

Public (1899) Department.

ORDINARY MS.

G.O., No. 368

Dated 23-3-99

INDEXED.

[Despatch Abstract.]

Coming to the S.G. for the necessary action, letter from the Secy for copy of a despatch from the Secy of State regarding a request made by Professor Huxley, Director of the Natural History Museum, London, that a collection may be made in India of mosquitoes & other flies that bite men or animals for the Museum, and giving certain instructions for compliance of the same.

23-3-99

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

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Public (1899) Department.

CURRENT No.

From The Secy.,
Home Dept.

Order No 368 of 23-3 ff

No. 428.

communicated to
the Surgeon General
for necessary action.

Dated 12.3.99

Received

Registered 18.3.99

Enclosures 2.

Spare copies 7 of 24.

10/99 Cur 20.3.99 21/3/99 ff

SUBJECT.

Forwarding ^{with remarks,} Copy of a despatch
from the Secretary of State regarding
a request made by Professor Ray
San Kester that a collection may be
made in India of mosquitoes
with six copies of the same and other flies that bite man for
the Natural History Museum.

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

BRITISH MUSEUM

(NATURAL HISTORY.)

HOW TO COLLECT MOSQUITOES

(CULICIDÆ.)

How to Collect Mosquitoes

(CULICIDÆ.)

LIST OF ARTICLES REQUIRED FOR COLLECTING AND PREPARING Mosquitoes.

ONE entomologist's collecting-net of book-muslin (one or two spare net-bags should be taken in case the one in use gets torn).

One dozen glass-*bottomed* pill-boxes ($1\frac{1}{2}$ to 2 in. in diameter is about the best size).

A cyanide killing-jar, or materials for making same, as follows:—

$\frac{1}{4}$ lb. of cyanide of potassium (in lumps).

1 lb. of plaster of Paris.

A glass jar with wide mouth and closely fitting lid.

Entomological forceps (two pairs), with curved ends, for holding pins.

One ounce No. 20 entomological pins (D. F. Taylor and Co., New Hall Works, Birmingham. These pins are sold in boxes at 7s. 6d. per ounce, and as the pins are exceedingly fine, an ounce will go a very long way).

Common pins (three or four packets).

Gun-wad punch, No. 20 bore.

Cards (2-sheet Bristol Board) from which to punch discs; a supply of the latter should be prepared ready for use.

Needles (two or three) mounted in handles, for arranging legs and wings.

A Platyscopic Lens :—this is indispensable.

Cork-carpet or pith—one or two sheets about 6 in. square, on which to perform the operations of pinning, etc.

A strongly-made wooden box (a cigar-box will do), in the bottom of which is fixed a layer of cork-carpet or pith (if the latter is used it should be not less than half an inch thick).

IMPORTANCE OF SENDING HOME SPECIMENS FOR DETERMINATION IN THE BEST POSSIBLE CONDITION.

It should be borne in mind that, for the purpose of the scientific determination of species, *mosquitoes cannot be collected with too great care*. As important specific characters are furnished by the *wings* and *legs*, it is of the utmost consequence that these should not be denuded of their scales, or otherwise injured; *unless attention is paid to this point the specimens will probably be quite worthless for determination*.

SPIRIT NOT TO BE USED.

Specimens for determination must *on no account* be placed in spirit.

SPECIMENS TO BE PINNED IMMEDIATELY THEY ARE DEAD.

Mosquitoes should in all cases be pinned, and that as soon as possible after death; duplicate specimens for dissection can, of course, be preserved in spirit, but if this is done care must be

taken, by the use of corresponding labels or numbers, to prevent confusion between species.

NUMBER OF SPECIMENS OF EACH SPECIES REQUIRED.

In collecting specimens of a species of mosquito for determination some *half dozen* examples of *each sex* should, if possible, always be obtained.

HOW TO DISTINGUISH THE SEXES.

