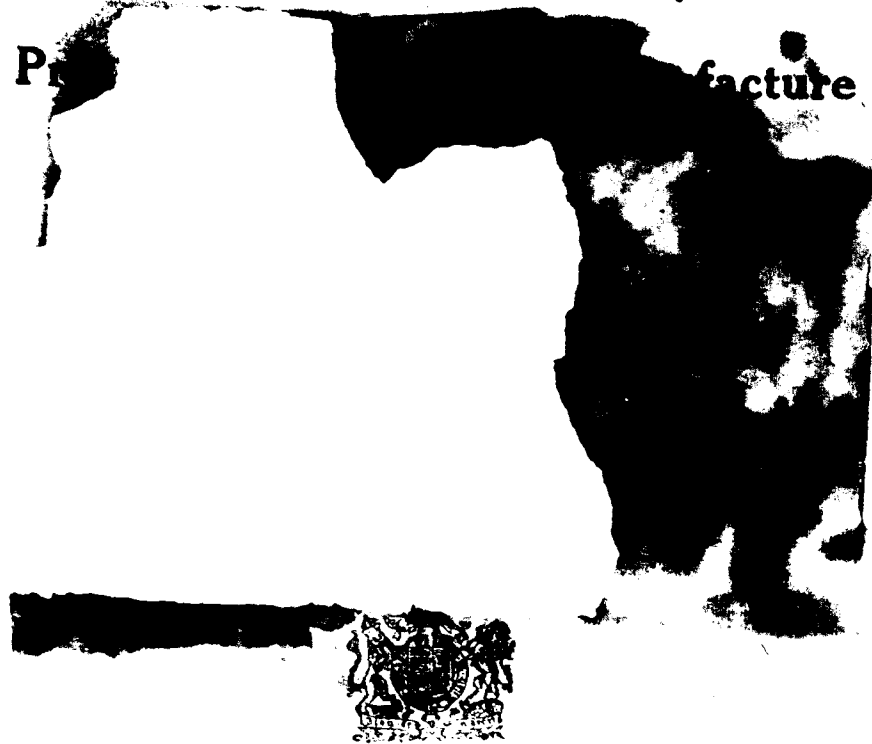


REPORT

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**Report of Secretary of the Drugs Manu-
facture Committee for the year ending
18th May 1920.**

1. The first meeting of the Drugs Manufacture Com-
mittee was held on 20th May 1919.

At that meeting the following decisions were
reached:—

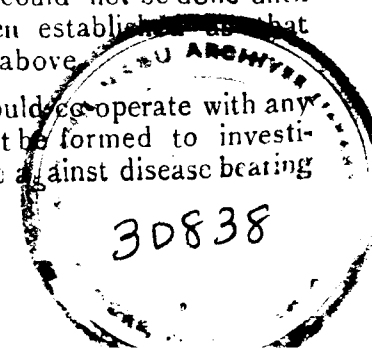
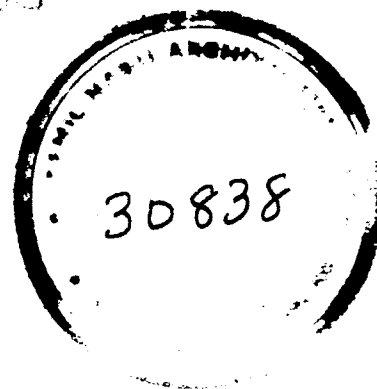
- (a) That the Committee should recommend to Government that the main investigations of the Committee should be carried out in Medical Store Depots, that a Research Laboratory should be established in the Medical Store Depot, Madras, and that the Director, Geological Survey of India, should be invited to be a member of the Committee. The Committee also placed on record their opinion that it would be necessary to establish an institute for the physiological standardisation of active principles of drugs.

That the Committee should recommend to Government the immediate addition to the personnel of the Botanical Survey of India of three Botanists with British University Degrees and three Indian Assistants to investigate the distribution of medicinal plants. The Committee recognised that until the suggested addition is made little advance could be made in utilizing the resources of India in medicinal plants.

- (c) The Committee recorded their opinion that the value of indigenous drugs not included in the British Pharmacopoeia should be investigated but recognised that this could not be done until such an institute had been established as that contemplated under (a) above.

- (d) That the Committee should co-operate with any organisation which might be formed to investigate preparations for use against disease bearing insects.

