REPORT OF THE KING INSTITUTE OF PREVENTIVE MEDICINE, GUINDY

FOR THE PERIOD
1st APRIL 1960 TO 31st MARCH 1961

BY
DR. S. GOVINDARAJAN, M.D., D.B. (Manchester)
Director, King Institute, Guindy

THE CONTROLLER OF STATIONERY AND
NG, MADRAS, ON BEHALF OF THE
GOVERNMENT OF MADRAS
1963

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REPORT OF THE KING INSTITUTE OF PREVENTIVE MEDICINE, GUINDY, MADRAS-32 FOR THE PERIOD 1st APRIL 1960 TO 31st MARCH 1961.

STAFF

GAZETTED OFFICERS

Director

Dr. S. Govindarajan, M.D., D.B. (Manchester).

Assistant Directors

1 Dr. N. Sundararajan, M.B.B.S.
2 Dr. C. Venkateswara Rao, M.B.B.S., L.O.
3 Dr. N. B. Kuppurajan, M.D.
4 Dr. S. Gnanadesikan, M.D.
5 Dr. (Srimathi) Ambujamma Natarajan, B.A., M.D

Assistant Surgeons

1 Dr. P. K. Menon, M.B.B.S.
2 Dr. (Srimathi) Anna Raju, M.B.B.S.
3 Dr. R. Seshayyan, M.B.B.S.
4 Dr. P. Ramaswamy, L.M.P.
5 Dr. K. S. Ramaswamy, M.B.B.S., L.T.M.
6 Dr K. S. Balasubramaniam, L.M.P.
7 Dr. (Srimathi) R. F. Sargunar, M.B.B.S.
8 Dr. A. K. Muthu, B.SC. (Hons), M.B.B.S.
9 Dr. K. V. Murthy, M.B.B.S
10 Dr (Kumari) K. Thara Bai, M.B.B.S.
11 Dr. (Srimathi) I. Chandraprahlad, M.B.B.S.
12 Dr. C. S. Balaram, M.B.B.S.
13 Dr. K. Thirunavukarasu, M.B.B.S.
14 Dr. S. Ramanathan, B.SC., M.B.B.S.
15 (a) Dr. (Srimathi) Leela Krishna Rao, M.B.B.S., up to 17th April 1960.
(b) Dr. S. M. Munirathnam Chetty, M.B.B.S. from 8th April 1960.
16 Dr. K. Padmanabhan, B.SC., M.B.B.S., from 8th April 1960 only.
17 Dr. K. Samuel Devaraj, M.B.B.S., up to 18th April 1960 only.
18 Dr G. N. V. Krishnan, L.M.P., L.P.H., D.L.S.C. up to 26th May 1960 only.
19 Vacant
20 Vacant.

Lecturer, School of Laboratory Technology

Dr. Dinker Babu Rao, M.B.B.S.

Senior Chemical Assistant (Solutions' Section)

Sri V. R. Srinivasan, M.A.

Chemical Assistant (Drugs)

C. S. Raghunathan B.SC. (Hons).

Bio-chemist

Sri T. R. Krishnaswamy, M.A., M.SC.

Lay Secretary & Treasurer, Grade I

Sri G. T. Harimurthi, M.A., up to 25th September 1960.
Sri K. R. Sitharama Rao, from 26th September 1960.

NON-GAZETTED OFFICERS

Veterinary Assistant Surgeons

1 Sri H. C. Samanna, B.V.SC., up to 13th February 1961.
2 Sri S. A. Joseph, B.V.SC., from 14th February 1961.
3 Sri N. Rajagopalan, I.M.V.C., retired and re-employed from 8th February 1960.
4 Sri C. Jayaraman, G.M.V.C., retired and re-employed from 24th March 1960 to 28th February 1961 and from 23rd March 1961.

SOLUTIONS SECTION.

Junior Chemical Assistants

1 Sri T. Sethuraman, B.SC.
2 Sri K. T. Gopalakrishnan, B.SC.
3 Sri R. Gopalakrishnan, B.SC.

DEPARTMENT OF ANTITOXIN

Junior Chemical Assistants

1 Sri S. Srinivasaraghavan, B.SC. (Chemistry) and B.SC. (Physics).
2 Kumari R. Radha, B.SC.

VACCINE LYMPH SECTION

Junior Chemical Assistant

Sri P. Munuswamy Raju.

SCHOOL OF LABORATORY TECHNOLOGY

Laboratory Assistant

Sri V. K. Satyanarayanan, B.SC.

OFFICE STAFF.

Manager .. .. Sri K. Ramiah.
Librarian .. .. Srimathi S. Sundaramma, B.SC., Dip. in Library Science.

Permanent.

Accountant	1
Cashier	1
Storekeeper	1
Upper Division Clerks	3
Lower Division Clerks	18
Typists	4
Attenders	8

Temporary.