The harmless male mosquitoes can be distinguished from the females (which alone bite and suck blood) by the possession of plumose antennae and palpi, forming tufts in front of the head; in the females the antennae, though long, are nearly bare (having whorls of only short hair at the bases of the joints), while the palpi in the case of females of the typical genus *Culex*, to which the majority of the described species belong, are quite short.

METHOD OF COLLECTING AND KILLING.

For capturing mosquitoes in the open an entomologist's collecting net is necessary, from which the insects can be transferred to glass-bottomed pill-boxes; in doing this great care must be taken not to pull off the legs; inside buildings it is possible, with care, to capture mosquitoes on walls and windows in the pill-boxes themselves. In any case mosquitoes should be collected alive in the glass-bottomed pill-boxes*; if

* These boxes can be obtained from any dealer in natural history apparatus, but care should be taken to see that the *bottoms*—and not the tops, as is often the case—are made of glass. Since the boxes are constructed of cardboard they are liable in tropical countries to go to pieces in the rains, and to prevent this they should be covered with glazed jaconet (stuck on with liquid glue) and then coated with Aspinall's enamel.

care is taken, several specimens can be got into one pill-box. To kill the mosquitoes the box is opened a fraction of an inch on one side, and placed for a few minutes in a cyanide killing-jar,* which must, of course, be closed. As soon as the insects are quite dead (if the mixture in the jar is of reasonable strength from three to five minutes is sufficient, and mosquitoes should not be allowed to remain exposed to the effects of the cyanide longer than this) they should be turned out on to a sheet of cork-carpet or pith; they should be touched as little as possible, the manipulations necessary in arranging the wings and legs being performed with a needle.

TO PIN A MOSQUITO.

Take a card disc and write on it all the data connected with the specimen to be pinned, as follows:—(1) Name of *locality*,

* A cyanide killing-bottle can be procured ready for use from Hinton and Co., Bedford Street, London, W. C., or any other chemist will prepare one to order, but when mosquitoes (or indeed *any* Diptera) are collected in the manner here advised it is preferable to make a large-sized killing-jar for oneself as follows:—Take any fairly large glass jar (such as a pickle-bottle) with a wide mouth and closely fitting lid, and cover the bottom with a layer of dry plaster of Paris to the depth of half an inch; pour in above this a layer equal in depth consisting of *powdered* cyanide of potassium, mixed with rather more than its bulk of dry plaster of Paris; cover this mixture with a layer of dry plaster of Paris to the depth of a quarter of an inch or so, and pour in above the whole a layer, half an inch in depth, consisting of plaster of Paris mixed with water to the consistency of cream. As soon as the top layer of plaster is dry the jar is ready for use. To obviate the risk of cracking the jar owing to the heat evolved when plaster of Paris is mixed with water, it may be advisable to stand the jar in warm water before adding the final layer. The exact amount of cyanide of potassium to be used is of no great consequence, but in the case of a properly prepared jar the odour should be readily perceptible on removing the lid; if it is not, the reason may be that the mixture is too dry, when a little water poured on to the top layer will probably set matters right. After some months' use the cyanide loses its efficacy (to obviate this so far as possible the jar should never be allowed to remain open), and the mixture must then be renewed.

including *altitude* if necessary; (2) *date*—day, month, year—thus, 9. 11. 98; (3) *collector's name*; (4) any *remarks of interest*, e.g., "Most troublesome species in district"; "Abundant in bamboo-jungle"; "Uncommon," etc. Place the disc on a sheet of a cork-carpet or pith, and picking up with the entomological forceps one of the fine No. 20 pins, thrust about one-third of an inch of it through the centre of the disc; in doing this the pin should be held by the forceps below the middle, otherwise, owing to its fineness, it may bend and fail to pass through the card. Lay the specimen *on its back* (turning it over with the aid of a needle or one of the No. 20 pins held in the forceps), and thrust the pin, which now carries the disc, through the centre of the thorax, between the bases of the legs, until the tip of a pin projects one-sixth of an inch beyond the dorsal surface of the thorax; * invert the disc (the specimen will then be right side up), and thrust an ordinary pin through the disc near the margin for the purpose of carrying both disc and specimen. The next and last thing to be done is to arrange the legs and wings as far as possible; *i.e.* the wings must be made to project at an angle from the body, and not allowed to remain closed, and the legs must be disposed symmetrically on the card disc so that all parts of them can be readily seen, instead of being left crumpled up beneath the body. These operations must be performed as gently as possible with the help of a needle mounted in a handle, or by the aid of No. 20 pin held in the forceps, and care must be taken that hairs and scales are not rubbed off in the process. As the tissues contract in drying, the legs and wings are very apt to get pulled out of place,

