agents for the Colonies being duly authorized thereto by the Government.

C. O.

Mr. *Foster* 15/10/32

Mr.

Mr.

Mr. Tomlinson.

Sir C. Bottomley.

Sir J. Shuckburgh.

Sir G. Grindle.

Permt. U.S. of S.

Parly. U.S. of S.

Secretary of State.

18/12/32

Kings

No 93 answered by No 120

93-94 71

Coupl.
Important

DRAFT.

The Secy

1) W.O.

2) A.M.

Copy 1/2 sends to N.H. Johnson 17/10/32

Sir

I am re. to
Kamont to you, to be laid
before the Army C'cil. ~~and~~
Air C'cil
a copy of the Fifth Report
of the Present Control C'te
of the Economic Advisory
Council, and of a subsequent
Note by the Secretary of the
C'te (E.A.C. (L) 621), regarding
a programme of experiments
to be conducted with a
view to determining the possibility

W.O. sent.
Copy to E.A.C. etc.
P.H.

Two parallel lines

with me
W.P.

of destroying flying swarms of locusts in East Africa by the discharge of poisonous dust from aeroplanes.

2. It will be drawn from the Revised Estimate in the Appendix to the Secretary's Note (E.A.C. (L) 621) that provision is made for certain payments to the W.O. for work undertaken in connexion with these experiments.

I am to state that the necessary ^{Sanction} ~~authority~~ has now been given by H.D.C.O. for the grant of £3250 from the Col. Development Fund, and that the C.A. for the Col. ^{in whose books a credit for this amount is being entered} have been authorized to meet claims from your Dept. up to a total of

£150
£450

3. In order that the experiments in question may be conducted during the present locust season, which may

C. O.

Mr.

Mr.

Mr.

Mr. Tomlinson.

Sir C. Bottomley.

Sir J. Shuckburgh.

Sir G. Grindle.

Permt. U.S. of S.

Parly. U.S. of S.

Secretary of State

DRAFT.

(Signed) H. J. ALLEN

be expected to terminate in December, it is desired that all the necessary arrangements for the supply of apparatus ^{and material} ~~and material~~ be concluded with the utmost possible despatch.

d. o.

Mr. Freeston 15

Mr.

Mr.

Mr. Parkinson.

Mr. Tomlinson.

Sir C. Bottomley.

Sir J. Shuckburgh.

Permt. U.S. of S.

Parly. U.S. of S.

Secretary of State.

18012/ Kenya.

Approved by N0999 113

92 13

5/17 October, 1932.

Sir,

I am etc. to inform you

that in pursuance of the recommendations of the Locust Control Committee of the Economic Advisory Council, he desires to engage your services in a temporary appointment under the Government of Kenya to carry out a programme of experiments and research into the possibility of destroying flying swarms of locusts by the discharge of poison dust from aeroplanes.

2. The duration of the programme is not anticipated to exceed three months inclusive of the time spent in transit to and from East Africa. It is understood

that

DRAFT.

H. H. KING, ESQ.

The old Parsonage
Ospringe
Faversham
Kent

copy to East. Compt (3) 25 OCT 1932

copy to P.A. 17/10/32

Copy to CA in comp. - dfr

Copy to EA - LF

that the Government of the Sudan
has no objection to your accepting
this appointment on the understanding
that no liability of any kind will
be incurred by them.

See 30A.

It is proposed that your
services should be remunerated by an
inclusive fee of £200, and that you
should receive a free first class return
passage from London to Nairobi, with
subsistence allowance at the rate of
£5 per diem on the sea voyages and
£2 per diem while in Kenya. In addition,
the cost (not exceeding £100) will be
~~made~~^{met} of a special insurance policy on
your life while you are engaged in the
experiments. You will understand that
payment under each of these heads will
be made from the funds of the Kenya Govt.,
to whose account the grant from the
Colonial Development Fund is being credited.

Your

that the Government of the Sudan
has no objection to your accepting
this appointment on the understanding
that no liability of any kind will
be incurred by them.

See 38A

3. It is proposed that your
services should be remunerated by an
inclusive fee of £200, and that you
should receive a free first class return
passage from London to Nairobi, with
subsistence allowance at the rate of
5/- per diem on the sea voyages and
£1 per diem while in Kenya. In addition,
the cost (not exceeding £100) will be
~~made~~^{not} of a special insurance policy on
your life while you are engaged in the
experiments. You will understand that
payment under each of these heads will
be made from the funds of the Kenya Govt.,
to whose account the grant from the
Colonial Development Fund is being credited.

Your



Your report on the result of the experiments should be communicated in the first instance to the Governor of Kenya, who will arrange for its transmission to the S. of S. for the Colonies for the information of the Economic Advisory Council.

4. I am to request you to state, at your earliest convenience, whether you accept this appointment on the terms outlined above. In the event of your acceptance you should place yourself in communication with the Crown Agents for the Colonies, 4, Millbank, S.W.1. (to whom a copy of this letter is being sent) in regard to (a) the provision of your return passage to Mombasa, (b) the negotiating of the special insurance policy on your life.

5. In the event of your requiring any special equipment, whether



74

Your report on the result of the experiments should be communicated in the first instance to the Governor of Kenya, who will arrange for its transmission to the S. of S. for the Colonies for the information of the Economic Advisory Council.

4. I am to request you to state, at your earliest convenience, whether you accept this appointment on the terms outlined above. In the event of your acceptance you should place yourself in communication with the Crown Agents for the Colonies, 4, Millbank, S.W.1, (to whom a copy of this letter is being sent) in regard to (a) the provision of your return passage to Mombasa, (b) the negotiating of the special insurance policy on your life.

5. In the event of your requiring any special equipment, whether

whether photographic or other
equipment, I am to request you
to submit to this Office, as soon
as possible, a detailed list of
such requirements in order that
authority to purchase may be given
to the Crown Agents. You are aware
that the portion of the grant allotted
to "contingencies" amounts to £50 only,
and in view of the other possible
claims on this item, you will, no doubt,
limit your requirements to the minimum.

I am, etc.

(Signed) H. T. ALLEN

C. O.

Mr. Frentzen 15/10/31

Mr.

Mr.

Mr. Tomlinson.

Sir C. Bottomley.

Sir J. Shuckburgh.

Sir G. Grindle.

Permt. U.S. of S.

Parly. U.S. of S.

Secretary of State

18012/31

Kanya

91

DRAFT.

The Director
Imp. Inst. of Entomology

Sir

I am in. to refer
to the Fifth Report of
the Locust Control Cttee
of the Economic Advisory
Council and to subsequent
discussion on the subject
of the experiments to be
conducted in Kanya
with in the control of
locust swarms by the
discharge of poison dust
from aeroplanes.

The necessary
authority has now been
given for the grant
of £3250 from the

Copy to EAC. LF

Cob. Development Fund, and the
C.A. for the Cobs. have been
authorized to meet, from the same
so provided, claims which they
may receive from you, up to a
total of £100. for expenses
incurred in connexion with the
breeding of a supply of locusts
for experimental purposes.

(Signed) H. T. ALLEN

October 14th, 1932.

My dear Freeston,

I thought it might be convenient to dot down in summary form my understanding of what we arranged this morning regarding the various steps that now require to be taken to put in motion our scheme for the aeroplane locust experiments. This I now do under the revised headings set out in the Appendix to Annex II of the paper which I circulated a day or two ago to our Committee on Locust Control (Committee Paper E.A.C.(L.) 621).

- ✓ 1. Colonial Office to send draft contract to Crown Agents for despatch to Imperial Airways as soon as ready.
- 2(a). Colonial Office to instruct Crown Agents to take necessary steps in consultation with Air Ministry (Directorate of Scientific Research).
- ✓ 2(b). Included in 1 above.
- ✓ 3. Colonial Office to send letter of appointment to King.
- ✓ 4. Colonial Office to instruct Crown Agents to take out policy.
5. Colonial Office to ask Air Ministry for date by which, in their opinion, it would be safe for King to sail having regard to the experiments they are carrying out, and to instruct Crown Agents to arrange for booking of King's passage accordingly. As regards Wimperis's passage, either Crown Agents to arrange ^{for} or to repay Air Ministry if they book.
6. Instructions about this to be included by Colonial Office in despatch to Kenya.
- ✓ 7. Crown Agents to be instructed by Colonial Office to purchase this in consultation with the Department of Scientific Research, Air Ministry, and Chemical Defence Research Department, War Office, who are already in consultation. Special urgency of despatch of dust to Kenya to be impressed on Crown Agents, subject to arrangements for certain quantities, say, three hundredweights to be sent to Air Ministry establishment at Farnborough for experiments.
- 8(a). Colonial Office to tell Air Ministry that they can go ahead, sending in bills in due course.

8(b).

October 14th, 1932.

My dear Freeston,

I thought it might be convenient to dot down in summary form my understanding of what we arranged this morning regarding the various steps that now require to be taken to put in motion our scheme for the aeroplane locust experiments. This I now do under the revised headings set out in the Appendix to Annex II of the paper which I circulated a day or two ago to our Committee on Locust Control (Committee Paper E.A.C.(L.) 621).

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- ✓ 3. Colonial Office to send letter of appointment to King.
- ✓ 4. Colonial Office to instruct Crown Agents to take out policy.
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- ✓ 7. Crown Agents to be instructed by Colonial Office to purchase this in consultation with the Department of Scientific Research, Air Ministry, and Chemical Defence Research Department, War Office, who are already in consultation. Special urgency of despatch of dust to Kenya to be impressed on Crown Agents, subject to arrangements for certain quantities, say, three hundredweights to be sent to Air Ministry establishment at Farnborough for experiments.
- ✓ 8(a). Colonial Office to tell Air Ministry that they can go ahead, sending in bills in due course.

8(b).

77

✓ 8(b). Colonial Office to inform War Office that £100 in (b)(i) now available and to request that experiments may be undertaken forthwith. Letter should explain that a further communication will be addressed to War Office with regard to (b)(ii) later. (Work not likely to start for six months.)

✓ 8(c). Colonial Office to inform Imperial Institute of Entomology that they can go ahead.

9. -----

✓ 10. Colonial Office to ask King to submit as soon as possible a list of miscellaneous requirements, explaining that owing to small sum available this should be kept as low as possible.

Yours sincerely,

Francis Hemming

E. A. C./425.

11th October 1932.

Dear Freeston,

I enclose herewith in duplicate a draft contract for Imperial Airways which the Air Ministry have drawn up for the hire of a suitable aeroplane for our locust experiments in Kenya.

You will remember that originally we planned that Imperial Airways should not only instal, but also design the dust discharging apparatus, but that at the meeting held at this office on October 6th, we agreed that it would be better for the Air Ministry to design this apparatus, and for Imperial Airways merely to instal it. The contract has been prepared on this basis.

Wimperis tells me that the substance of the draft contract has been agreed with Imperial Airways, but that it has not been shown to them in its present form.

I have looked the document over, and it seems to me all right. The only comments that I have to make are the following:-

Clause 3 (g).

This provides, inter alia, that "the liability for damage to property of third parties or to third parties caused by the chemicals used in the course of the experiments shall be borne by the Crown Agents."

In view of the fact that we are advised

/that

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/that it is impossible for anyone to suffer any harm from the dust which we are going to discharge, this risk should be absolutely negligible. I agree, however, that Imperial Airways are entitled to be relieved of any liability on this account. You will no doubt consider whether it will be necessary to give some indemnification to the Crown Agents on this account, and if so, by whom such indemnification should be given.

Clause 9 (d).

I think it is reasonable that we should make good out of our grant any reconditioning of the aeroplane on the completion of the experiments in so far as this is necessary (I do not anticipate that it will be necessary) on account of any structural changes necessitated by the installation of the discharging apparatus on the tips of the wings.

This would obviously be only a small item, and could, I think, be regarded as covered by our item for contingencies.

Clause 11.

In our discussions, you will remember that we agreed that if it was found necessary on any occasion for the aeroplane to fly so low that it could not use its wireless, it would be necessary to provide an escorting machine. The cost of this, as you will see, is put at £10 per flying hour.

I think that this is reasonable, and if the contingency contemplated arises, we shall have to provide for it by revising the total number of flying hours.

Clause 14.

/Clause 14.

80

Clause 14.

I agree with this clause, provided that the words "accredited representative(s)" includes the Economic Advisory Council, who would certainly wish to be consulted before any public announcement is made regarding the proposed experiments.

Clause 15.

You will no doubt insert appropriate particulars in the spaces which have been left blank by the Air Ministry.

You will presumably not wish to send the draft contract to the Crown Agents until you have got final Treasury sanction for our revised estimate. I shall be grateful if you will be so kind as to keep me in touch with your progress with Blackett and the Treasury.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Francis H. ...". The signature is written in a cursive style and is underlined with a long, horizontal stroke that extends to the right and then curves downwards.

L.B. Freeston, Esq., O.B.E.,
Colonial Office, S.W.1.

Draft.

October, 1932.

Gentlemen,

The Crown Agents for the Colonies (on behalf of Government of Kenya) ^(hereinafter called the Government) hereby offer to place a contract with you to cover the hiring of a "Mercurius" type aircraft for the purpose of carrying out experiments in connection with the use of aeroplanes against locusts in Kenya. The contract shall be subject to the following conditions:-

- (1) Payment at the rate of £30 per flying hour shall be made in respect of flights to and from the selected bases in connection with the experiments. For purpose of payment, a flight shall be reckoned as commencing immediately the aircraft leaves the ground solely for flying in connection with the experiments and terminating on the landing of the aircraft.
- (2) The aircraft shall operate normally from Kisumu but may ^{at the direction of the Government} operate from Nairobi or Juba or from other bases not more than 1 flying day's journey from Kisumu.
- (3) Payment under clause (1) shall include:-
 - (a) The cost of transporting the aircraft ^{and crew} to Kisumu.
 - (b) The provision of fuel and oil for the flights.
 - (c) The salary of the crew operating the aircraft other than that of the representatives of the ^{Government} Crown Agents engaged in the experiments.
 - (d) The maintenance of the aircraft in an airworthy condition throughout the period covered by this contract.
 - (e) All housing and landing fees arising as the result of the operations or alternatively the provision of the necessary labour for handling the aircraft on the ground.
 - (f) All wireless services other than those which are the subject of special charge by the Postal authorities.

Messrs. Imperial Airways Ltd.,
Airways House,
Charles Street,
S.W.1.

(g) All

- (g) All risks arising to the aircraft and the crew and to third parties other than representatives of the ^{Government} Crown Agents engaged in the experiments. The liability for damage to property of third parties or to third parties caused by the chemicals used in the course of the experiments shall however be borne by the ^{Government} Crown Agents.
- (h) All ground running of engines incidental to the flights and all flights ancillary to the main flights except in so far as such flights cover the flying of the aircraft from the ^{selected} base to the scene of the experiments.
- (i) Labour necessary for preparing the aircraft for the flights and for loading on to any special containers carried in the aircraft, the chemicals to be used for the experiments, and the operation of such apparatus during flight if required.
- (4) You will endeavour to provide a first pilot who has had experience of flying of the type called for by these experiments and who will be available throughout the flights subject to the exigencies of maintenance of your regular air services.
- (5) The aircraft together with the necessary crew, ground parties fuel and oil shall be available on a date in November, 1932, to be subsequently decided upon and shall, subject to clause (b), remain available during such period as to permit of a maximum of 50 hours flying in connection with the experiments or such less number of hours as may be determined by the ^{Government} Crown Agents.
- (6) You shall have the right to recall the aircraft if necessary in order to permit of the normal operation of the South African Division of the Air Route to Capetown. In this event, the cost of the return of the aircraft from the base at which it is operating at the time to its normal base and of its subsequent return to the base at which the experiments were proceeding at the time of recall shall be borne by you.