Commercial Accountant	1
Additional Storekeeper	1
Upper Division Clerks	2
Typists	2 (1 post not filled).

LABORATORY STAFF.

Permanent.

Technical Assistant	1
Technicians	18
Laboratory Attendants, I Grade	26
Laboratory Attendants, II Grade	51
Peons	77
Technical Assistants	2 (1 post not yet filled).

Temporary.

Technicians	3
Technician, Grade II	21
Laboratory Attendant, II Grade	3
Peons	4

MISCELLANEOUS STAFF.

Photographer Assistant	1
Overseer	1
Deputy Overseer	1
Assistant Overseers	5
Mechanic	1
Electrician	1
Refrigeration Mechanic	1
Pharmacist	1

VISITORS

The Institute was honoured by the visits of :—

1 Dr. R. N. Ghosh, Associate Professor of Microbiology, All-India Institute of Hygiene and Public Health.

2 Dr. Gordon Meikle John, Professor of Medicine, University of Colorado, United States of America.

3 Dr. Patnaik, Assistant Director of D.G.H.S., New Delhi.

4 Dr. B. V. Sundarababu, Health Officer, Corporation of Madras.

5 Dr. A. Loylabadi, Iran.

6 Dr. S. Tirandaz, Iran.

7 Dr. U. Krishna Rao, Speaker, Madras Legislative Assembly.

8 Dr. M. Radovanovic, Regional Advisor on communicable diseases of World Health Organisation Searo, New Delhi.

9 Dr. L. G. Edde, World Health Organisation Area representative for India.

10 Dr. W. H. Bohne, Director of Division of communicable diseases, World Health Organisation Headquarters, Geneva.

11 Dr. K. Sivagnanam Ratnam, Superintendent, Health Services, Ceylon.

12 Major, Arnold M. Reeve, M.D., M.P.H., Assistant Army Attache.

FINANCE.

The total expenditure for the year amounted to Rs. 18,66,030 including the amount of Rs. 65,365 borne by other departments on this Institute account [See statement (1) under table I].

The total cash receipts by way of sale proceeds of sera, vaccines and collection of payments for services rendered, etc., amounted to Rs. 1,80,939 [See statement (2).]

The difference between the total expenditure and total cash receipts, viz., Rs. 16,85.091, represents the net cost on this Institute debitable to State Revenue.

Most of the Biological products manufactured in this Institute such as Vaccine Lymph, Bacterial Vaccines, Sera, Sterile solutions, etc., are issued free to Government Departments. If the above free supplies and the services rendered by this Institute were to be charged for according to the approved rates, the total anticipated receipts shown in statement 3 of Table I would amount to Rs. 38,15,436. The difference between the estimated receipts and the estimated expenditure, i.e., Rs. 21,30,345 (i.e., Rs. 38,15,436 + Rs. 1,80,939—Rs. 18,66,030=Rs. 21,30,345), represents the approximate net profit.

Further a sum of Rs. 20,526 and Rs. 2,776 (i.e., Rs. 23,302), has been spent towards the purchase and supplies of instruments and chemicals to the Water Analysis and Government Analyst Departments (now under the administrative control of the Director of Public Health), respectively in addition to the usual services rendered.

If this amount is also to be taken into account the total net profit of the Institute would be Rs. 21.53,647 (i.e., Rs. 21,30,345 plus Rs. 23,302 which is equal to Rs. 21,53,647).

IMPROVEMENTS

(1) *Additional storeroom building.*—The construction of the additional storeroom at a cost of Rs. 90,000, is nearing completion and will be available for occupation early.

(2) *Stables for 100 horses.*—The construction of 100 horses' stables at a cost of Rs. 4,90,000, is nearing completion. It will be possible to manufacture larger quantities of serum and other Biological products than what is manufactured at present when the construction of the horses' stables is completed.

(3) *Training School for Technicians.*—The construction of a separate building for giving training for Laboratory Technicians sanctioned by the Government in G.O. Ms. No. 2087, Health, dated 2nd July 1958, at a cost of Rs. 1.50 lakhs is under progress.

(4) *Additional Boiler room.*—Government in their order No. 389, Public Works Department, dated 5th February 1959, sanctioned a sum of Rs. 8,000 for the construction of a room for housing the additional boiler. The Public Works Department has taken up the construction.

(5) *Transfer of the old B.C.G. Laboratory building to King Institute.*—The old B.C.G. Laboratory buildings were taken over from the Government of India on payment of a compensation of Rs. 1,16,816 vide G.O. Ms. No. 1839, Health, dated 4th June 1958. The Public Works department authorities were addressed to execute repairs to the buildings especially to the air-conditioning plant and cold storage room. The Public Works Department is engaged in executing the repairs.

(6) *Provision of an incinerator.*—The Public Works Department has been addressed to provide a new incinerator sanctioned by Government at a cost of Rs. 1,400.