* Should it be found impracticable to proceed in the manner here prescribed, owing to the difficulty of making the specimen lie in the required position on its back, it may be pinned in the ordinary way through the middle of the thorax from the *dorsal* side; in this case, however, the specimen must be *pinned first* (*i.e.*, before it is mounted on the card disc); it should be drawn two-thirds of the way up the pin, and the latter should then be thrust through the disc, holding the pin with the forceps *below* the specimen; mount the disc on a common pin, as in the first method.

and, to correct these changes, the specimens should be examined once or twice during the next day or two after being pinned.

TRANSMISSION OF SPECIMENS TO ENGLAND.

Pinned specimens of mosquitoes, like those of other insects, rapidly develop mould during the rainy season in tropical countries; and since mouldy specimens are practically worthless for purposes of scientific determination, the insects should be sent home as soon as possible after being collected. If contain the specimens, if a proper entomological store-box is not available, any small strongly-made box (such as a cigar-box) will serve, in the bottom of which a layer of cork-carpet or pith (not less than half an inch thick, in the case of the latter) is firmly fixed. The greatest care must be taken to prevent specimens getting loose and rolling about in transit, since in this way a single loose disc might easily destroy or hopelessly damage all the other specimens in the box. To prevent this the pins supporting the cards should be inserted as tightly as possible into the cork-carpet or pith, and they should all be driven in to the same level; if this is done a sheet of soft paper (newspaper does very well) can be *fixed* into to the box, resting on the heads of the supporting pins, in order to minimise the damage should a disc happen to get loose. The box containing the specimens should be well wrapped in cotton-wool or similar material, and firmly packed in an outer box for transmission (by Parcel Post) to England.

N.B.—NOT ONLY MOSQUITOES, BUT ALL DIPTERA SHOULD BE COLLECTED, PREPARED, AND SENT HOME IN THE MANNER ABOVE DESCRIBED.

The above instructions, though drawn up with special reference to mosquitoes, are equally applicable to the collecting of

Diptera in general, except that in the case of the large forms, such as horse-flies (Tabanidæ), robber-flies (Asilidæ), etc., it is not necessary to use so fine a pin as a No. 20 (D. F. Taylor and Co.'s entomological pin No. 5—price 1s. 6d. per ounce—would do instead).

ADDRESS FOR SPECIMENS.

Specimens of mosquitoes (or other *Diptera*) intended for the British Museum should be directed to

THE BRITISH MUSEUM

(NATURAL HISTORY),

CROMWELL ROAD,

LONDON, S.W.

All communications on the subject should be addressed to the Director.

INDIA OFFICE;
London, the 12th January 1899.

Revenue.
No. 9.

To His Excellency the Right Honourable the GOVERNOR GENERAL
of India in Council.

MY LORD,

I FORWARD a copy of letter from Professor Ray Lankester, Director
of the Natural History Museum, asking
that collections of mosquitoes and other flies
that bite men or animals may be made in India and forwarded to the Natural
History Museum. The recent investigations into the action of mosquitoes as
carriers of disease germs have caused special attention to be directed to these
insects; I enclose copy of the reply sent
to Dr. Lankester, and the copies of the
pamphlet for the guidance of collectors.