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- (e) That copies of the proceedings of the Committee should be forwarded to local Governments who should be asked to assist the Committee by supplying information likely to be valuable.
- (f) That it should be recommended to Government that the Committee should work under the Department of Revenue and Agriculture, that the Director-General, Indian Medical Service, should be asked to act as Chairman, and Lieutenant-Colonel H. Ross, I.M.S., to act as Secretary to the Committee and that an allowance should be granted to the clerk in the office of Director-General, Indian Medical Service, who should perform the clerical work of the Committee.

Results of
Committee's
Recommendations

2. The action taken up to date on these recommendations has been as follows :—

The Army Department have agreed that investigations should be carried out in the laboratories of Medical Store Depots and the research chemist in the Medical Store Depot, Madras, undertakes the investigation from the chemical standpoint of samples of plants, etc., submitted to him.

The Director, Geological Survey of India, has become a member of the Committee.

It is hoped that by the beginning of next year the Calcutta School of Tropical Medicine will be in a position to undertake the investigation of the therapeutic efficiency of drugs and the standardisation of their active principles.

Proposals are before Government for the establishment of a School of Tropical Medicine in Bombay. If these proposals mature it will be possible to have similar investigations carried out in Bombay.

As regards the proposed strengthening of the Botanical Survey, a Sub-Committee of the Board of Scientific Advice made specific recommendations to the Board in their report of 7th July last. We have just been informed that these recommendations are still under the consideration of the Revenue and Agriculture Department.

Local Governments and Administrations have been informed of the formation of the Committee and asked to assist by furnishing information likely to be useful.

Government have decided that the Committee should work under the Department of Revenue and Agriculture with the Director-General, Indian Medical Service, as Chairman and the Assistant Director-General, Indian Medical Service (Stores), as Secretary, both ex-officio.

An allowance has been sanctioned for the clerk who performs the necessary clerical duties of the Committee.

3. Some months were occupied subsequent to the meeting in May last in settling the rules under which the Committee should work and in December last the Government of India addressed all local Governments and Administrations informing them that the Committee would be instructed to submit to the Government of India all proposals for new expenditure and suggesting that the Committee should be allowed to communicate directly with all heads of Departments subordinate to local Governments. To this suggestion all local Governments have agreed. It has also been decided that the Committee may communicate directly with all heads of Departments of the Government of India and that a quorum of the Committee should consist of the Chairman, the Secretary and two other members.

Rules under
which the
Committee
works.

In February the Government of India decided to dissolve the Indigenous Drugs Committee and this Committee has taken over the reports and important files of the Committee which has been dissolved.

In February also with the approval of Government a "Press Communique" was issued describing the formation of the Committee and its functions.

On the 20th March the Secretaryship of the Committee was taken over by Lieutenant-Colonel A. A. Gibbs, I.M.S.

4. There has been considerable variety in the correspondence carried on during the year.

Work carried
out during
the year.

We have received the Annual Report of the Government Cinchona Plantations in Bengal for the year 1918-19 from which it appears that Ipecacuanha and Digitalis are successfully grown in considerable quantity at

We have had a long correspondence with the firm of Smith, Stanistreet and Company, Calcutta. This firm during the war took up the manufacture of numerous drugs from indigenous sources among them being Salts of Barium, Calcium, Magnesium, Potassium and Sodium. They state that the fall in the prices of several European products has made it impossible to continue the export trade which they had established during the war but they still maintain a successful trade both in India and abroad in Resin of Podophyllin, Caffeine and Strychnine. They refer to three difficulties in establishing an export trade from India—first careless collection and adulteration, second competition by Indian speculators (often quite ignorant of the articles in which they deal) forcing the price up to a point where export is impossible and third the cost of carriage over long journeys both by land and sea before the goods reach the European market.

They consider that in the case of many articles manufactured by them during the war it will be impossible to establish a permanent trade. They suggest that Government might help private enterprise by a duty on imported products which can be made in India, and that where Indian products can be sold at reasonable rates Government should not manufacture such in Medical Store Depots but should purchase from private firms. They were supplied with information regarding articles made in Factories of Medical Store Depots and of investigations carried out in the Laboratories of those Depots.