- (7) In the event of interruption of the experiments under clause ⁶, the contract may at the option of the ^{Government} Crown Agents either be terminated at the date of such interruption or may be continued for a period sufficient to complete the maximum period of 50 hours flying when the aircraft becomes again available.
- (8) In the event of the aircraft becoming unserviceable during the period defined in clause (5) or not being available for continuation of the experiments as provided in clause (5), you shall without charge to the ^{Government} Crown Agents for the Colonies make available for completion of the contract at the base from which operations were proceeding at the time the aircraft became unserviceable and at the earliest date practicable, an aircraft equally suitable for the experiments and shall instal therein without charge to the ^{Government} Crown Agents any apparatus necessary for the carrying out of the experiments.
- (9) (a) The ^{Government} Crown Agents shall furnish as soon as possible full particulars of any apparatus they desire to be installed for the purpose of the experiments.
- (b) In the event of your being required ~~to~~ ^{instal} to supply such apparatus ~~and/or to instal~~ ^{the} ~~the~~ ^{Government} Crown Agents shall pay a fair and reasonable sum to be mutually agreed upon for such supply ~~and/or~~ installation.
- (c) If you are called upon ~~to supply and/or~~ instal the apparatus, the supply ~~and/or~~ the installation shall be executed so as to warrant the issue of a Certificate of Airworthiness for the aircraft so modified.
- (d) On completion of the period of flying called for in clause 5 and subject to clause 6 the ^{Government} Crown Agents for the Colonies shall pay you a fair and reasonable sum to be mutually agreed upon for the removal of the apparatus and for the restoration of the aircraft to its original condition if modified in any way to permit of the installation of the apparatus and if such restoration is required.

Draft.

October, 1932.

Gentlemen,

The Crown Agents for the Colonies (on behalf of Government of Kenya) hereby offer to place a contract with you to cover the hiring of a "Mercurus" type aircraft for the purpose of carrying out experiments in connection with the use of aeroplanes against locusts in Kenya. The contract shall be subject to the following conditions:-

- (1) Payment at the rate of £30 per flying hour shall be made in respect of flights to and from the selected bases in connection with the experiments. For purpose of payment, a flight shall be reckoned as commencing immediately the aircraft leaves the ground solely for flying in connection with the experiments and terminating on the landing of the aircraft.
- (2) The aircraft shall operate normally from Kisumu but may operate from Nairobi or Juba or from other bases not more than 1 flying day's journey from Kisumu.
- (3) Payment under clause (1) shall include:-
 - (a) The cost of transporting the aircraft to Kisumu.
 - (b) The provision of fuel and oil for the flights.
 - (c) The salary of the crew operating the aircraft other than that of the representatives of the Crown Agents engaged in the experiments.
 - (d) The maintenance of the aircraft in an airworthy condition throughout the period covered by this contract.
 - (e) All housing and landing fees arising as the result of the operations or alternatively the provision of the necessary labour for handling the aircraft on the ground.
 - (f) All wireless services other than those which are the subject of special charge by the Postal authorities.

Messrs. Imperial Airways Ltd.,
Airways House,
Charles Street,
S.W.1.

(g) All

- (g) All risks arising to the aircraft and the crew and to third parties other than representatives of the Crown Agents engaged in the experiments. The liability for damage to property of third parties or to third parties caused by the chemicals used in the course of the experiments shall however be borne by the Crown Agents.
- (h) All ground running of engines incidental to the flights and all flights ancillary to the main flights except in so far as such flights cover the flying of the aircraft from the base to the scene of the experiments.
- (i) Labour necessary for preparing the aircraft for the flights and for loading on to any special containers carried in the aircraft, the chemicals to be used for the experiments, and the operation of such apparatus during flight if required.
- (4) You will endeavour to provide a first pilot who has had experience of flying of the type called for by these experiments and who will be available throughout the flights subject to the exigencies of maintenance of your regular air services.
- (5) The aircraft together with the necessary crew, ground parties fuel and oil shall be available on a date in November, 1932, to be subsequently decided upon and shall, subject to clause (6), remain available during such period as to permit of a maximum of 50 hours flying in connection with the experiments or such less number of hours as may be determined by the Crown Agents.
- (6) You shall have the right to recall the aircraft if necessary in order to permit of the normal operation of the South African Division of the Air Route to Capetown. In this event, the cost of the return of the aircraft from the base at which it is operating at the time to its normal base and of its subsequent return to the base at which the experiments were proceeding at the time of recall shall be borne by you.

- 83
- 3-
- (7) In the event of interruption of the experiments under clause 6, the contract may at the option of the Crown Agents either be terminated at the date of such interruption or may be continued for a period sufficient to complete the maximum period of 50 hours flying when the aircraft becomes again available.
- (8) In the event of the aircraft becoming unserviceable during the period defined in clause (5) or not being available for continuation of the experiments as provided in clause (7), you shall without charge to the Crown Agents for the Colonies make available for completion of the contract at the base from which operations were proceeding at the time the aircraft became unserviceable and at the earliest date practicable, an aircraft equally suitable for the experiments and shall instal therein without charge to the Crown Agents any apparatus necessary for the carrying out of the experiments.
- (9) (a) The Crown Agents shall furnish as soon as possible full particulars of any apparatus they desire to be installed for the purpose of the experiments.
- (b) In the event of your being required ~~to~~ ^{instal} to ~~supply~~ such apparatus ~~and/or to instal~~ ^{instal} the Crown Agents shall pay a fair and reasonable sum to be mutually agreed upon for such ~~supply and/or~~ installation.
- (c) If you are called upon to ~~supply and/or~~ instal the apparatus, the ~~supply and/or~~ installation shall be executed so as to warrant the issue of a Certificate of Airworthiness for the aircraft so modified.
- (d) On completion of the period of flying called for in clause 5 and subject to clause 6 the Crown Agents for the Colonies shall pay you a fair and reasonable sum to be mutually agreed upon for the removal of the apparatus and for the restoration of the aircraft to its original condition if modified in any way to permit of the installation of the apparatus and if such restoration is required.

October, 1932.

Gentlemen,

The Crown Agents for the Colonies ^{acting} on behalf of ^{the} Government of Kenya ^(hereinafter called the Government) hereby offer to place a contract with you to cover the hiring of a "Hercules" type aircraft for the purpose of carrying out experiments in connection with the use of aeroplanes against locusts in Kenya. The contract shall be subject to the following conditions:-

- (1) Payment at the rate of £30 per flying hour shall be made in respect of flights to and from the selected bases in connection with the experiments. For purpose of payment, a flight shall be reckoned as commencing immediately the aircraft leaves the ground solely for flying in connection with the experiments and terminating on the landing of the aircraft.
- (2) The aircraft shall operate normally from Kisumu but may ^{at the direction of the Government} operate from Nairobi or Juba or from other bases not more than 1 flying day's journey from Kisumu.
- (3) Payment under clause (1) shall include:-
 - (a) The cost of transporting the aircraft ^{and crew} to Kisumu ^{or other selected base}.
 - (b) The provision of fuel and oil for the flights.
 - (c) The salary of the crew operating the aircraft other than that of the representatives of the ^{Government} Crown Agents engaged in the experiments.
 - (d) The maintenance of the aircraft in an airworthy condition throughout the period covered by this contract.
 - (e) All housing and landing fees arising as the result of the operations or alternatively the provision of the necessary labour for handling the aircraft on the ground.
 - (f) All wireless services other than those which are the subject of special charge by the Postal authorities.

Messrs. Imperial Airways Ltd.,
Airways House,
Charles Street,
S.W.1.

/ (g) All

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(h) All ground running of engines incidental to the flights and all flights ancillary to the main flights except in so far as such flights cover the flying of the aircraft from the base to the scene of the experiments.

(i) Labour necessary for preparing the aircraft for the flights and for loading on to any special containers carried in the aircraft, the chemicals to be used for the experiments, and the operation of such apparatus during flight if required.

(4) You will endeavour to provide a first pilot who has had experience of flying of the type called for by these experiments and who will be available throughout the flights subject to the exigencies of maintenance of your regular air services.

(5) The aircraft together with the necessary crew, ground parties fuel and oil shall be available on a date in November, 1932, to be subsequently decided upon and shall, subject to clause (6), remain available during such period as to permit of a maximum of 50 hours flying in connection with the experiments or such less number of hours as may be determined by the ^{Government} Crown Agents.

(6) You shall have the right to recall the aircraft if necessary in order to permit of the normal operation of the South African Division of the Air Route to Capetown. In this event, the cost of the return of the aircraft from the base at which it is operating at the time to its normal base and of its subsequent return to the base at which the experiments were proceeding at the time of recall shall be borne by you.

(7) In the event of interruption of the experiments under clause 6, the contract may at the option of the ^{Government} Crown Agents either be terminated at the date of such interruption or may be continued for a period sufficient to complete the maximum period of 50 hours flying when the aircraft becomes again available.

(8) In the event of the aircraft becoming unserviceable during the period defined in clause (5) or not being available for continuation of the experiments as provided in clause (5), you shall without charge to the ^{Government} Crown Agents for the Colonies make available for completion of the contract at the base from which operations were proceeding at the time the aircraft became unserviceable and at the earliest date practicable, an aircraft equally suitable for the experiments and shall install therein without charge to the ^{Government} Crown Agents any apparatus necessary for the carrying out of the experiments.

(9) (a) The ^{Government} Crown Agents shall furnish as soon as possible full particulars of any apparatus they desire to be installed for the purpose of the experiments.

(b) In the event of your being required ~~to~~ ^{install} to supply such apparatus ~~and/or to install~~ ^{the} the ^{Government} Crown Agents shall pay a fair and reasonable sum to be mutually agreed upon for such ~~supply and/or~~ installation.

(c) If you are called upon to ~~supply and/or~~ install the apparatus, the ~~supply and/or~~ installation shall be executed so as to warrant the issue of a Certificate of Airworthiness for the aircraft so modified.

(d) On completion of the period of flying called for in clause 5 and subject to clause 6 the ^{Government} Crown Agents for the Colonies shall pay you a fair and reasonable sum to be mutually agreed upon for the removal of the apparatus and for the restoration of the aircraft to its original condition if modified in any way to permit of the installation of the apparatus and if such restoration is required.

Subject to clause 2, the actual locations selected for the experiments shall be at the discretion of the ~~Crown~~^{Government} Agents for the Colonies. The period of the flights and times at which flights shall be made (so long as no considerations of safety of the aircraft and its personnel are involved) shall also be at the discretion of the ~~Crown~~^{Government} Agents. Subject to clause 4(c) your representative in charge of the aircraft shall have sole discretion on all matters of safety for flight.

(11) In the event of any flight being carried out at so low an altitude as to preclude the operation of the wireless apparatus fitted in the aircraft you shall arrange under the same terms and conditions for a second aircraft to be available solely for wireless services. Payment in respect of the second aircraft shall be made at the rate of £10.0.0. per flying hour.

(12) The cost of supplying and transporting to the operating bases the chemicals to be used in the experiments shall be borne by the ~~Crown~~^{Government} Agents for the Colonies.

(13) You will be precluded from publishing or causing to be published any advertisement of which this contract or its execution forms directly or indirectly the subject, without the written permission of the ~~Crown~~^{Government} Agents for the Colonies.

(14) The ~~Crown~~^{Government} Agents for the Colonies or their accredited representatives may at their sole discretion publish or ~~cause~~^{or authorize the publication of} to be published reports on these experiments.

(15) Rendering of bills

(a) to whom,

(b) who shall certify:-

(i) as to accuracy of amount,

(ii) as to satisfactory performance.

I am, etc.,

Under cover of Foreign Office Note of the 30th August 1932.
(L 4532/40/405).

COPY.

NO DISTRIBUTION.

Decode. Mr. Campbell (Alexandria).
29th August, 1932.

D. 1.26 p.m. 29th August, 1932.

R. 1.25 p.m. 29th August, 1932.

No. 147. (k).

Your telegram No. 171.

Following received from Khartoum.

Begins:-

I see no objection to Mr. King's employment here provided firstly, no financial liability is incurred by the Sudan Government in respect to transport or expenses. Secondly, Sudan Government is not liable for any indemnity in the event of accident occurring to King, during such employment, over and above terms of Sudan Government Pension Ordinance of 1919. Thirdly, it is understood that employment is not duty under the Sudan Government.

C. O.

18012
Kenya

pe
1934
87

Mr. Freeman *relief.*

Mr.

Mr.

Mr. Parkinson.

Mr. Tomlinson.

Mr. C. Bottomley.

Mr. J. Shuckburgh.

Permt. U.S. of S.

Partly. U.S. of S.

Secretary of State.

C.O.
R 13 OCT
D 13

CA

18 OCT

Gentlemen

DRAFT.

copy to C.D.A.C. } LFF 14.10.32
Exney/1934 }

Copy to 200 small. to { Kenyan } 14.10.32. LFF
E.A.C. }

copy to Kenyan } 25 OCT 1932

78)

79)

Encl. to 76
(marked A)

Copy to (with encl) to
E.A.C. LFF
for Kenya 778

82)

(without encl) to
IX
E.A.C. (Mr. Hamming) LFF

81)

I am in the
refer to the letter from this Office
to the Treasury of the 8th Oct., of
which a copy was sent to you
on Oct. 12th, regarding a grant
from the Col. Devt. Fund to
enable the Govt. of Kenya to
carry out an ongoing experimental
programme of locust destruction
by means of poison discharged
from aeroplanes.

From the Treasury
reply of Oct. 11th you will be
aware that T.L. have sanctioned
the grant, and of £3250, and
have arranged for the

immediate
2 Transfer to your account of £1,000. An
Application for the balance will be
made by the S. of S. to the Treasury
in due course.

3. I am to enclose for your
information & guidance a Revised Estimate
showing the objects to which the grant
is to be applied. You will be ^{separately} advised
in ~~separate~~ ^{separate} case of the certain
arrangements to be made in connection
with items 1-7 and 10 of the Estimate.
In the meantime I am to convey to
you the S. of S.'s general authority to
meet ^{the} claims which will in due course
accrue in respect of each ~~these~~ item
up to the total shown against the
item in the ^{Revised} Estimate.

4. As you are aware, the
expenditure of ~~grants~~ ^{grants & loans}
is subject to audit by the Comptroller
& Auditor-General. As in this case the
greater part of the disbursements will be
made ~~in~~ ^{from} your Office, and
it will consequently be difficult for
the Govt. of Kenya to render a
detailed account for audit purposes.

G. O.

- Mr.
- Mr.
- Mr.
- Mr. Parkinson.
- Mr. Tomlinson.
- Mr. C. Bottomley.
- Mr. J. Shuckburgh.
- Permt. U.S. of S.
- Parly. U.S. of S.
- Secretary of State.

DRAFT.

I am accordingly to request that
you will keep a ~~separate~~ ^{separate}
account for expenditure from this
grant, and forward it to
this Office, in a form suitable
for audit, as soon as the
expenditure is completed.

5. Copies of this letter are
being sent to the Govt. of Kenya,
the Treasury and the Secretary
of the Col. Dev. Adl. C'ty.

(Signed) H. T. ALLEN.

Tel. No. Whitehall 1234.

Any reply to this letter should be addressed to-
THE SECRETARY,

TREASURY,
WHITEHALL, LONDON, S.W.1,
and the following number quoted.

S. 34609
0240

TREASURY CHAMBERS

11/10/32

Sir



I am directed by the Lords Commissioners of His Majesty's Treasury to acquaint you that the Paymaster-General has been authorised to transfer the sum of £1000 from the Colonial Development Fund to the General Ac/c of the Crown Agents for the Colonies at the Bank of England as part of free grant to be made to the Government of Kenya in respect of a scheme for controlling locust swarms.

*The Under Secretary
of State
Colonial Office*

I am, *Sir*

Your obedient Servant,

R. V. NIND HOPKINS.

Whitehall

Telephone No.: ~~XXXXXX~~ 1234.

82 90

Any reply to this letter should be addressed to—
THE SECRETARY,



THE SECRETARY,
TREASURY,
WHITEHALL, LONDON, S.W.1,
and the following number quoted:



TREASURY CHAMBERS.