Dated 20th December 1898.

One copy sent now; and twenty-nine copies
by book post will follow.

2. I shall be glad to hear whether Your Excellency is able to give the
desired assistance to the efforts of the Director of the Museum. Probably two
or three competent collectors in each Province could do all that is required in
a single year without detriment to their ordinary duties.

I have the honour to be,

MY LORD,

Your Lordship's most obedient humble Servant,
GEORGE HAMILTON.

The 20th December 1898.

MY LORD,

WITH reference to the investigation of Malaria and similar diseases by a Committee appointed jointly by the Secretary of State for the Colonies and the Royal Society, and in view of the possible connection of Malaria with mosquitoes, it is of great importance to obtain exact knowledge of the different species of mosquitoes and allied insects in the various tropical countries.

I have arranged with Mr. Chamberlain that a special study of mosquitoes shall be undertaken here. For this purpose, however, it is necessary to obtain collections from all parts of the world.

With a view to the formation of such collections, directions have been drawn up and are printed by this Department, and the Colonial Office has engaged to distribute this pamphlet to all Colonial officials, medical or scientific, accompanied by a circular letter from Mr. Chamberlain requesting that collections of mosquitoes and other flies which bite men and animals should be at once made and forwarded to the Natural History Museum.

I have the honour to request that Your Lordship will be pleased to move the Viceroy of India to issue similar instructions to British and native officials serving under the Indian Government, and to enclose a copy of the printed directions for collectors. I shall be glad to furnish Your Lordship with any number of this pamphlet that may be required for transmission abroad, on the understanding that the collections are to be sent here for study in the first instance, and that the first set of specimens shall be retained for the National Collection.

I have, etc.,

E. RAY LANKESTER.

To
The Right Honourable the Secretary of State for India.

R. & S. 2988.

INDIA OFFICE ;

The 11th January 1899.

SIR,

IN reply to your letter, dated the 20th December 1898, I am directed to say that Lord George Hamilton will send your proposals to the Government of India, who, he anticipates, will cordially co-operate in procuring specimens of mosquitoes and other flies which bite men and animals.

I am to ask that thirty copies of pamphlets for the guidance of mosquito collectors may be sent for transmission to the Government of India.

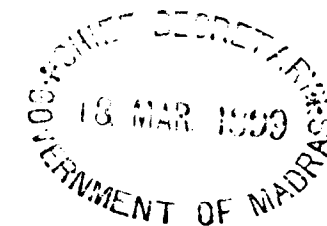
I am, Sir,

Your obedient Servant,

A. GODLEY.

To
Professor E. RAY LANKESTER, F.R.S.,
Natural History Museum, South Kensington.

869
No. 420 .



FROM

R. NATHAN, Esq.,
Under Secretary to the Government of India,

TO

The Chief Secretary to the Government of Madras.

Home Department.
Medical.

Calcutta, the 13th March 1899.

SIR,

I AM directed to forward a copy of a Despatch from Her Majesty's Secretary of State, No. 9 (Revenue), dated the 12th January 1899, and enclosures, regarding a request made by Professor Ray Lankester, Director of the Natural History Museum, that a collection may be made in India of mosquitoes and other flies that bite men or animals for the Natural History Museum.

2. I am to request that, *with the permission of the Governor in Council,* copies of the pamphlet entitled "How to collect Mosquitoes," may be forwarded to the *Surgeon General with the Government of Madras* and that he may be directed to cause two or three medical officers serving in *the Madras Presidency* to make collections of mosquitoes and other flies that bite men or animals in accordance with the instructions contained in the pamphlet. The collections should be forwarded direct *by the Surgeon General with the Government of Madras* to the Natural History Museum, London. Her Majesty's Secretary of State has been asked to send out some sets of the apparatus described on pages 1 and 2 of the pamphlet, which will be distributed when received.

I have the honour to be,

SIR,

Your most obedient Servant,

R. Nathan

Under Secretary to the Government of India.