Orders were placed with the firm for 5 of their products including Belladonna roots and leaves on behalf of the Medical Store Department. In the case of other articles manufactured by the firm their prices were too high to justify the Director-General, Indian Medical Service, in placing orders with them. This firm has obtained a concession from the Kashmir State for the exportation of Podophyllin root which they state will permit them to supply all India's requirements and to

Applications for advice as to the cultivation of medicinal plants were received from Bollaram, Bhowanipur and Assam. Suitable advice was given in each instance. In the case of Bhowanipur the matter was referred to the Director, Botanical Survey. One of the applicants, Lieutenant Brian Hill of Upper Assam, has distributed seeds of nine varieties of medicinal plants, obtained from England, in the Naga Hills, Darjeeling, Shillong, Jaintia Hills, Cherrapunji and Surma Valley. He will report to the Committee the results of these experiments.

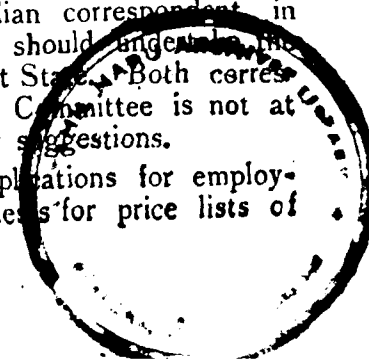
Advice was given in several cases as to the source from which medicinal plants could be obtained and as to the method of extraction of their active principles.

Two firms—the Mysore Pharmaceutical Co. and Messrs. Sein Obroi of Rawalpindi—furnished us with long lists of medicinal plants which they can supply. They were asked to send samples to the Medical Storekeeper to Government, Madras, for examination. The latter firm offered the services of their expert Botanist for purposes of exploration.

We are at present in communication with the Financial Secretary to the Maharaja of Sikkim regarding medicinal plants found in that State. The Financial Secretary enquires whether it would be possible for a commission to visit the State and advise regarding the development of its resources in plants, minerals and mineral waters.

Suggestions were received from the Civil Surgeon, Agra, that medicinal plants should be grown in disused "Company Baghs" under the supervision of the Botanical Department, and from an Indian correspondent in Travancore that the Committee should undertake the growth of medicinal plants in that State. Both correspondents were informed that the Committee is not at present in a position to adopt their suggestions.

There have been numerous applications for employment under the Committee, requests for price lists of



drugs sold by the Committee and requests that we should purchase drugs.

Captain MacCulloch, the research chemist of the Medical Store Depot, Madras, has examined samples of Glycerine made by two Indian firms, Hind Candle Co., Bombay and the North-West Soap Company, Calcutta, and has found that both are of high quality.

Mr. Howlett forwarded to the Committee samples of the root bark of the mona tree and of the stem bark of the karram tree, 2 substitutes for quinine used in the jungles of Bihar. Captain MacCulloch reported that examination of these showed that their active principles were apparently a glucoside and a gum respectively.

Lieutenant-Colonel Vaughan, I.M.S., of Ranchi has reported that he has successfully treated numerous cases of malaria with infusion and liquid extract made from the tree *Vitex Peduncularis* found in the Ranchi District. He suggests that he might be assisted in his investigations by the Indian Research Fund. In reply it was suggested that his investigations would more properly be assisted financially by this Committee. He was asked to make proposals on the subject which are still awaited. He was also requested to send samples of *Vitex* to the Medical Storekeeper to Government, Madras, for examination by Captain MacCulloch.

Two samples of Tincture of *Digitalis* prepared from Darjeeling leaf and from Ootacamund leaf by Messrs. Smith, Stanistreet and Company, were received for examination. Tested by Martindale's colorimetric test (a suggested substitute for the physiological test) both were reported by Captain MacCulloch to be of standard strength. Tests of the same tinctures by physiological methods carried out at the Pharmacological Laboratory, Cambridge, by arrangement with the Director-General of Stores, India Office, showed the Darjeeling tincture to be of good therapeutic value while the value of the Ootacamund tincture was doubtful.

We have also received a report of the examination at the Imperial Institute, London, of a sample of *Hyoscyamus Muticus* grown experimentally in the Madras Presidency which states that the percentage of alkaloid

recoverable is higher than that found formerly in wild Indian plants but less than that usually found in wild plants from Egypt and the Soudan.