S.34609/0240.

RECEIVED
12 OCT 1932
COL OFFICE

11 October, 1932.

5-2

Sir,

1078

copy to Hon Comf (2) 25 OCT 1932

I have laid before the Lords Commissioners of His Majesty's Treasury Mr. Holmes' letter of the 8th instant (No. 18012/32) signifying Sir Philip Cunliffe-Lister's concurrence in the recommendation of the Colonial Development Advisory Committee conveyed in the Secretary's letter of the 4th instant that a free grant of £3,250 should be made from the Colonial Development Fund to finance a programme of experiments both in Kenya and in the United Kingdom with a view to determining the efficacy of a suggested method of controlling locust swarms by the discharge of poison dust from aircraft.

The Colonial Development Advisory Committee in their recommendation on this application stated that it was for consideration whether it would not be more economical to undertake certain laboratory experiments which are to be carried out in this country, before proceeding

The Under Secretary of State,
Colonial Office.

sum of £1,000 to be transferred from the Fund to the credit of the Kenya Government with the Crown Agents for the Colonies.

Copies of this letter have been sent to the Secretary of the Colonial Development Advisory Committee and to the Crown Agents for the Colonies.

I am,

Sir,

Your obedient Servant,

R. V. Nield Asst Secy

proceeding with the projected operations in Kenya. The Committee however, did not wish to press this suggestion.

My Lords are now informed that the Secretary of State is advised that, though this physiological work in England is of ^{great} such importance it is desirable to postpone these investigations in the laboratory until after the field work has been carried out. It is further stated that unless the greatest despatch is used it will not be possible to undertake the field work during the present locust season which may be expected to terminate in December.

I am now to request you to inform the Secretary of State that, in the circumstances described, My Lords sanction a free grant of £3,250 from the Colonial Development Fund in accordance with the recommendation of the Committee. They are causing the

sum

Mr. Justice Gifford

- Mr. Tomlinson.
- Sir O. Bottomley.
- Sir J. Shackburgh.
- Sir G. Grindle.
- Parli. U.S. of S.
- Parly. U.S. of S.
- Secretary of State.



Recd 82 SC

Very imp

Important

8 Oct. 1932

Sir

DRAFT.

The Secretary
Treasury

Copy to C.A.C. B.10 } 12/10/32
 " " C.P.A.C. B.16 }
 " " S.A.C. " " }

I am, etc., to refer to the letter from the Colonial Development Advisory Committee of the 4th October (C.D.A.C. 1121) recommending a free grant of £3,250 from the Colonial Development Fund to finance a programme of experiments both in Kenya and in the United Kingdom with a view to determining the efficacy of a suggested method of controlling locust swarms by the discharge of poison dust from aircraft.

2. I am to request you to inform the L.C. of the Treasury that as a result of a conference of technical experts held on the 6th October under the auspices of

Copy to
 C.A.C. B.10
 C.P.A.C. (The Secretary)
 Ec. Adv. Cmt (under copy to Mr. Hanning)

Tell
 (sent to 7)
 arriving 10/10/32

copy of memo to Gov Conf (3) 25 OCT 1932

the Locust Control Committee, it is
advised necessary to modify the
detailed allocation of the £3250
proposed to be expended on this
scheme. ~~A table is enclosed~~
The enclosed table, received
from the Secretary of the Locust
Control Committee, shows the estimated
expenditure as now revised. The
alteration has been submitted to
the Chairman of the C.C. Devl.
Advis. Com. who has expressed
concern ^{therein} on behalf of the Committee.

3 In the second para. of
their letter of the 4th Oct. the C.C.
D.C. suggested, as a matter for
consideration, that it might be more
economical to complete the laboratory
investigations in England before
embarking upon the field experiments
in East Africa. In this connection
I am to advise that, unless the greatest
despatch is used, it will not be possible
to undertake the above work during the
present locust season, which may be
expected to terminate in December.

C. O.

Mr.

Mr.

Mr.

Mr. Tomlinson.

Sir C. Bottomley.

Sir J. Shuckburgh.

Sir G. Grindle.

Permt. U.S. of S.

Partly. U.S. of S.

Secretary of State.

DRAFT.

75
If the work programme is deferred
the season when locusts are again abundant
(about the middle of 1933), the new
technique of locust-control which it
is hoped to base upon the experiments
could not be put ^{carried out} into effect on
an effective scale until 1934.
In their Fifth Report (appended to C.D.A.C.
1092) the Locust Control Committee
estimate the damage caused by
locusts

during the period 1927-1931 at over
£6,000,000.

The Lords Commissioners of the
Treasury will appreciate the
Secretary of State's reluctance to
acquiesce in any course which will
have the effect of deferring the
inception of measures designed to
combat so grave a menace to the
prosperity of the Tropical Dependencies.

40 Moreover, the S. of S. is advised
that though from a scientific
point of view it is extremely

important to ascertain what is the minimum dose of sodium arsenite dust that is fatal to an adult. Tropical Malaria Research, it would, in any case, be desirable to postpone the necessary physiological investigations in the laboratory (which would be intricate and protracted) until after the field work had been carried out; as indications of considerable value to the physiologist will, it is anticipated, be forthcoming in the course of the empirical work in the field.

5. For the foregoing reasons I am to request you to move T.L. to signify their approval of the grant to the Govt of Kenya of £3250, to be applied to the purpose described in the application to the CDA, subject to the modified allocation set out in the enclosed table.

6. As it is desired that Mr. H. H. King should proceed to Kenya ^{as soon as possible} ~~at the earliest possible date~~, I am to ask that a very early reply may be returned to this letter, and that a portion of the grant (say, £1000) may

C. O.

Mr.

Mr.

Mr.

Mr. Tomlinson.

Sir C. Bottomley.

Sir J. Shuckburgh.

Sir G. Grindle.

Permt. U.S. of S.

Partij. U.S. of S.

Secretary of State.

DRAFT.

be placed forthwith to the credit 94
of the Kenya Govt with the C.A.
to the Cols.

(sgd) S. L. Holmes.

Mr. Poynton

Will you be good enough to submit the following to Sir Basil Blackett:

C.D.A.C. 1092 and 1121. - Locust control in Kenya.

On the understanding that Treasury approval of the Committee's recommendation would shortly be forthcoming, a meeting was held yesterday under the auspices of the Locust Control Committee of the Economic Advisory Council, to consider further the various steps necessary to carry out the scheme. Amongst others ^{present} (were):-

~~Present~~

Sir Guy Marshall and - (Imperial Institute
Dr. Neave - of Entomology)

Representatives of the Air Ministry
(Research Department)

Mr. H.H. King (The Sudan Entomologist who
is to carry out the work in Kenya).

A
B

After discussion it was agreed that the allocation of expenditure proposed in C.D.A.C. 1092 called for some adjustment. The appended schedule shows the revised estimate now proposed by the Technical Experts. I also attach a letter from the Secretary of the Locust Control Committee giving the views of the Conference on the suggestion ^{made} ~~meeting~~ by the C.D.A.C. in para. 2 of their letter (C.D.A.C. 1121).

We should be grateful if the Chairman would concur in our telling the Treasury that he has been consulted in regard to the revised allocation of the £3250, and that he has no reason to suppose that the Committee would take exception to it

Admitted
7/10.

77A
Mr. Freeston.

Sir Basil Blackett concurs

116/1-23

E.A.C./425.

7th October 1932.

Dear Freeston,

In accordance with the arrangement we made yesterday afternoon, I am writing you with regard to details of the finance of our projected aeroplane v. locust experiment.

In the first place, I enclose herewith two copies of the note giving the revised estimate of cost. The total, £3,250, is the sum as approved by the Colonial Development Advisory Committee, but the items have, as you know, been readjusted within the total.

As regards the proviso to the Committee's approval of the scheme that it might be better to undertake the physiological experiments before the field work, the view of the expert meeting yesterday, at which the Air Ministry was represented as well as you, was that it would be most undesirable to postpone the field work until the completion of the physiological tests. They based this conclusion on two grounds. In the first place, unless the greatest dispatch is used, it will not be possible to undertake the field experiments in the present locust season. That would probably mean that the work would have to be deferred until June 1933, and if the experiments proved successful the new technique could not be put into effect on a large-scale until the 1934 season. Further, as regards the physiological investigations, yesterday's meeting took the view that though from a scientific point of view it was extremely important to ascertain what is the minimum dose of sodium arsenite dust that is fatal to an adult Tropical Migratory Locust, it would, in any case, be

/desirable.

Copy sent to L.A., 1/10/32

Copy incl A & For. Conf (3) 25 OCT 1932

8 October 1932

Copy to Treasury

/desirable to postpone these physiological investigations which would be of an intricate character, and would probably occupy a considerable period, until after the field work had been carried out, as indications of considerable value for the physiological investigations would, it was anticipated, be forthcoming in the course of the empirical work in the field. The better time for these investigations to be carried out would be after the field work, if that proved successful, and before large scale technical application of this new method of attacking locusts from the air.

The view of the experts present was therefore that:-

- (a) the field work should be started as soon as possible;
- (b) that the physiological work should be confined to the repetition of Mr. King's original experiments in conditions in which it was possible to measure the exact density of any given cloud to which locusts were exposed. (This work could not, in any case, be carried out for six months, i.e. until the locusts proposed to be reared by the Imperial Institute of Entomology at the British Museum were available.).

In the circumstances, I suggest that you should let Sir Basil Blackett see the proposed readjustment of the various items within the approved total, and that when you have received his concurrence, you should submit it as quickly as possible with the ^{other} papers to the Treasury, with a letter explaining the reasons why it is now thought better to postpone the suggested physiological investigations.

Yours sincerely,

Francis Huntington

L. B. Freeston, Esq., O. B. E.,
Colonial Office.

Revised estimate of expenditure required for experiments in connection with the use of aeroplanes against locusts.

sc
gc

	Original Estimate.	Revised Estimate.
	£	£
1. Hire of aeroplane (47 instead of 50 hours flying at £30 per hour)	1,500	1,410
2. Construction and installation of discharge apparatus.		
(a) Hire and transport to Africa and back of compressed air steel cylinders		100
(b) Fee to Imperial Airways Ltd. for installation.	100	50
3. Remuneration of entomologist	200	200
4. Premium on life insurance policy	100	100
5. Passages to Kenya and back	320	320
6. Subsistence allowances (say)	170	170
7. Dust (3 tons at £50 per ton)	150	150
8. Estimated fees to be paid to —		
(a) Air Ministry for (i) design and construction of containers (£150). (ii) flying tests to determine optimum rate of discharge (£250). (iii) observation and sampling of dust clouds (£50)	200	450
(b) War Office for (i) research on cloud dispersion to be undertaken by Chemical Defence Research Department (£100). (ii) for facilities for work at Porton by entomologist (£50).	100	(100) (50)
(c) Imperial Institute of Entomology in respect of breeding of locusts)	100	100
9. Physiological investigations (Replaced by 8(b) (ii) above)	250	—
10. Contingencies. (Cameras, &c.)	60	50
Total	3,250	3,250

Note. In both Estimates the sums to be expended in this country and abroad are £3,080 and £170 respectively.

Communications on this subject
should be addressed to—

THE SECRETARY.

Telephone: VICTORIA 8840.

11/15
COLONIAL DEVELOPMENT ADVISORY COMMITTEE,
COLONIAL OFFICE,
DOWNING STREET,
S.W.1.

CWAAC 1121



4 October, 1932.

Sir,

I am directed by the Colonial Development Advisory Committee to request you to inform Secretary Sir Philip Cunliffe-Lister that, at their Fifty-First Meeting, on the 28th September, they had before them Colonial Office Memorandum, C.D.A.C.1092, submitting on behalf of the Government of Kenya an application for a free grant of £3,250 from the Colonial Development Fund to cover the cost of:-

- (a) experiments to be undertaken in that Colony in the discharge of poison dust from aircraft against flying swarms of locusts, and
- (b) certain investigations to be conducted by the Chemical Defence Research Department of the War Office.

2. The Committee note that the scheme has been prepared with the highest technical advice available and they have no doubt of the desirability of proceeding with the recommendations of the Committee on Locust Control. There is only one point in the scheme on

THE UNDER SECRETARY OF STATE,
COLONIAL OFFICE.

copy to Hon. Secy (2) 25 1932

which they desire to comment. They are informed that the experiments at the Chemical Defence Research Department will be conducted simultaneously with the experiments in Kenya. One of the problems which is to be investigated in this country is the minimum dose of sodium arsenite dust that is fatal to adult migratory locusts. It is for consideration whether it would not be more economical to undertake these experiments first before embarking on the more costly experiments in Kenya, since this might obviate wastage arising from the use of larger quantities of the preparation than would be necessary. The Committee do not, however wish to press this suggestion, and if the Secretary of State is satisfied that this modification of the project is not desirable, they agree to recommend the desired free grant of £3,250.

3.A similar letter is being sent to the Treasury.

I am,

Sir,

Your obedient servant,

Atkinson

Secretary to the Committee.

RECEIVED
23 SEP 1932
COL. OFFICE

100
74

E. A. C. /425.

① ~~H. Henderson~~
② R 297

September 23rd 1932.

Dear Seel,

294

Kya

I enclose for your information a copy of a letter which I have received from the War Office in regard to the experiments to be undertaken by the Chemical Defence Research Department for the Locust Committee.

Yours sincerely,

H. D. Henderson

G. F. Seel, Esq.,
COLONIAL OFFICE,
S. W. 1.

COPY.

WAR OFFICE,
LONDON, S.W. 1.

86/Chemical/492. (M. G. O. 4.)

22nd September 1932.

Sir,

With reference to your letter E.A.C./425 dated September 16th, 1932, together with a copy of the Fifth Report prepared by the Committee on Locust Control dealing with proposals for the use of aircraft against locusts, I am commanded by the Army Council to acquaint you, for the information of the Economic Advisory Council, that they agree to undertake certain experiments relating to the production of sodium arsenite clouds and sanction the work indicated being undertaken by the Chemical Defence Research Department at the Experimental Station, Porton, on a repayment basis.

It is considered that a maximum of two months would be required to complete the experiments at an estimated cost of :-

Salary of Scientist	
(2 months at £329.8.0 p.a.)	£54. 18. 0
75% overhead charge on above.	£41. 2. 0
Materials, etc.	£ 4. 0. 0
Travelling	Nil
	<hr/>
	<u>£100. 0. 0</u>

I am to add that this work can be commenced immediately on receipt of your instructions.

I am, Sir,

Your obedient servant,

(Signed) A. E. WIDDOWS

The Secretary,
Economic Advisory Council,
2, Whitehall Gardens,
S.W. 1.

A.A.C./425.

September 16th, 1932.

Sir,

I am directed by the Economic Advisory Council to transmit herewith, for the information of the Army Council the accompanying copy of the Fifth Report prepared by the Committee on Locust Control dealing with proposals for the use of aircraft against locusts. (Council Paper A.A.C. (C 74).

2. This Report has been approved by the Prime Minister, and an application is being made by the Secretary of State for the Colonies, on behalf of the Government of Kenya, to the Colonial Development Advisory Committee for a grant, from the Colonial Development Fund to cover the work outlined in the enclosed Report together with certain supplementary expenditure.

3. The work contemplated by the report entails the cooperation of the Chemical Defence Research Department of the War Office, and the Economic Advisory Council understand that the Department is prepared to undertake certain experiments relating to the production of sodium arsenite clouds, on a basis of repayment, subject to the approval of the Army Council.

4. The Economic Advisory Council understand that the estimated cost of these experiments, assuming that both portions of this work could be completed within a maximum period of two months, is as follows:-

Salary of scientist (2 months)	£329. 8. 0. p.a.	658. 16. 0.
75 per cent. overhead charge on above	41. 2. 0.
Materials, etc.	4. 0. 0.
Travelling	Nil.
		<u>£100. 0. 0.</u>

5. Provision for this expenditure is included in the application to the Colonial Development Advisory Committee referred to above, and I am to express the hope that the Army Council will sanction the work indicated being undertaken by the Chemical Defence Research Department, subject to the grant being made from the Colonial Development Fund.

6. It is understood that the application for the grant will be considered by the Colonial Development Advisory Committee on September 28th; and it is hoped that, if the grant is recommended, the experimental work in this country can be undertaken at once so as to enable the entomologist who is to direct the aeroplane experiments in Kenya to leave for the Colony in October. 184

I am, Sir,

Your obedient servant,

(Signed) H. D. HENDERSON.

The Under-Secretary of State,
War Office, S.W.1.

COPY FOR REGISTRATIC

70/105
Kc

Telegram from Governor Kenya to the Secretary of State for the Colonies

Dated 19th September Received 5.19 p.m. 19th September 1932

18012/32 Kya.

No. 170. Your despatch of 7th September Confidential. I concur in application being made.

While most anxious to co-operate I desire to emphasize that experiment if successful will be of equal value to all African territories. I consider therefore Kenya expenditure of free travelling and other facilities should be strictly limited. On a 50 flying hour basis this should not be excessive but if it should prove so no doubt you will consider allocating portion of it to other territories likely to benefit. I note opinion expressed in paragraph of enclosure that experiment is not likely to prove dangerous. Presume therefore Kenya Government will not be held financially liable for any compensation claim in unlikely event of such proving sustainable.

As regards paragraph 4 of despatch flying swarms are very prevalent now but naturally no guarantee could be given as to their remaining in area now infested. Therefore the earlier experiment made the better. Last year swarms tended to move eastwards towards Tanaland.

1932
18/10/32
EAC
I.I.E.E.
wpy
Amund (copy) 24/10/32

The Imperial Institute of Entomology

69¹⁰⁰

Head Office at:
THE BRITISH MUSEUM (NATURAL HISTORY),
CROMWELL ROAD, LONDON, S.W. 7.

Publication Office,

41, QUEEN'S GATE,
LONDON, S.W. 7.

Director:
MR. G. A. K. MARSHALL, C.M.G., D.Sc., F.R.S.

Assistant Director:
S. A. NEAVE, M.A., D.Sc.

Telephone: WATKIN 4341.

12th September 1932.

My dear Seel,

Many thanks for yours of the 10th September enclosing a copy of Marshall's letter. I am glad to find that he agrees with all our conclusions.

I enclose for your information a copy of a letter just received from Johnson of the Chemical Defence Research Department of the War Office and have also sent one to the Economic Advisory Council calling their attention to the last paragraph.

Yours sincerely,

S. A. Neave

Assistant Director.

G.F.Seel Esq.

*I have reminded Mr. Henderson ETC
(in Mr. Henderson's absence) that everything
is conditional on the part from the C.D.F.
has been approved.*

G.F. Seel

Received 28 SEP 1932

COPY.

CHEMICAL DEFENCE RESEARCH DEPARTMENT, ¹⁰⁷
(The War Office),
14 Grosvenor Gardens,
LONDON, S.W.1.

K.3861. NKJ/HS.

9th September 1952.

Sir,

As a result of the discussions held at your office on the 2nd instant, I have approached the War Office to ascertain whether there is likely to be any objection to this Department undertaking certain investigations on repayment for the Locust Control Committee.

The proposal put forward is that some experiments be carried out at the Experimental Station, Periton, to determine what concentration of particulate sodium arsenite is required to kill locusts in a given time of exposure. The contribution from this Department would consist in developing a technique for the production of the sodium arsenite clouds, and in measuring the concentration of sodium arsenite in the subsequent experiments. Assuming that both portions of this work could be completed within a maximum period of two months, the estimated cost of the service is calculated as a maximum of one hundred pounds, arrived at as follows:

Salary of scientist (2 months @ £329.8.0 p.a.)	254:	18:	0:
75 per cent. overhead charge on above.	41:	2:	0:
Materials, etc.	4:	0:	0:
Travelling.			Nil.
	<u>2100:</u>	<u>0:</u>	<u>0:</u>

I have been informed by the War Office that no objection will be made to this work being carried out for the Economic Advisory Council on repayment, but that official sanction cannot, of course, be given until an official request is received by the Secretary of State for War from the competent authority responsible for the administration of activities arising from the recommendations of the Committee on Locust Control.

I am, Sir,
Your obedient servant,

N.K. JOHNSON (Signed),

Chief Superintendent.

The Director,
Imperial Institute of Entomology,
41 Queen's Gate, S.W.7.

66 A 108

COLONIAL OFFICE MEMORANDUM

I.

The Secretary of State for the Colonies ^{on behalf of the Govt of Kenya,} desires to submit an application for a free grant from the Colonial Development Fund in order to enable experiments to be undertaken in Kenya in the discharge of clouds of poison dust from aircraft against flying swarms of locusts. The nature of the proposed experiments and an estimate of the expenditure involved, ^{fully} are explained in the Fifth Report of the Committee on Locust Control of the Economic Advisory Council, a copy of which is attached. In recommending this report to the sympathetic consideration of the Colonial Development Advisory Committee, the Secretary of State desires to draw special attention to the following points:-

(a) The experiments will, if successful, not be of benefit to Kenya alone. Uganda, Tanganyika and Nigeria ~~[not to mention India and the Sudan]~~ have incurred heavy losses from locust invasion, and the tests which it is desired to carry out may properly be regarded as a work of imperial significance, localised for convenience in Kenya.

(b) The Kenya Government has already shown great activity in carrying out such control of the locust pest as is possible from the ground. During the current year £26,000 has already been appropriated to locust control work; ^{and} in addition to Government expenditure both the European and the native population have played an energetic part in the campaign of extermination. This expenditure ^{the} on extermination of locusts, together with the losses suffered from the depredations of these insects, have constituted a serious financial burden ^{upon} the Colony in the last few years, and having regard

N Seal 10/9/32
 D. A. ... 17/9/32
 M. ...
 Sir F. Campbell
 Sir C. B. ...
 Mr. ...

Fifth Report of Locust Control C.M.C.
 (Copies obtained from E.A.C.)

Minutes of Meeting of sub-committee 29.32
 (Copy annexed)

...
 as they are outside
 the C.D.A.C. ...
 ...
 ...
 ...



regard to the very serious position of the Colony's finances, the Secretary of State does not consider that the local Government would be in a position to contribute towards the cost of the experiment now proposed, more than the free travelling and other facilities which the Locust Control Committee suggest in paragraph 22(e) of their report.

It will be seen that the cost of the experiment is estimated in the report at £2,900, of which the whole, with the exception of £170 for local subsistence allowances, would be expended in the United Kingdom.

II.

The Committee on Locust Control, at the same time as they prepared their Fifth Report, also proposed that the Imperial Institute of Entomology should obtain from the Zoological Society ^{of} London ^a sufficient number of the adult tropical migratory locusts, to enable the experiments to be carried out by the Chemical Defence Research Department of the War Office with a view to ascertaining:

See para 1(d)
of 45 on 9/545/32.

- (1) The rate at which the adult locust of this species ~~breeds~~ ^{breathes} when in flight; and
 - (2) What is the minimum dose of sodium arsenite dust, powdered to pass through a standard 240 sieve, that is fatal to adults of this species when in flight?
- It is understood that the object of these experiments ~~is~~ to enable data to be provided which would ensure that in the event of the experiment proposed in Kenya demonstrating the possibility of dealing with locusts by spraying poison dust from the air, large scale operations would be undertaken on the most economical basis possible.

The

The Committee on Locust Control did not, it will be observed, make any provision for expenditure on these further experiments in the estimate included with their ^{5th} Report. ~~It would appear that~~ ^{presumably} ~~it was~~ not contemplated that these further experiments would involve additional expenditure; but it now appears, as the result of a meeting of experts which was convened for the purpose at the request of the Locust Control Committee, ^{that they} ~~these~~ experiments will, in fact, involve ~~a slight~~ ^{some} additional expenditure. The meeting in question was convened by the Acting Director of the Imperial Institute of Entomology and was attended by ~~Entomological~~ ^{Research} experts and by members of the Chemical Defence Department. As a result of their discussions it was agreed that special steps would be necessary to provide a supply of living locusts as proposed by the Committee ^{on} Locust Control since there are ~~not available in this country~~ ^{in adequate numbers} and that the Chemical Defence Research Department of the War Office ~~was~~ ^{is} not in a position to undertake ^{the investigation of} ~~some of~~ the problems which it was proposed to refer to them, pointing out that ~~these~~ ^{are} ~~problems~~ ^{were} essentially entomological and involved a highly complicated technique, and that their solution ^{cannot} ~~could not~~ be arrived at without detailed physiological studies. The meeting was of opinion that it would be necessary to engage the ^{services} ~~services~~ of an experienced physiologist to conduct these experiments.

The additional cost of these further experiments which are not referred to in the Locust Control Committee's Fifth Report is estimated as follows:-

- A. Estimated Expenditure required for raising a stock of locusts for control experiments.
- L. Attendant's salary for six ^{months} ~~weeks~~ at

Copy of the minutes of the meeting is annexed.

Further

	at 30/- a week.....	£39. 0. Od.
2.	Installation of cages, with electrical heating and lighting.....	£40. 0. Od.
3.	Contingencies.....	£21. 0. Od.
		<hr/>
		£100. 0. Od.

Note. No provision is made in the estimate for the cost of heating and lighting, since it is hoped that no charge in this respect will be made by the authorities of the British Museum (Natural History).

B. Estimate Expenditure required for physiological experiments on locusts in connection with the aircraft method of control.

1.	Physiologist's fee.....	£50.
2.	Apparatus and fittings.....	£150.
3.	Contingencies.....	£50
		<hr/>
		£ 250.

Owing to the absence from London of members of the Committee on Locust Control at this time of the year it has not been possible to submit the recommendations of this ^{meeting} Committee of experts to a formal meeting of the Committee for confirmation. The proposals have, however, been communicated to Sir Guy Marshall, the Director of the Imperial Institute of Entomology and the Chairman of the meeting of the Committee on Locust Control at which the Fifth Report was prepared. Sir Guy Marshall ~~has since the subject was fallen~~ has replied as follows: -

" I am in complete agreement with the conclusions arrived at, and I think that the supplementary estimates for carrying out the work are reasonable and adequate."

(66)

In view of ^{the} opinions expressed by Sir Guy Marshall, the Secretary of State desires to suggest to the Advisory Committee that they should consider the addition of a further sum of £350 to the grant of £2,900 from the Colonial Development Fund for which application is made in the first part of this memorandum ~~on the recommendation of the Economic Advisory Council.~~
^{Understood that it is}
 It is ~~not~~ necessary for the experiments covered by this further sum to be completed before the aeroplane tests in Kenya are undertaken, but ~~that~~ they will be undertaken as soon as possible so that their results will be available when the time comes to consider applying on a larger scale the results of the aeroplane experiments in Kenya.

III.

The total amount of the free grant for which application is made is thus £3,250, made up as follows:

- (1) Scheme proposed in the Fifth Report of the Committee on Locust Control ----- £2, 900
- (2) Further chemical and physiological investigations contemplated by the Committee on Locust Control.----- £350

Of this expenditure £3,080 will be spent in this country.

Colonial Office
12th Sept. 1932

Printed for the Economic Advisory Council. August 1932.

CONFIDENTIAL.

Copy No. 47

E.A.C. (C.) 74.

ECONOMIC ADVISORY COUNCIL.

COMMITTEE ON LOCUST CONTROL.

Fifth Report.

Proposals for the use of aircraft against locusts.

2, Whitehall Gardens, S.W. 1,
August 26, 1932.

COMMITTEE ON LOCUST CONTROL.

COMPOSITION AND TERMS OF REFERENCE.

On the 29th April, 1929, the late Earl of Balfour, the then Chairman of the Committee of Civil Research,* appointed a Sub-Committee on Locust Control with directions to consider and report on (a) means for the mass destruction of the Desert Locust *Schistocerca gregaria* Forsk and (b) methods for ascertaining the reasons for the periodic swarming of this species, with a view to its control.

2. On the 8th July, 1931, the Committee's terms of reference were extended to cover other tropical African locusts. They are now as follows:—

To consider and report on—

- (a) Means for the mass destruction of the Desert Locust *Schistocerca gregaria* Forsk, and other tropical African locusts.
- (b) Methods for ascertaining the reasons for the periodic swarming of these species with a view to their control.

3. The Committee is constituted as follows:—

Sir Henry Miers, F.R.S., *Chairman*.

Major E. E. Anstun, D.S.O., Keeper, Department of Entomology, British Museum (Natural History).

Mr. C. S. Elton, Department of Zoology and Comparative Anatomy, University Museum, Oxford.

Sir Walter Fletcher, K.B.E., C.B., F.R.S., Secretary, Medical Research Council.

Mr. J. B. S. Haldane, Sir William Dunn Reader in Biochemistry, University of Cambridge.

Sir Leonard Hill, F.R.S.

Sir Guy A. K. Marshall, C.M.G., D.Sc., F.R.S., Director, Imperial Institute of Entomology.

Professor E. B. Poulton, F.R.S., Hope Professor of Zoology, Oxford.

Mr. G. F. Seel, Colonial Office.

Mr. F. A. Stockdale, C.B.E., Agricultural Adviser to the Secretary of State for the Colonies.

Mr. B. P. Uvarov, Senior Assistant, Imperial Institute of Entomology.

Mr. H. E. Wimperis, C.B.E., Director of Scientific Research, Air Ministry.

Mr. A. F. Hemming, C.B.E., Joint Secretary, Economic Advisory Council (*Secretary to the Committee*).

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* NOTE.—By Treasury Minute, dated the 27th January, 1929, the Committee of Civil Research was absorbed in the Economic Advisory Council, of which this Sub-Committee became a Committee.

FIFTH REPORT.

PROPOSALS FOR THE USE OF AIRCRAFT AGAINST LOCUSTS.

I.—Introductory.

1. At meetings held on the 16th and 19th August, 1932, we had under consideration a proposal for the use of aeroplanes in discharging clouds of poison dust in the air against flying swarms of locusts. This suggestion was put before us by Mr. H. H. King, Chief Government Entomologist, Khartoum, in two letters to Sir Guy Marshall, dated the 16th and 25th July, 1932 (Committee Papers E.A.C.(L.) 578 and 574). It was also the subject of telegraphic correspondence between the Secretary of State for the Colonies and the Government of Kenya, a copy of which was transmitted to us by the Colonial Office on the 12th August, 1932 (E.A.C.(L.) 577). In his telegram the Governor stated that he had heard with interest of the experiments which had been carried out in the Sudan, and referred to the anxiety which he felt concerning large flying swarms of locusts which might do immense damage in his territory during the next few months while the crops were ripening.

2. The second of our meetings was attended by Mr. King, who discussed with us the progress made in his experiments and the difficulties which remained to be overcome. In addition Mr. L. B. Freeston of the Colonial Office has attended these meetings in view of the great interest that the East African dependencies feel in the outcome of these experiments.

3. The investigations upon which Mr. King has been engaged in the Anglo-Egyptian Sudan aim at the development of a new means for the destruction of locusts, and hence for preventing the spread of the pest to wider areas. Although the application of such practical methods of control is closely dependent upon knowledge obtained from research into the origin of locust invasions and the laws by which they are governed, it will, nevertheless, be evident that the elaboration of these methods is a task altogether distinct from the ecological investigations at present being conducted by the Imperial Institute of Entomology on behalf of this committee, and in accordance with the scheme drawn up by us in our second, third and fourth reports (Council Papers C.R.C. 38, E.A.C.C. 51, and E.A.C.C. 71).

II.—The need for new methods of attack.