At the suggestion of Major-General Edwards we have been in communication with the Assistant Conservator of Forests, Kashmir, regarding the medicinal plants which can be obtained there but particularly with regard to *Artemisia Maritima*. This is the source of the valuable drug Santonine. Supplies in the past have been obtained solely from Russian Turkestan, the collection of the flowers being a monopoly leased by the Russian Government. The Director-General of Stores, India Office, has lately reported that the drug is not procurable in English markets. Its recognition in India or in neighbouring countries would be a valuable discovery. Search is proceeding in Kashmir and Ladakh and also in Baluchistan. Messrs. Smith, Stanistreet and Company inform us that they have been investigating the subject but that the samples which they obtained differed so widely that they have been obliged to send them to London for examination.

Mr. Howlett has lately kindly undertaken to investigate the possibility of preparing Fly Spray from ingredients produced in India as the Medical Store Department has recently found it difficult to obtain the Japanese Camphor Oil which is used as a source of Saffrol in Fly Spray. For the purpose of his experiments Mr. Howlett has been supplied by the Medical Storekeeper to Government, Madras, with Thymene, a by-product in the preparation of Thymol.

An investigation has been in progress for a considerable period by the Imperial Agricultural Bacteriologist, Pusa, assisted by another officer into the possibility of producing by electrolytic methods a relatively stable hypochlorite solution to replace bleaching powder for sterilisation of drinking water. Reports of the progress made are encouraging and the final report is expected shortly.

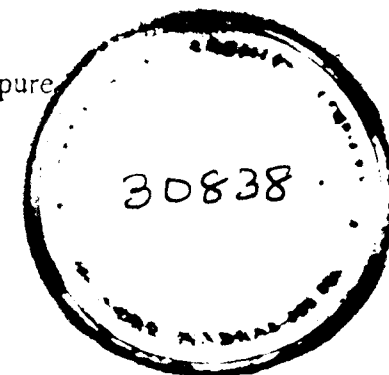
5. Although much remains to be done before the resources of India are fully utilised in the production of drugs, the following list of articles of which Government requirements are wholly or in part derived from Indian

Extent to which Indian products are utilised by Government.

sources shows that some progress has been made. Many of these have been made in India only since the beginning of the war and many are prepared in the Factories of Government Medical Store Depots:—

Absolute Alcohol.
 Acids, Hydrochloric, Nitric and Sulphuric.
 Alum.
 Ammonia.
 Argenti Nitras.
 Caffeine.
 Calcium Carbonate.
 „ Chloride.
 „ Phosphate.
 Castor Oil.
 Collodion.
 French chalk.
 Glucose.
 Keratine solution.
 Lysol.
 Magnesium Carbonate.
 „ Sulphate.
 Morphia.
 Oleic Acid.
 Oils of Aniseed, Dill, Cloves, Carraway, Cedarwood, Chaulmoogra, Croton, Sandal wood, Theobroma, Eucalyptus and Turpentine.
 Pharmaceutical preparations of Aloes, Asafoetida, Belladonna, Benzoin, Cinchona, Colocynthis, Digitalis, Hyoscyamus, Indian hemp, Liquorice, Nux Vomica, Opium and Squills.
 Plaster of Paris.
 Potassium Carbonate.
 Prepared chalk,

Pyroxylin.
 Rectified Spirit.
 Soft Soap.
 Sodium Arsenite.
 „ Carbonate.
 „ Chloride, chemically pure.
 „ Nitrate.
 „ Phosphate.
 „ Sulphate.
 Starch.
 Sulphate of iron.
 Talc.
 Tannic Acid.
 Thymol.



6. Until Government sanction the additions recommended to the personnel of the Botanical Survey and until the maturation of the schemes for the Schools of Tropical Medicine at Calcutta and Bombay it cannot be expected that this Committee shall make much systematic progress. Prospects of progress in the future.

When the Schools of Tropical Medicine are fully equipped and staffed it will be for consideration whether the investigation of drugs from the purely chemical standpoint should not be handed over to those institutions leaving to the Chemists of Government Medical Store Depots the extraction in bulk of the active principles already approved and standardised by the Pharmacologists and Chemists of the two schools.

A. A. GIBBS, *Lieut.-Col., I. M. S.,*
Secretary, Drugs Manufacture Committee.

W. R. EDWARDS, *Major-Genl., I. M. S.,*

SIMLA: } *Chairman, Drugs Manufacture Committee.*
The 15th May 1920.