4. Some idea of the magnitude and gravity of the locust problem as a whole may be obtained from the figures quoted in our fourth report* (paragraph 11 and Appendix 2). Even such fragmentary data as are available from official sources show that the damage done by locusts during the present outbreak, i.e., in the period 1927 to 1931 can safely be estimated as exceeding £6 millions. The expenditure on control measures during the same period amounted to about £1 million, while the number of man-days of labour spent by the population in controlling locusts was at a very conservative estimate not less than 28 millions.

5. The problem is, moreover, growing in complexity. During the last two years, while the invasions of the Desert Locust (*Schistocerca gregaria* Forsk.) have continued unabated, a new and still more serious danger to the agriculture of tropical Africa has arisen as a result of the appearance of swarms of the Tropical Migratory Locust *Locusta migratoria migratorioides* R. and F. The distribution of this species covers an enormous range, but its ravages have been particularly severe in Kenya. The damage done in that territory during 1931 included the destruction of 40 per cent. on the average of maize and wheat in European areas to the value of £175,000, and of about 20 per cent. of grain crops in native areas, valued at £75,000. In addition the shortage of grazing caused by locusts in stock-raising

* Cmd. 4124

areas was responsible for a drop of 60 per cent. in milk yields. Expenditure by the Kenya Government on locust control during the calendar year 1931 amounted to £18,000. For the first seven months of the current year, the sanctioned expenditure amounted to £26,000.

6. The figures quoted for Kenya in the preceding paragraph relate to damage done by the Tropical Migratory Locust. It is against this species that the method of attack from the air, which we have had under consideration, is most likely to prove effective. Swarms of Desert Locusts when in flight usually move in open formation extending to a considerable height and covering a large area. In order to destroy them in any number very large clouds of poison dust would have to be employed. Swarms of Migratory Locusts on the other hand move in dense massed formation and should, therefore, prove vulnerable if attacked by means of an effective poison dust.

7. Moreover, in the case of this species there has hitherto been no satisfactory method of destruction and control. The normal method of attack in dealing with Desert Locusts is to kill them in the immature (hopper) stage by means of poisoned baits laid on the ground. When employed, however, against hoppers of the migratory locust this method has not proved so successful, since hoppers of this species do not eat the bait so readily as do Desert Locust hoppers. A further difficulty is presented by the nature of much of the country in which this species breeds. In arid and semi-arid districts, such as those inhabited by the Desert Locust, it is comparatively easy to locate and destroy hoppers, but in tall dense vegetation often frequented by the Migratory Locust they escape detection. Moreover, the transport of bait and working parties through such country is extremely arduous.

8. The experiments, therefore, which have been conducted by Mr. King in the use of poison dust, to be discharged against flying swarms from aeroplanes, suggest altogether new possibilities in the destruction and control of this species of locust. Such possibilities are of special interest to a highly settled area such as Kenya in which the damage done by this locust has been particularly severe. Should, however, the development of this method of control proceed satisfactorily its field of application would extend far beyond the borders of a single territory, and might prove of far-reaching importance, both in the destruction of locusts and in holding up the advance of flying swarms into new areas.

III.—The experiments so far conducted.

9. The first stage in the experimental work done by Mr. King was described in a paper written by him in conjunction with Mr. W. Ruttledge, and published this year in the *Bulletin of Entomological Research*.* The experiment consisted of exposing adult *L. migratorioides* to a cloud of sodium arsenite dust (powdered to pass through a standard 240 sieve) for specified periods, and then placing the locust in a clean cage. In order to reproduce the conditions of flight the locust was suspended on a thin copper wire and induced to flutter. It was found that locusts which fluttered in the dust cloud for approximately, but not more than, ten seconds invariably showed signs of discomfort within half an hour and were usually markedly ill, if not moribund or dead, within two hours. All were dead within twenty-four hours. Similar experiments were carried out with other poisons such as arsenious oxide and Paris green, but the results were less favourable than those obtained with sodium arsenite. This may possibly be due to the fact that while sodium arsenite is highly soluble, both Paris green, and arsenious oxide are but slightly soluble in water.

10. Having thus assured himself of the efficacy of sodium arsenite as a locust poison Mr. King proceeded to carry out practical experiments in the production of a dust cloud in the air. At this stage of his investigations he was fortunate in securing through the good offices of the Air Council the co-operation of the personnel of the Royal Air Force stationed at Khartoum, whose assistance

* King, H. H. and Ruttledge, W. 1932 Bull. Ent. Research 23: 65-68.

6

was of great value. A simple form of container (or metal funnel for the discharge of the dust) was designed, capable of being attached without structural alterations to the Fairey III F type of bombing aircraft. Experiments were carried out in the air with chalk dust of the same density as the poison dust which it was ultimately proposed to use, and after a few minor modifications had been made in the design of the container a satisfactory dust cloud was produced.

11. At this point, however, an unforeseen difficulty arose. It was found that air eddies carried the dust back into the cockpit in such quantity as to make the use of poison dust quite out of the question. Very little of the dust came back through the container, but it found its way through openings in the underside of the fuselage. In order to prevent this it would have been necessary, if this type of aircraft were to be used, to modify the fuselage in such a way as to ensure that there were no cracks or openings in it, or, alternatively, to alter the point of discharge of the dust. Neither course could have been adopted without considerable interference with the structure of the aircraft. In the circumstance further experiments with this type of machine had to be abandoned. There is no doubt, however, that these difficulties could easily be overcome by the use of a more suitable type of aeroplane and container.

12. We understand that from calculations made by the Chemical Defence Research Department of the War Office it appears that the rate at which sodium arsenite powder of the required density would fall through the air is sufficiently low to raise no difficulty in the creation of a suitable dust cloud in advance of a flying swarm. It should be observed that no danger to human beings, crops, or livestock is likely to arise as a result of the use in this way of poison dust against locusts, in view of the fact that the natural dissipation of the cloud reduces its density within a short time to a point at which its effects are no longer poisonous. As compared with poison gas which must be stored in heavy cylinders, dust has the advantage that it is lighter and, therefore, cheaper to handle. Moreover, few gases could be maintained, particularly in a hot climate, at a sufficiently high point of concentration to enable them to be used as a locust poison in this manner.

IV.—The scheme of work proposed.

13. In the light of Mr. King's experiments, and of the considerations set forth in the preceding paragraphs, we are of the opinion that there is every possibility that the method by which it is proposed to attack locusts in flight will prove successful in practice. Before, however, recommending the adoption of this method to Colonial and other governments we consider that it is essential that full-scale experiments should be conducted with aeroplanes against locusts in Africa. Such tests would serve to discover not only whether there are any practical difficulties which may have been left out of account, but also the average cost of destroying a swarm of any given size by this method.

14. In his telegram to the Secretary of State for the Colonies, referred to above (see paragraph 1), the Governor of Kenya inquired as to the possibility of action being taken in that territory by Royal Air Force machines. In reply, however, to a letter addressed to them on this subject the Air Council stated that they much regretted that they were not in a position to afford Royal Air Force assistance on this occasion, as no unit would be in the vicinity, and they felt unable to despatch a special flight from the Middle East Command 2,000 miles distant.

15. In the course of their letter however, the Air Council suggested that the necessary flying might be undertaken by Imperial Airways, Limited. From inquiries which we have made we understand that the company have at the present time a machine at Kisumu in Kenya, which would be well adapted for work such as we have in mind, and in view of the general suitability of the conditions in Kenya and the special importance of these investigations to that territory, we consider that the necessary tests are most likely to prove successful if undertaken there. At the same time the financial situation of the colony affords no ground for hope that

7

the expenditure required could be met from local revenues. As we have already shown (see paragraph 5) approved expenditure by the Kenya Government on locust control for 1982 already amounts to £26,000 and we think that it would be unreasonable to expect that Government to expend further sums on research at the present time. If, however, experiments were to be undertaken in their territory, we recommend that the Kenya Government should be invited to co-operate in the work by affording all possible local facilities such as free transport, working parties, &c.

16. In view of the valuable benefits which would be conferred by the success of these experiments, not only upon Kenya, but also upon other territories subject to infestation by locusts of this species, we consider that an application for a grant to enable such experiments to be made might appropriately be addressed to the Colonial Development Advisory Committee. It is true that at the present time ecological investigations regarding locusts are being carried out on our behalf by the Imperial Institute of Entomology, which are partly financed by a different government body, namely, the Empire Marketing Board. Nevertheless, as we pointed out at the outset of our report (see paragraph 3) the problems raised by the development of practical methods of control are quite distinct from those which concern the scientific investigation of the habits of the locust, although practical methods must necessarily depend ultimately for their application on theoretical observations. We, therefore, recommend that the Economic Advisory Council should invite the Secretary of State for the Colonies to apply on behalf of the Governor of Kenya for a grant from the Colonial Development Fund to cover the cost of this experimental work.

17. It would be essential to the success of these experiments that they should be conducted, and their results noted, by a specialist entomologist who has given particular study to this method of control. We are accordingly anxious that they should be undertaken by Mr. King, who, as will be clear from the account given above, is the officer who has devised this method of control and has been in charge of the experiments so far carried out. Should it be possible to obtain the necessary grant from the Colonial Development Fund it is desirable that the experiments should be undertaken during the next four months, as during that time flying swarms of the Tropical Migratory Locust will be available in Kenya for experiment. We hope that notwithstanding the fact that technically during that period Mr. King (who is now on final leave pending retirement) will be a servant of the Government of the Anglo-Egyptian Sudan no objection will be raised to his being employed in Kenya on this important work which, if it proves successful, will benefit the Sudan in common with other territories infested by this species of locust. We recommend that the Economic Advisory Council should communicate in this sense with the Secretary of State for Foreign Affairs.

18. We anticipate that a number of highly technical problems relating both to the discharge of the poison dust, its rate of dissipation and fall, &c., may arise during the course of the experiments. Much valuable time would be saved if it were possible for a scientific officer of high standing familiar with such problems to be present in Kenya at least during the initial period of experiment. Indeed, it might well be that the presence of such officer might in certain circumstances be essential to the success of the whole experiment. No one is more familiar with the problems likely to be encountered and their relation to the object of the experiment than Mr. H. E. Wimperis, C.B.E., Director of Scientific Research, Air Ministry, who has been a member of our Committee since its inception. We accordingly recommend that the Economic Advisory Council should represent strongly these considerations to the Air Council, and should express the hope that the Council will be prepared to assist these important investigations by authorising Mr. Wimperis to proceed to Kenya by air, so as to be present for (say) a week's experimental work in that territory.

19. We consider that a period of one month would prove sufficient for the work required, during which period it is unlikely that the actual time spent in the air would exceed fifty hours. We are informed by the Air Ministry that Imperial Airways are prepared

to undertake the necessary flying at a cost of £90 per flying hour, starting from Kisumu. The machine to be employed is a De Havilland Hercules three-engined machine, which may be considered to be a suitable type for this purpose, having regard to the load to be carried and the fact that much of the flying to be done would be carried out at relatively low altitudes. With full tanks the machine has a flying range of 900 miles, and its equipment includes wireless apparatus.

20. We understand further that Imperial Airways are prepared to undertake in consultation with the Chemical Defence Research Department the design and construction of a container for the distribution of the dust to meet Mr. King's requirements, to be ready in Kisumu within one month from the date of order at a cost which would not exceed £100. It is advisable that practical tests should be carried out before the container is despatched to Kenya in order to obtain the most suitable rate of discharge. We understand that these tests could be carried out by the Research Department of the Air Ministry and at the research station of the Chemical Defence Research Department at Porton. We estimate that this expenditure would not exceed £900 in all. We recommend that in the event of the requisite funds for the proposed investigations being obtained, the Economic Advisory Council should invite the Air Council to undertake any further negotiations that may be necessary with Imperial Airways, Limited, to enable the Crown Agents for the Colonies to conclude with that Company a definite agreement on behalf of the Government of Kenya for the performance of the work described above.

21. We estimate that for the purpose of these experiments not more than three tons of sodium arsenite dust would be required at a cost of approximately £50 per ton. To these requirements must be added provision for the salary of the entomologist, which we estimate at £200 for three months inclusive of his remuneration for the preparation of his report; together with the payment of the premium upon a suitable life insurance policy, and the cost of travelling and subsistence allowances during the period of service. Adding to this further items to cover expenses incurred by the Air Ministry and the War Office (Chemical Defence Research Department, Porton), and to meet contingencies and minor expenses, such as the provision of cameras for purposes of record, &c., we calculate that the total expenses to be incurred for these experiments would be covered by an outside figure of £2,900. We have given a more detailed account of these expenses in an appendix attached to this report.

V.—SUMMARY OF RECOMMENDATIONS.

22. We summarise our recommendations as follows:—

- (a) that the Economic Advisory Council should recommend the Secretary of State for the Colonies to submit on behalf of the Government of Kenya an application to the Colonial Development Advisory Committee for a grant of £2,900 from the Colonial Development Fund for the purpose of enabling experiments to be undertaken in Kenya in the discharge of clouds of poison dust from aircraft against flying swarms of locusts;
- (b) that, in the event of a grant being made for this purpose from the Colonial Development Fund, the Air Council should be invited to undertake any further negotiations that may be necessary with Imperial Airways, Limited, to enable the Crown Agents for the Colonies to conclude with that company on behalf of the Government of Kenya a definite agreement to place a three-engined De Havilland aeroplane at the disposal of the Government of Kenya for a sum not exceeding £30 per flying hour, and to fit such aeroplanes within one month of the date of contract with a container of a type to be approved by the Air Council at a cost not exceeding £100;
- (c) that the Economic Advisory Council should invite the Secretary of State for Foreign Affairs to endeavour to arrange with the Government of the Anglo-Egyptian Sudan for the employment of Mr. H. H. King as entomologist in charge of the proposed experiments notwithstanding the fact that the experiments may begin before the expiry of the period which must elapse before the date on which his retirement from the post of Chief Government Entomologist, Khartoum, takes effect;
- (d) that the Economic Advisory Council should represent strongly to the Air Council the desirability of the presence, during at least part of the experiments, of a scientific officer of high standing familiar with the scientific problems to which it may be anticipated the experiments will give rise; and that they should accordingly express the hope that the Air Council will be prepared to assist these important investigations by authorising Mr. H. E. Wimperis, their Director of Scientific Research, to proceed to Kenya by air so as to be present for (say) one week's experimental work in that territory;
- (e) that the Secretary of State for the Colonies should invite the Governor of Kenya to provide, as the contribution of his Territory, free travelling and other facilities within his Territory to the personnel to be engaged on these experiments.

(Signed on behalf of the Committee):

GUY A. K. MARSHALL,
Acting Chairman.

(Signed) FRANCIS HEMMING,
Secretary to the Committee.

2, Whitehall Gardens, S.W. 1,
August 26, 1952.

APPENDIX.

Estimated expenditure required for experiments in connection with the use of aeroplanes against locusts.

In the following table we show the total estimated expenditure required, distinguishing those items payment for which would be made in this country.

	Expenditure		Total expenditure.
	in the United Kingdom.	Other expenditure.	
	£	£	£
1. Hire of aeroplane (50 hours flying at £30 per hour)	1,500	—	1,500
2. Design and construction of container	100	—	100
3. Remuneration of entomologist	200	—	200
4. Premium on life insurance policy	100	—	100
5. Passages to Kenya and back	320	—	320
6. Subsistence allowances (say)	—	170	170
7. Dust (3 tons at £50 per ton)	150	—	150
8. Contingencies (cameras, &c.)	60	—	60
9. Estimated fees to be paid to—			
1. Air Ministry in respect of research on design of container, &c.			
2. War Office for work to be undertaken by Chemical Defence Research Department, London	300	—	300
Total	2,730	170	2,900

Minutes of a Meeting

held at the Imperial Institute of Entomology, 41 Queen's Gate, S.W.7, on Friday, 2nd September 1932, to discuss the conclusions of the 12th Meeting and the Fifth Interim Report of the Committee on Locust Control, with regard to the use of aircraft against locusts.

Present: Dr. S.A.Neave (in the Chair)
 Mr. H.H.King
 Mr. B.P.Uvarov
 Mr. N.K.Johnson } of the Chemical Defence
 Major W.C.Ball } Research Dept. of the War
 Office.

The meeting discussed the practical ways and means of beginning the investigations in the use of aircraft against flying locusts, as planned in the Fifth Interim Report and the conclusions of the 12th Meeting of the Committee on Locust Control.

2. It was agreed that the preliminary experimental work on living locusts, as suggested in paragraph (d) of the conclusions of the 12th Meeting, cannot be undertaken immediately, since several hundred adult insects are required, and not more than 25 - 30 are at present available in London. Further, the representatives of the Chemical Defence Research Department of the War Office stated that their Department cannot undertake technical entomological problems such as the determination of the rate at which Locusta migratoria migratorioides, R. & F. breathes when in flight, nor of the minimum dose of sodium arsenite dust, powdered to pass through a standard 240 sieve, that is fatal to adult locusts when in flight. These are essentially entomological problems involving a highly complicated technique, and their solution cannot be arrived at without detailed physiological studies.

3. It was nevertheless agreed that the above points are extremely important for the ultimate development of the aircraft method of locust control, and therefore that immediate steps should be taken for rearing in London a

sufficiently abundant stock of living locusts for experimental purposes. These can be bred from the existing stock within three months, if the necessary accommodation, heating and attendance are provided, though no provision for expenditure under this head has been included in the Report in question. Dr. Neave undertook to communicate on this point with the authorities at the British Museum (Natural History), where it is hoped the necessary facilities can be obtained, and where the work could be carried on under the immediate supervision of Mr. Uvarov.

4. It was considered, however, that the absence at this stage of exact physiological data, which might take several months to obtain, ought not to interfere with the beginning of practical tests of the new method in the field. With this end in view, it was suggested that Mr. King should cooperate in the construction of the hopper built by the Air Ministry. When the hopper is ready, the Chemical Defence Research Department of the War Office should be requested to assist in testing it, from the point of view of the rate of discharge, etc. Meanwhile, subject to funds being available, that Department would begin investigations into the technique of determining the concentration of dust clouds, in order to be able to apply the data obtained in actual experiments on locusts when supplies of the latter become available. The Department will also undertake the examination of samples of poison to be used in field tests.

5. As soon as Mr. King has concluded his preliminary work in England, he will proceed to East Africa, where he hopes to arrive by the end of October. In accordance with the experience of the previous year, locust swarms may be expected to occur in Kenya, Uganda or Tanganyika Territory during October, November and December, and it will be possible, there-

fore, to start field trials in one of these territories.

6. By that time a stock of living locusts will have been raised in London, and various data such as the minimum lethal dose of poison, the lethal concentration of poison dust in the air, the rate of breathing of locusts while in flight, etc. can be worked out in a laboratory, with a view to improving the practical application of the method. It is observed, however, that such investigations would appear to require the services of a very experienced physiologist and may well involve the necessity for special and delicate apparatus, for neither of which does any financial provision appear to have been made.

[Agreed.]
Guy A. K. Nankall
9. 11. 32. J

ESTIMATED EXPENDITURE
REQUIRED FOR RAISING A STOCK OF LOCUSTS
FOR CONTROL EXPERIMENTS.

1. Attendant's salary for six and a half months, from 15th September 1932 to 31st March 1933	£59. - .-
2. Installation of cages, with electrical heating and lighting	40. - .-
3. Contingencies	21. - .-
	<hr/>
Total.....	<u>£100. - .-</u>

Note:- No provision is made in the estimate for the cost of heating and lighting, since it is hoped that no charge in this respect will be made by the authorities of the British Museum (Natural History).

J. A. K. Danhall.
9. 11. 32

120
R2

ESTIMATED EXPENDITURE

required for physiological experiments on locusts in connection with the aircraft method of control.

1. Physiologists fee £ 50.-
2. Apparatus and fittings..... 150.-
3. Contingencies 50.-

Total...£250.-

Guy A. N. Nankall
9. 11. 32



123
66
The Fowey Hotel.

Fowey.

Cornwall.

9. IX. 1932

Dear Seel,

Nerve has sent me a copy of the minutes of the meeting to consider the "arrangements to be made for carrying out the physiological investigations into the breathing of locusts in flight & the minimum lethal dose of arsenic." I am in complete agreement with the conclusions arrived at, & I think that the supplementary estimates for carrying out the work are reasonable and adequate.

Yours sincerely

Gay A. Marshall

I enclose the papers.

Minutes of a Meeting

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Major W.C. Ball

of the Chemical Defence
Research Dept. of the War
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3. It was nevertheless agreed that the above points are extremely important for the ultimate development of the aircraft method of locust control, and therefore that immediate steps should be taken for rearing in London a

sufficiently abundant stock of living locusts for experimental purposes. These can be bred from the existing stock within three months, if the necessary accommodation, heating and attendance are provided, though no provision for expenditure under this head has been included in the Report in question. Dr. Neave undertook to communicate on this point with the authorities at the British Museum (Natural History), where it is hoped the necessary facilities can be obtained, and where the work could be carried on under the immediate supervision of Mr. Uvarov.

4. It was considered, however, that the absence at this stage of exact physiological data, which might take several months to obtain, ought not to interfere with the beginning of practical tests of the new method in the field. With this end in view, it was suggested that Mr. King should cooperate in the construction of the hopper built by the Air Ministry. When the hopper is ready, the Chemical Defence Research Department of the War Office should be requested to assist in testing it, from the point of view of the rate of discharge, etc. Meanwhile, subject to funds being available, that Department would begin investigations into the technique of determining the concentration of dust clouds, in order to be able to apply the data obtained in actual experiments on locusts when supplies of the latter become available. The Department will also undertake the examination of samples of poison to be used in field tests.

5. As soon as Mr. King has concluded his preliminary work in England, he will proceed to East Africa, where he hopes to arrive by the end of October. In accordance with the experience of the previous year, locust swarms may be expected to occur in Kenya, Uganda or Tanganyika Territory during October, November and December, and it will be possible there-

ESTIMATED EXPENDITURE

required for physiological experiments on locusts in connection with the aircraft method of control.

1. Physiologist's fee	£50
2. Apparatus and fittings	150
3. Contingencies	50
	<u>£250.</u>

*Completed / Cashell /
- 19. IX. 32*

**ESTIMATED EXPENDITURE
 REQUIRED FOR RAISING A STOCK OF LOCUSTS
 FOR CONTROL EXPERIMENTS.**

1. Attendant's salary for six months at 50/- a week	250. 0. 0.
2. Installation of cages, with electrical heating and lighting	40. 0. 0.
3. Contingencies	21. 0. 0.
Total	<u><u>2100. 0. 0.</u></u>

Note: No provision is made in the estimate for the cost of heating and lighting, since it is hoped that no charge in this respect will be made by the authorities of the British Museum (Natural History).

G. A. Marshall
 9. IX. 32.

65/29

The Imperial Institute of Entomology

Head Office at:
THE BRITISH MUSEUM (NATURAL HISTORY),
CROMWELL ROAD, LONDON, S.W.7.

Director:
SIR T. A. K. MARSHALL, C.M.G., D.Sc., F.R.S.

Assistant Director:
S. A. NEAVE, M.A., D.Sc.

Publication Office,

41, QUEEN'S GATE,
LONDON, S.W. 7.

Telephone: WESTERN 4341.

7th September 1932.

My dear Seel,

As arranged yesterday, I enclose herewith a copy of the letter that I have posted to-day to Marshall. I also enclose, in a slightly amended form, a copy of the estimate for expenditure proposed for raising a stock of locusts, which I shall be obliged if you will substitute for the one that I left with you yesterday. Of course, if you thought it desirable and no one else was available, I should be quite willing to attend and answer any questions at the meeting of the Colonial Development Fund.

Yours sincerely,

S. A. Neave
Assistant Director.

G.F.Seel Esq.

A

ESTIMATED EXPENDITURE
 REQUIRED FOR RAISING A STOCK OF LOCUSTS
 FOR CONTROL EXPERIMENTS.

1. Attendant's salary for six months at 30/- a week	£39. -- --.
2. Installation of cages, with elec- trical heating and lighting	40. -- --.
3. Contingencies	£1. -- --.
Total	<u>£80. -- --.</u>

Note: No provision is made in the estimate for the cost of heating and lighting, since it is hoped that no charge in this respect will be made by the authorities of the British Museum (Natural History).

7th September 1938.

My dear Marshall,

Many thanks for yours of yesterday with enclosures, which I will deal with as requested.

As regards the locust question, a few days after your departure and immediately before his own, Hemming arranged with me to have a meeting here in order that King, Uvarov and the War Office expert from the Chemical Defense Research Department could meet and discuss the putting into practice of the recommendations of the Committee on Locust Control. I enclose herewith two copies of the minutes of this meeting from which you will see that we were immediately involved in two main difficulties. The first was that no adequate supply of adult locusts is available and that therefore provision would have to be made in the estimate for breeding them in quantity. Uvarov's estimate for doing this is attached, but it has not yet been possible to make any arrangements with the B.M., as everybody in authority there is either on leave or at the British Association. The second difficulty arose out of the minutes of the last meeting of the Locust Committee, of which I enclose a copy (which please return) as you may not yet have seen them. These appear to envisage the carrying out of the physiological experiments on the locusts themselves by the War Office. Johnson, however, made it quite clear that his Department could not undertake work of this character and was only prepared to tackle the chemical side of the problem. Here again a supplementary estimate seemed necessary and I enclose one herewith. This, of course, is a mere shot in the dark, and it occurs to me that if we could obtain the services of Wigglesworth for this purpose, he might very well already have some of the apparatus necessary, and in this case, we might be able to get the

investigation done at appreciably less cost.

The next problem that faced me was how to get authority to have these supplementary recommendations, if approved, carried out. As you know, the Locust Committee is scattered to the ends of the earth. Hemming is in the Pyrenees and appears to have left nobody behind him with any authority or with any knowledge of the question. I have, however, had a long talk with Seel on the subject, and it appears that he has to submit the application to the Colonial Development Fund not later than the 14th so that it may be considered at their next meeting, which is, I understand, on the 28th. The problem therefore is how to present them with a supplementary statement and estimates that will have any valid authority, and Seel now suggests that it would materially help matters if you, as Acting Chairman of the Locust Committee, were to write to him confirming our recommendations and estimates if, in fact, you do approve of them. Johnson says that he will not be allowed to do this work for us without some undertaking that it would be paid for, and he is to let me have an estimate in the course of a day or two; but as we cannot delay things, since it is, I think, clear that King must go out to Kenya in October, there seems to be no alternative but to risk the refusal of the Colonial Development Fund to make the grant. Should this happen, the Locust Committee will have to decide by what other means the money can be obtained.

The whole problem seems to bristle with difficulties and it is not easy to make them all clear in a letter, but I hope that the above deals sufficiently with the more essential points.

With kind regards,

Yours sincerely,

Sir Guy A.K. Marshall, C.M.G., F.R.S.

S. 44/9

4 133

Mr. Bael,
Colonial Office.

No 60
18012/32
Locusts

With reference to our minute of the 31st August regarding the proposed insurance of Mr. H.H. King who may shortly be sent to Kenya to investigate the possibility of controlling flying swarms of locusts by dusting powdered arsenic from an aeroplane, I enclose a copy of a letter dated the 7th September from our Insurance Brokers shewing the conditions under which the Sun Life Office would accept the proposal on Mr. Kings life.

We presume we shall hear from you in due course if insurance is to be arranged.

by

J. C. O'Keefe
Shipping Dept.,
Crown Agents for the Colonies,
~~3rd August~~, 1932.
8th September,

GLANVILL, ENTHOVEN & COMPANY,

Life Dept.,

118, Old Broad Street, E.C.2.

7th September, 1932.

S.44/9

The Crown Agents for the Colonies,
4, Millbank, S.W.1.

Gentlemen,

Sun Life Proposal £12,000 - H.H.King.

Referring to your letter of the 31st August,
Mr. King called to see me on Friday last. The Sun Life
Office have accepted the proposal on his life and
subject to his remaining in his present state of
health, they will be prepared to issue a policy to
cover death from any cause whatsoever at a premium
of £106 as quoted.

Yours faithfully,

(sgd) J. NATHAM.

Manager, Life Dept.,
Glanvill, Enthoven & Company.

6333

Any further communication on this subject should be addressed to:-

THE SECRETARY,
ECONOMIC ADVISORY COUNCIL,
2, WHITEHALL GARDENS, S.W.1,
and the following number quoted.

ECONOMIC ADVISORY COUNCIL,

2, WHITEHALL GARDENS,

LONDON, S.W.1.

E.A.C./425.

September 5th, 1932.

RECEIVED
5 SEP 1932
COL OFFICE

Sir,

I am directed by the Economic Advisory Council to transmit herewith for the information of Secretary Sir Philip Cunliffe-Lister the accompanying copy of the Fifth Report prepared by their Committee on Locust Control, containing recommendations for certain experiments to be carried out into the efficacy of the discharge of clouds of poison dust from aircraft as a means of destroying the adults of the Tropical Migratory Locust.

2. The Prime Minister has approved the Committee's Report, and I am to express his hope that the Secretary of State for the Colonies will submit on behalf of the Government of Kenya an application to the Colonial Development Advisory Committee for a grant of £2,500 from the Colonial Development Fund, for the purpose of enabling the experiments suggested in the Fifth Report of the Committee on Locust Control to be carried out.

3. Additional copies of the Committee's Report are available in this office and will be communicated to your Department on receipt of information as to the number required.

Uganda (136)
T.T. (137)
Somal. (138)
Nyasal. (139)
N. Rhodes. (140)
Nigeria (141)
G. E. (142)
S. L. (143)
Zambia (144)

copy sent to Gov

I am, Sir,

Your obedient Servant,

Francis Hemming

The Under Secretary of State,
Colonial Office, S.W.1.

CONFIDENTIAL.

Copy No. 39

E.A.C. (C.) 74.

ECONOMIC ADVISORY COUNCIL.

COMMITTEE ON LOCUST CONTROL.

Fifth Report.

Proposals for the use of aircraft against locusts.

2, Whitehall Gardens, S.W. 1,
August 26, 1932.

COMMITTEE ON LOCUST CONTROL.

COMPOSITION AND TERMS OF REFERENCE.

On the 29th April, 1929, the late Earl of Balfour, the then Chairman of the Committee of Civil Research, * appointed a Sub-Committee on Locust Control with directions to consider and report on (a) means for the mass destruction of the Desert Locust *Schistocerca gregaria* Forsk and (b) methods for ascertaining the reasons for the periodic swarming of this species, with a view to its control.

2. On the 8th July, 1931, the Committee's terms of reference were extended to cover other tropical African locusts. They are now as follows:—

To consider and report on—

- (a) Means for the mass destruction of the Desert Locust *Schistocerca gregaria* Forsk, and other tropical African locusts.
- (b) Methods for ascertaining the reasons for the periodic swarming of these species with a view to their control.

3. The Committee is constituted as follows:—

Sir Henry Miers, F.R.S., *Chairman*.

Major E. E. Austen, D.S.O., Keeper, Department of Entomology, British Museum (Natural History).

Mr. C. S. Elton, Department of Zoology and Comparative Anatomy, University Museum, Oxford.

Sir Walter Fletcher, K.B.E., C.B., F.R.S., Secretary, Medical Research Council.

Mr. J. B. S. Haldane, Sir William Dunn Reader in Biochemistry, University of Cambridge.

Sir Leonard Hill, F.R.S.

Sir Guy A. K. Marshall, C.M.G., D.Sc., F.R.S., Director, Imperial Institute of Entomology.

Professor E. B. Poulton, F.R.S., Hope Professor of Zoology, Oxford.

Mr. G. F. Seel, Colonial Office.

Mr. F. A. Stockdale, C.B.E., Agricultural Adviser to the Secretary of State for the Colonies.

Mr. B. P. Uvarov, Senior Assistant, Imperial Institute of Entomology.

Mr. H. E. Wimperis, C.B.E., Director of Scientific Research, Air Ministry.

Mr. A. F. Hemming, C.B.E., Joint Secretary, Economic Advisory Council (*Secretary to the Committee*).

* NOTE.—By Treasury Minute, dated the 27th January, 1930, the Committee of Civil Research was absorbed in the Economic Advisory Council, of which this Sub-Committee became a Committee.

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III.—The experiments so far conducted	9
IV.—The scheme of work proposed	13
V.—Summary of recommendations	22

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FIFTH REPORT.

PROPOSALS FOR THE USE OF AIRCRAFT AGAINST LOCUSTS.

I.—Introductory.

1. At meetings held on the 16th and 19th August, 1932, we had under consideration a proposal for the use of aeroplanes in discharging clouds of poison dust in the air against flying swarms of locusts. This suggestion was put before us by Mr. H. H. King, Chief Government Entomologist, Khartoum, in two letters to Sir Guy Marshall, dated the 18th and 25th July, 1932 (Committee Papers E.A.C.(E.) 578 and 574). It was also the subject of telegraphic correspondence between the Secretary of State for the Colonies and the Government of Kenya, a copy of which was transmitted to us by the Colonial Office on the 12th August, 1932 (E.A.C.(E.) 577). In his telegram the Governor stated that he had heard with interest of the experiments which had been carried out in the Sudan, and referred to the anxiety which he felt concerning large flying swarms of locusts which might do immense damage in his territory during the next few months while the crops were ripening.

2. The second of our meetings was attended by Mr. King, who discussed with us the progress made in his experiments and the difficulties which remained to be overcome. In addition Mr. L. B. Freeston of the Colonial Office has attended these meetings in view of the great interest that the East African dependencies feel in the outcome of these experiments.

3. The investigations upon which Mr. King has been engaged in the Anglo-Egyptian Sudan aim at the development of a new means for the destruction of locusts, and hence for preventing the spread of the pest to wider areas. Although the application of such practical methods of control is closely dependent upon knowledge obtained from research into the origin of locust invasions and the laws by which they are governed, it will, nevertheless, be evident that the elaboration of these methods is a task altogether distinct from the ecological investigations at present being conducted by the Imperial Institute of Entomology on behalf of this committee, and in accordance with the scheme drawn up by us in our second, third and fourth reports (Council Papers C.R.(C.) 88, E.A.C.(C.) 51, and E.A.C.(C.) 71).

II.—The need for new methods of attack.

4. Some idea of the magnitude and gravity of the locust problem as a whole may be obtained from the figures quoted in our fourth report* (paragraph 11 and Appendix 2). Even such fragmentary data as are available from official sources show that the damage done by locusts during the present outbreak, i.e., in the period 1927 to 1931 can safely be estimated as exceeding £6 millions. The expenditure on control measures during the same period amounted to about £1 million, while the number of man-days of labour spent by the population in controlling locusts was at a very conservative estimate not less than 28 millions.

5. The problem is, moreover, growing in complexity. During the last two years, while the invasions of the Desert Locust (*Schistocerca gregaria* Forsk.) have continued unabated, a new and still more serious danger to the agriculture of tropical Africa has arisen as a result of the appearance of swarms of the Tropical Migratory Locust (*Locusta migratoria migratoroides* R. and F.). The distribution of this species covers an enormous range, but its ravages have been particularly severe in Kenya. The damage done in that territory during 1931 included the destruction of 40 per cent. on the average of maize and wheat in European areas to the value of £175,000, and of about 20 per cent. of grain crops in native areas, valued at £75,000. In addition the shortage of grazing caused by locusts in stock-raising

* Cmd. 4124.

area was responsible for a drop of 60 per cent. in milk yields. Expenditure by the Kenya Government on locust control during the calendar year 1931 amounted to £18,000. For the first seven months of the current year, the sanctioned expenditure amounted to £26,000.

6. The figures quoted for Kenya in the preceding paragraph relate to damage done by the Tropical Migratory Locust. It is against this species that the method of attack from the air, which we have had under consideration, is most likely to prove effective. Swarms of Desert Locusts when in flight usually move in open formation extending to a considerable height and covering a large area. In order to destroy them in any number very large clouds of poison dust would have to be employed. Swarms of Migratory Locusts on the other hand move in dense massed formation and should, therefore, prove vulnerable if attacked by means of an effective poison dust.

7. Moreover, in the case of this species there has hitherto been no satisfactory method of destruction and control. The normal method of attack in dealing with Desert Locusts is to kill them in the immature (hopper) stage by means of poisoned baits laid on the ground. When employed, however, against hoppers of the migratory locust this method has not proved so successful, since hoppers of this species do not eat the bait so readily as do Desert Locust hoppers. A further difficulty is presented by the nature of much of the country in which this species breeds. In arid and semi-arid districts, such as those inhabited by the Desert Locust, it is comparatively easy to locate and destroy hoppers, but in tall dense vegetation often frequented by the Migratory Locust they escape detection. Moreover, the transport of bait and working parties through such country is extremely arduous.

8. The experiments, therefore, which have been conducted by Mr. King in the use of poison dust, to be discharged against flying swarms from aeroplanes, suggest altogether new possibilities in the destruction and control of this species of locust. Such possibilities are of special interest to a highly settled area such as Kenya in which the damage done by this locust has been particularly severe. Should, however, the development of this method of control proceed satisfactorily its field of application would extend far beyond the borders of a single territory, and might prove of far-reaching importance, both in the destruction of locusts and in holding up the advance of flying swarms into new areas.

III.—The experiments so far conducted.

9. The first stage in the experimental work done by Mr. King was described in a paper written by him in conjunction with Mr. W. Rutledge, and published this year in the *Bulletin of Entomological Research*.* The experiment consisted of exposing adult *L. migratoroides* to a cloud of sodium arsenite dust (powdered to pass through a standard 240 sieve) for specified periods, and then placing the locust in a clean cage. In order to reproduce the conditions of flight the locust was suspended on a thin copper wire and induced to flutter. It was found that locusts which fluttered in the dust cloud for approximately, but not more than, ten seconds invariably showed signs of discomfort within half an hour and were usually markedly ill, if not moribund or dead, within two hours. All were dead within twenty-four hours. Similar experiments were carried out with other poisons such as arsenious oxide and Paris green, but the results were less favourable than those obtained with sodium arsenite. This may possibly be due to the fact that while sodium arsenite is highly soluble, both Paris green and arsenious oxide are but slightly soluble in water.

10. Having thus assured himself of the efficacy of sodium arsenite as a locust poison Mr. King proceeded to carry out practical experiments in the production of a dust cloud in the air. At this stage of his investigations he was fortunate in securing through the good offices of the Air Council the co-operation of the personnel of the Royal Air Force stationed at Khartoum, whose assistance

* King, H. H. and Rutledge, W. 1932 Bull. Ent. Research 23: 65-68.

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* King, H. H. and Ruttledge, W. 1932 Bull. Ent. Research 23: 65-68.

6
was of great value. A simple form of container (or metal funnel for the discharge of the dust) was designed, capable of being attached without structural alterations to the Fairey III F type of bombing aircraft. Experiments were carried out in the air with chalk dust of the same density as the poison dust which it was ultimately proposed to use, and after a few minor modifications had been made in the design of the container a satisfactory dust cloud was produced.

11. At this point, however, an unforeseen difficulty arose. It was found that air eddies carried the dust back into the cockpit in such quantity as to make the use of poison dust quite out of the question. Very little of the dust came back through the container, but it found its way through openings in the underside of the fuselage. In order to prevent this it would have been necessary, if this type of aircraft were to be used, to modify the fuselage in such a way as to ensure that there were no cracks or openings in it, or, alternatively, to alter the point of discharge of the dust. Neither course could have been adopted without considerable interference with the structure of the aircraft. In the circumstance further experiments with this type of machine had to be abandoned. There is no doubt, however, that these difficulties could easily be overcome by the use of a more suitable type of aeroplane and container.

12. We understand that from calculations made by the Chemical Defence Research Department of the War Office it appears that the rate at which sodium arsenite powder of the required density would fall through the air is sufficiently low to raise no difficulty in the creation of a suitable dust cloud in advance of a flying swarm. It should be observed that no danger to human beings, crops, or livestock is likely to arise as a result of the use in this way of poison dust against locusts, in view of the fact that the natural dissipation of the cloud reduces its density within a short time to a point at which its effects are no longer poisonous. As compared with poison gas which must be stored in heavy cylinders, dust has the advantage that it is lighter and, therefore, cheaper to handle. Moreover, few gases could be maintained, particularly in a hot climate, at a sufficiently high point of concentration to enable them to be used as a locust poison in this manner.

IV.—The scheme of work proposed.

13. In the light of Mr. King's experiments, and of the considerations set forth in the preceding paragraphs, we are of the opinion that there is every possibility that the method by which it is proposed to attack locusts in flight will prove successful in practice. Before, however, recommending the adoption of this method to Colonial and other governments we consider that it is essential that full-scale experiments should be conducted with aeroplanes against locusts in Africa. Such tests would serve to discover not only whether there are any practical difficulties which may have been left out of account, but also the average cost of destroying a swarm of any given size by this method.

14. In his telegram to the Secretary of State for the Colonies, referred to above (see paragraph 1), the Governor of Kenya inquired as to the possibility of action being taken in that territory by Royal Air Force machines. In reply, however, to a letter addressed to them on this subject the Air Council stated that they much regretted that they were not in a position to afford Royal Air Force assistance on this occasion, as no unit would be in the vicinity, and they felt unable to despatch a special flight from the Middle East Command 2,000 miles distant.

15. In the course of their letter however, the Air Council suggested that the necessary flying might be undertaken by Imperial Airways, Limited. From inquiries which we have made we understand that the company have at the present time a machine at Kisumu in Kenya, which would be well adapted for work such as we have in mind, and in view of the general suitability of the conditions in Kenya and the special importance of these investigations to that territory, we consider that the necessary tests are most likely to prove successful if undertaken there. At the same time the financial situation of the colony affords no ground for hope that

7
the expenditure required could be met from local revenues. As we have already shown (see paragraph 5) approved expenditure by the Kenya Government on locust control for 1932 already amounts to £26,000 and we think that it would be unreasonable to expect that Government to expend further sums on research at the present time. It, however, experiments were to be undertaken in their territory, we recommend that the Kenya Government should be invited to co-operate in the work by affording all possible local facilities such as free transport, working parties, &c.

16. In view of the valuable benefits which would be conferred by the success of these experiments, not only upon Kenya, but also upon other territories subject to infestation by locusts of this species, we consider that an application for a grant to enable such experiments to be made might appropriately be addressed to the Colonial Development Advisory Committee. It is true that at the present time ecological investigations regarding locusts are being carried out on our behalf by the Imperial Institute of Entomology, which are partly financed by a different government body, namely, the Empire Marketing Board. Nevertheless, as we pointed out at the outset of our report (see paragraph 8) the problems raised by the development of practical methods of control are quite distinct from those which concern the scientific investigation of the habits of the locust, although practical methods must necessarily depend ultimately for their application on theoretical observations. We, therefore, recommend that the Economic Advisory Council should invite the Secretary of State for the Colonies to apply on behalf of the Governor of Kenya for a grant from the Colonial Development Fund to cover the cost of this experimental work.

17. It would be essential to the success of these experiments that they should be conducted, and their results noted, by a specialist entomologist who has given particular study to this method of control. We are accordingly anxious that they should be undertaken by Mr. King, who, as will be clear from the account given above, is the officer who has devised this method of control and has been in charge of the experiments so far carried out. Should it be possible to obtain the necessary grant from the Colonial Development Fund it is desirable that the experiments should be undertaken during the next four months, as during that time flying swarms of the Tropical Migratory Locust will be available in Kenya for experiment. We hope that notwithstanding the fact that technically during that period Mr. King (who is now on final leave pending retirement) will be a servant of the Government of the Anglo-Egyptian Sudan no objection will be raised to his being employed in Kenya on this important work which, if it proves successful, will benefit the Sudan in common with other territories infested by this species of locust. We recommend that the Economic Advisory Council should communicate in this sense with the Secretary of State for Foreign Affairs.

18. We anticipate that a number of highly technical problems relating both to the discharge of the poison dust, its rate of dissipation and fall, &c., may arise during the course of the experiments. Much valuable time would be saved if it were possible for a scientific officer of high standing familiar with such problems to be present in Kenya at least during the initial period of experiment. Indeed, it might well be that the presence of such officer might in certain circumstances be essential to the success of the whole experiment. No one is more familiar with the problems likely to be encountered and their relation to the object of the experiment than Mr. H. E. Wimperis, C.B.E., Director of Scientific Research, Air Ministry, who has been a member of our Committee since its inception. We accordingly recommend that the Economic Advisory Council should represent strongly these considerations to the Air Council, and should express the hope that the Council will be prepared to assist these important investigations by authorising Mr. Wimperis to proceed to Kenya by air, so as to be present for (say) a week's experimental work in that territory.

19. We consider that a period of one month would prove sufficient for the work required, during which period it is unlikely that the actual time spent in the air would exceed fifty hours. We are informed by the Air Ministry that Imperial Airways are prepared

was of great value. A simple form of container (or metal funnel for the discharge of the dust) was designed, capable of being attached without structural alterations to the Fairey III F type of bombing aircraft. Experiments were carried out in the air with chalk dust of the same density as the poison dust which it was ultimately proposed to use, and after a few minor modifications had been made in the design of the container a satisfactory dust cloud was produced.

11. At this point, however, an unforeseen difficulty arose. It was found that air eddies carried the dust back into the cockpit in such quantity as to make the use of poison dust quite out of the question. Very little of the dust came back through the container, but it found its way through openings in the underside of the fuselage. In order to prevent this it would have been necessary, if this type of aircraft were to be used, to modify the fuselage in such a way as to ensure that there were no cracks or openings in it, or, alternatively, to alter the point of discharge of the dust. Neither course could have been adopted without considerable interference with the structure of the aircraft. In the circumstances further experiments with this type of machine had to be abandoned. There is no doubt, however, that these difficulties could easily be overcome by the use of a more suitable type of aeroplane and container.

12. We understand that from calculations made by the Chemical Defence Research Department of the War Office it appears that the rate at which sodium arsenite powder of the required density would fall through the air is sufficiently low to raise no difficulty in the creation of a suitable dust cloud in advance of a flying swarm. It should be observed that no danger to human beings, crops, or livestock is likely to arise as a result of the use in this way of poison dust against locusts, in view of the fact that the natural dissipation of the cloud reduces its density within a short time to a point at which its effects are no longer poisonous. As compared with poison gas which must be stored in heavy cylinders, dust has the advantage that it is lighter and, therefore, cheaper to handle. Moreover, few gases could be maintained, particularly in a hot climate, at a sufficiently high point of concentration to enable them to be used as a locust poison in this manner.

IV.—The scheme of work proposed.

13. In the light of Mr. King's experiments, and of the considerations set forth in the preceding paragraphs, we are of the opinion that there is every possibility that the method by which it is proposed to attack locusts in flight will prove successful in practice. Before, however, recommending the adoption of this method to Colonial and other governments we consider that it is essential that full-scale experiments should be conducted with aeroplanes against locusts in Africa. Such tests would serve to discover not only whether there are any practical difficulties which may have been left out of account, but also the average cost of destroying a swarm of any given size by this method.

14. In his telegram to the Secretary of State for the Colonies, referred to above (see paragraph 1), the Governor of Kenya inquired as to the possibility of action being taken in that territory by Royal Air Force machines. In reply, however, to a letter addressed to them on this subject the Air Council stated that they much regretted that they were not in a position to afford Royal Air Force assistance on this occasion, as no unit would be in the vicinity, and they felt unable to despatch a special flight from the Middle East Command 2,000 miles distant.

15. In the course of their letter however, the Air Council suggested that the necessary flying might be undertaken by Imperial Airways, Limited. From inquiries which we have made we understand that the company have at the present time a machine at Kisumu in Kenya, which would be well adapted for work such as we have in mind, and in view of the general suitability of the conditions in Kenya and the special importance of these investigations to that territory, we consider that the necessary tests are most likely to prove successful if undertaken there. At the same time the financial situation of the colony affords no ground for hope that

the expenditure required could be met from local revenues. As we have already shown (see paragraph 5) approved expenditure by the Kenya Government on locust control for 1932 already amounts to £26,000 and we think that it would be unreasonable to expect that Government to expend further sums on research at the present time. If, however, experiments were to be undertaken in their territory, we recommend that the Kenya Government should be invited to co-operate in the work by affording all possible local facilities such as free transport, working parties, &c.

16. In view of the valuable benefits which would be conferred by the success of these experiments, not only upon Kenya, but also upon other territories subject to invasion by locusts of this species, we consider that an application for a grant to enable such experiments to be made might appropriately be addressed to the Colonial Development Advisory Committee. It is true that at the present time ecological investigations regarding locusts are being carried out on our behalf by the Imperial Institute of Entomology, which are partly financed by a different government body, namely, the Empire Marketing Board. Nevertheless, as we pointed out at the outset of our report (see paragraph 3) the problems raised by the development of practical methods of control are quite distinct from those which concern the scientific investigation of the habits of the locust, although practical methods must necessarily depend ultimately for their application on theoretical observations. We, therefore, recommend that the Economic Advisory Council should invite the Secretary of State for the Colonies to apply on behalf of the Governor of Kenya for a grant from the Colonial Development Fund to cover the cost of this experimental work.

17. It would be essential to the success of these experiments that they should be conducted, and their results noted, by a specialist entomologist who has given particular study to this method of control. We are accordingly anxious that they should be undertaken by Mr. King, who, as will be clear from the account given above, is the officer who has devised this method of control and has been in charge of the experiments so far carried out. Should it be possible to obtain the necessary grant from the Colonial Development Fund it is desirable that the experiments should be undertaken during the next four months, as during that time flying swarms of the Tropical Migratory Locust will be available in Kenya for experiment. We hope that notwithstanding the fact that technically during that period Mr. King (who is now on final leave pending retirement) will be a servant of the Government of the Anglo-Egyptian Sudan no objection will be raised to his being employed in Kenya on this important work which, if it proves successful, will benefit the Sudan in common with other territories infested by this species of locust. We recommend that the Economic Advisory Council should communicate in this sense with the Secretary of State for Foreign Affairs.

18. We anticipate that a number of highly technical problems relating both to the discharge of the poison dust, its rate of dissipation and fall, &c., may arise during the course of the experiments. Much valuable time would be saved if it were possible for a scientific officer of high standing familiar with such problems to be present in Kenya at least during the initial period of experiment. Indeed, it might well be that the presence of such officer might in certain circumstances be essential to the success of the whole experiment. No one is more familiar with the problems likely to be encountered and their relation to the object of the experiment than Mr. H. E. Wimperis, C.B.E., Director of Scientific Research, Air Ministry, who has been a member of our Committee since its inception. We accordingly recommend that the Economic Advisory Council should represent strongly these considerations to the Air Council, and should express the hope that the Council will be prepared to assist these important investigations by authorising Mr. Wimperis to proceed to Kenya by air, so as to be present for (say) a week's experimental work in that territory.

19. We consider that a period of one month would prove sufficient for the work required, during which period it is unlikely that the actual time spent in the air would exceed fifty hours. We are informed by the Air Ministry that Imperial Airways are prepared

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to undertake the necessary flying at a cost of £90 per flying hour, starting from Kisumu. The machine to be employed is a De Havilland Hercules three-engined machine, which may be considered to be a suitable type for this purpose, having regard to the load to be carried and the fact that much of the flying to be done would be carried out at relatively low altitudes. With full tanks the machine has a flying range of 900 miles, and its equipment includes wireless apparatus.

20. We understand further that Imperial Airways are prepared to undertake in consultation with the Chemical Defence Research Department the design and construction of a container for the distribution of the dust to meet Mr. King's requirements, to be ready in Kisumu within one month from the date of order at a cost which would not exceed £100. It is advisable that practical tests should be carried out before the container is despatched to Kenya in order to obtain the most suitable rate of discharge. We understand that these tests could be carried out by the Research Department of the Air Ministry and at the research station of the Chemical Defence Research Department at Porton. We estimate that this expenditure would not exceed £800 in all. We recommend that in the event of the requisite funds for the proposed investigations being obtained, the Economic Advisory Council should invite the Air Council to undertake any further negotiations that may be necessary with Imperial Airways, Limited, to enable the Crown Agents for the Colonies to conclude with that Company a definite agreement on behalf of the Government of Kenya for the performance of the work described above.

21. We estimate that for the purpose of these experiments not more than three tons of sodium arsenite dust would be required at a cost of approximately £50 per ton. To these requirements must be added provision for the salary of the entomologist, which we estimate at £200 for three months inclusive of his remuneration for the preparation of his report; together with the payment of the premium upon a suitable life insurance policy and the cost of travelling and subsistence allowances during the period of service. Adding to this further items to cover expenses incurred by the Air Ministry and the War Office (Chemical Defence Research Department, Porton), and to meet contingencies and minor expenses, such as the provision of cameras for purposes of record, &c., we calculate that the total expenses to be incurred for these experiments would be covered by an outside figure of £2,800. We have given a more detailed account of these expenses in an appendix attached to this report.

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V.—SUMMARY OF RECOMMENDATIONS.

22. We summarise our recommendations as follows:—

- (a) that the Economic Advisory Council should recommend the Secretary of State for the Colonies to submit on behalf of the Government of Kenya an application to the Colonial Development Advisory Committee for a grant of £2,900 from the Colonial Development Fund for the purpose of enabling experiments to be undertaken in Kenya in the discharge of clouds of poison dust from aircraft against flying swarms of locusts;
- (b) that, in the event of a grant being made for this purpose from the Colonial Development Fund, the Air Council should be invited to undertake any further negotiations that may be necessary with Imperial Airways, Limited, to enable the Crown Agents for the Colonies to conclude with that company on behalf of the Government of Kenya a definite agreement to place a three-engined De Havilland aeroplane at the disposal of the Government of Kenya for a sum not exceeding £20 per flying hour, and to fit such aeroplane within one month of the date of contract with a container of a type to be approved by the Air Council at a cost not exceeding £100;
- (c) that the Economic Advisory Council should invite the Secretary of State for Foreign Affairs to endeavour to arrange with the Government of the Anglo-Egyptian Sudan for the employment of Mr. H. H. King as entomologist in charge of the proposed experiments notwithstanding the fact that the experiments may begin before the expiry of the period which must elapse before the date on which his retirement from the post of Chief Government Entomologist, Khartoum, takes effect;
- (d) that the Economic Advisory Council should represent strongly to the Air Council the desirability of the presence, during at least part of the experiments, of a scientific officer of high standing familiar with the scientific problems to which it may be anticipated the experiments will give rise; and that they should accordingly express the hope that the Air Council will be prepared to assist these important investigations by authorising Mr. N. E. Wiseman, their Director of Scientific Research, to proceed to Kenya by air so as to be present for (say) one week's experimental work in that territory;
- (e) that the Secretary of State for the Colonies should write the Governor of Kenya to provide, as the contribution of his Territory, free travelling and other facilities within his Territory to the personnel to be engaged on these experiments.

(Signed on behalf of the Committee):

GUY A. K. MARSHALL,

Acting Chairman.

(Signed) FRANCIS HENNING,

Secretary to the Committee.

2, Whitehall Gardens, S.W. 1,

August 26, 1952.

to undertake the necessary flying at a cost of £80 per flying hour, starting from Kisumu. The machine to be employed is a De Havilland Hercules three-engined machine, which may be considered to be a suitable type for this purpose, having regard to the load to be carried and the fact that much of the flying to be done would be carried out at relatively low altitudes. With full tanks the machine has a flying range of 900 miles, and its equipment includes wireless apparatus.

20. We understand further that Imperial Airways are prepared to undertake in consultation with the Chemical Defence Research Department the design and construction of a container for the distribution of the dust to meet Mr. King's requirements, to be ready in Kisumu within one month from the date of order at a cost which would not exceed £100. It is advisable that practical tests should be carried out before the container is despatched to Kenya in order to obtain the most suitable rate of discharge. We understand that these tests could be carried out by the Research Department of the Air Ministry and at the research station of the Chemical Defence Research Department at Porton. We estimate that this expenditure would not exceed £800 in all. We recommend that in the event of the requisite funds for the proposed investigations being obtained, the Economic Advisory Council should invite the Air Council to undertake any further negotiations that may be necessary with Imperial Airways, Limited, to enable the Crown Agents for the Colonies to conclude with that Company a definite agreement on behalf of the Government of Kenya for the performance of the work described above.

21. We estimate that for the purpose of these experiments not more than three tons of sodium arsenite dust would be required at a cost of approximately £50 per ton. To these requirements must be added provision for the salary of the entomologist, which we estimate at £200 for three months inclusive of his remuneration for the preparation of his report; together with the payment of the premium upon a suitable life insurance policy, and the cost of travelling and subsistence allowances during the period of service. Adding to this further items to cover expenses incurred by the Air Ministry and the War Office (Chemical Defence Research Department, Porton), and to meet contingencies and minor expenses, such as the provision of cameras for purposes of record, &c., we calculate that the total expenses to be incurred for these experiments would be covered by an outside figure of £2,900. We have given a more detailed account of these expenses in an appendix attached to this report.

V.—SUMMARY OF RECOMMENDATIONS.

22. We summarise our recommendations as follows:—

- (a) that the Economic Advisory Council should recommend the Secretary of State for the Colonies to submit on behalf of the Government of Kenya an application to the Colonial Development Advisory Committee for a grant of £2,900 from the Colonial Development Fund for the purpose of enabling experiments to be undertaken in Kenya in the discharge of clouds of poison dust from aircraft against flying swarms of locusts;
- (b) that in the event of a grant being made for this purpose from the Colonial Development Fund, the Air Council should be invited to undertake any further negotiations that may be necessary with Imperial Airways, Limited, to enable the Crown Agents for the Colonies to conclude with that company on behalf of the Government of Kenya a definite agreement to place a three-engined De Havilland aeroplane at the disposal of the Government of Kenya for a sum not exceeding £80 per flying hour, and to fit such aeroplane within one month of the date of contract with a container of a type to be approved by the Air Council at a cost not exceeding £100;
- (c) that the Economic Advisory Council should invite the Secretary of State for Foreign Affairs to endeavour to arrange with the Government of the Anglo-Egyptian Sudan for the employment of Mr. H. H. King as entomologist in charge of the proposed experiments notwithstanding the fact that the experiments may begin before the expiry of the period which must elapse before the date on which his retirement from the post of Chief Government Entomologist, Khartoum, takes effect;
- (d) that the Economic Advisory Council should represent strongly to the Air Council the desirability of the presence, during at least part of the experiments, of a scientific officer of high standing familiar with the scientific problems to which it may be anticipated the experiments will give rise; and that they should accordingly express the hope that the Air Council will be prepared to assist these important investigations by authorising Mr. N. E. Willespie, their Director of Scientific Research, to proceed to Kenya by air so as to be present for (say) one week's experimental work in that territory;
- (e) that the Secretary of State for the Colonies should invite the Governor of Kenya to provide, as the contribution of his Territory, free travelling and other facilities within his Territory to the personnel to be engaged on these experiments.

(Signed on behalf of the Committee):

GUY A. K. MARSHALL,

Acting Chairman.

(Signed) FRANCIS HEMMING,

Secretary to the Committee.

APPENDIX.

Estimated expenditure required for experiments in connection with the use of aeroplanes against locusts.

In the following table we show the total estimated expenditure required, distinguishing those items payment for which would be made in this country.

	Expenditure in the United Kingdom.	Other expendi- ture.	Total expendi- ture.
	£	£	£
1. Hire of aeroplane (50 hours flying at £30 per hour) ...	1,500	—	1,500
2. Design and construction of container ...	100	—	100
3. Remuneration of entomologist ...	200	—	200
4. Premium on life insurance policy ...	100	—	100
5. Passage to Kenya and back ...	320	—	320
6. Subsistence allowances (say) ...	—	170	170
7. Dust (3 tons at £50 per ton) ...	150	—	150
8. Contingencies (cameras, &c.) ...	60	—	60
9. Estimated fees to be paid to—			
1. Air Ministry in respect of research on design of container, &c.			
2. War Office for work to be undertaken by Chemical Defence Research Department, Porton	300	—	300
Total ...	2,730	170	2,900

C. O.

- Mr. Seel
- Mr. Allen
- Mr.
- Mr. Parkinson.
- Mr. Tomlinson.
- Sir C. Bottomley.
- Sir J. Shuckburgh.
- Permt. U.S. of S.
- Parly. U.S. of S.
- Secretary of State.

for conison

18012/32 Kenya.

62/141

C. D.
R 5-SEP
D 6

For Air Mail of 7th September.

~~25~~ 7 September, 1932.

Sir,

DRAFT.

KENYA.

Confidential

Gov. Byrne.

I have the honour to acknowledge the receipt of your telegram No.159 on the subject of the proposed experiments for the use of aircraft against swarms of the Tropical Migratory Locust (Locusta migratorioides).

2. I now transmit to you copies of the Fifth Report of the Locust Control Committee of the Economic Advisory Council which deals with this question. You will observe that the Locust Control Committee have recommended that an application

Report.

2 copies (with me)

Copy to P.A.C., B.H. - 7-9-32

Copy with copy (61) to Economic Advisory Council, L.F. for infn.

application should be made for a
free grant from the Colonial
Development Fund for the purpose of
enabling experiments to be undertaken
in Kenya, ^u for the use of aircraft
for discharging clouds of poison
dust against flying swarms of locusts.

In my telegram No.169 I assumed that
you would concur in an application
being made on behalf of the Govt. of
Kenya for a free grant from the
Colonial Development Fund to cover
the cost of this experiment, and,
although the point is not expressly
mentioned in your telegram, I propose
to assume, unless I am informed to the
contrary by telegraph, that you concur
in the application being made. It
is proposed that the matter should be
put before the Colonial Development
Advisory Committee at its next meeting

(No.56)

on the 28th September.

3. In view of the advice of the Locust Control Committee (formulated after personal discussion with Mr. King, the Entomologist to the Sudan Government) as to the prospects of the success of the experiment, I trust that your Government will be prepared to provide, as recommended by the Committee, free travelling and other facilities within Kenya to the personnel engaged on the experiments, and also facilities for the transport of the requisite stores.

in the event of a proposal being sanctioned for the major expenses of the experiment

4. In view of the fact that the matter cannot be submitted to the Colonial Development Advisory Committee before the 28th September, it may prove impracticable for the experiment to ^{start} begin so early as the

beginning

beginning of October. You will
no doubt, however, advise me if
a delay of a few weeks in the
commencement of operations would
seriously prejudice the success
of the experiment.

5. The enclosed report has not, as yet,
I have, etc. been published, and
should therefore be
treated as confidential

(for the Secretary of State)
(Signed) R. W. HAMILTON.

Telegram from Governor Kenya to the Secretary of State
for the Colonies

Dated 2nd September Received 4.55.p.m. 2nd September 1932

No. 159.

Unread copy - 7.9.32
copy to C.A.C. 7.9.32

Your telegram No. 169. Locust experiments might suitably begin early in October probably in Meru area. Understand however from Sudan Government that experiments there proved impossible owing to structural unsuitability of aircraft available and I am advised that their object was to determine possibility of destroying original parent swarms when discovered rather than reducing widespread infestation such as exists here in populated areas. In these circumstances I should be unwilling to commit this Government to any expenditure locally or otherwise on such experiments without further information as to likelihood of success but presume proposal is that whole cost of experiments would be met from Colonial Development Fund.