(7) *Installation of an automatic chlorinating unit.*—An automatic chlorinating unit at a cost of Rs. 1,420, has been provided by the Public Works Department at the water pumping house.

(8) *Construction of two shaving sheds for calves.*—The proposal for the construction of two shaving sheds at a cost of Rs. 3,500, was approved by the Director of Medical Services, Madras. The Public Works Department was addressed to take up the work on hand immediately.

(9) *Providing rooms for second and third-calves sheds.*—The Public Works Department was addressed to take up the construction of providing rooms for second and third calves sheds, which was already sanctioned by the Director of Medical Services at a cost of Rs. 1,980.

(10) *Improvements to Vaccine Lymph Department for prevention of foot and mouth diseases.*—The following works have been sanctioned by the Government for the improvements to Vaccine Lymph Department of this Institute as suggested by the Committee constituted by the Government to go into the causes of occurrence of Foot and Mouth Diseases amongst the calves used for the manufacture of vaccine lymph and to suggest ways and means for its prevention :—

(a) *Construction of four quarantine sheds for calves and first-floor over Overseer's Block.*—Government have sanctioned an expenditure of

Rs. 1,43,500 for the construction of four calves sheds and a first floor over the Overseer's block. The Public Works Department has been addressed to take the work on hand immediately. The construction of the first floor has been commenced by the Public Works Department.

(b) *Construction of a compound wall around King Institute, Guindy.*—The construction of a compound wall with wire fencing at a cost of Rs. 21,500 sanctioned by the Government in G.O. Ms. No. 2358, Public Works Department, dated 19th August 1960 has been taken up by the Public Works Department and the construction is under progress.

(c) *Alternate routes for the Animal drawn vehicles.*—The work of providing alternate routes to animal drawn vehicles has been sanctioned by Government in G.O. Ms. No. 388, Public Works Department, dated 5th February 1959 at an expenditure of Rs. 9,700. The Public Works Department has been addressed to take up the work on hand.

(d) *Enclosing the existing calf sheds and provision of weld mesh or expanded metal so as to prevent infection through birds, squirrels, etc., and in the case of vaccinated calf sheds for provision of wire mesh which will be proof against flies.*—Government have sanctioned in their order Ms. No. 178, Public Works Department, dated 16th January 1959 a sum of Rs. 12,000 for the purpose mentioned above. The Public Works Department has been addressed to take the work on hand.

GENERAL REVIEW

I. Water Analysis Department and Government Analyst Department

The departments of Water Analysis and the Government Analyst which were separated from the King Institute, Guindy (Medical Department) in G.O. Ms. No. 2660, Health, dated 25th August 1960 and transferred to the Public Health Department continue to function under the control of the Director of Public Health, Madras. This Institute would continue to render all services to these two departments as before, up to 28th February 1962 as per G.O. Ms. No. 1218, Health, dated 26th April 1960.

II. Vaccine Lymph Section

The production of vaccine lymph was maintained at a satisfactory level. During the period under report 148,875 ml. of glycerniated vaccine lymph in a dilution of one in three was produced.

4,686,990 doses of vaccine lymph were supplied to the field for routine vaccination and a quantity of 75,000 doses was supplied to Kerala State. All the batches of vaccine lymph supplied to the field were satisfactory at the time of issue in conformity with the standards prescribed.

It is during the period under report that the Pilot Project of Small-Pox Eradication Programme was initiated in Chingleput district from 1st September 1960. A total quantity of 851,140 doses of vaccine lymph in a dilution of one in five was made to meet the demand of this project.

The Assistant Director Dr. (Mrs.) A. Natarajan was deputed to United Kingdom to undergo training in the manufacture of freeze-dried Small-Pox Vaccine at Lister Institute and Mr. C. S. Fallon, the Refigeration Mechanic to Edwards High Vacuum, Limited, Crawley Sussex (United Kingdom) for training in operation and maintenance of Freeze drying plant, machinery, etc.

III. Diagnostic Department

(a) *Clinical section.*—This section had examined and reported on 14,915 specimens received for Bacteriological examination. The incidence of Cholera was very low this year and only one case was reported positive for the whole year for this State. A Bacteriological unit was sent to the North Arcot and South Arcot districts to investigate the causes of occurrence of the cases of diarrhoea in those districts during the last six months.

(b) *Serology section.*—Kahn, V.D.R.L. and Wassermann reaction tests on blood specimens, Langes and Wassermann reaction tests on cerebrospinal fluid specimens and Paul Bunnel test on blood specimens received were carried out in this section. The manufacture of Antigens for Kahn and Wassermann tests was also carried out.

(c) *Media room.*—This section had continued to manufacture and supply media to the various sections of this institute and also to other public health laboratories, hospitals, and private practitioners.

(d) *Therapeutic vaccine section.*—This section had continued to manufacture and supply the various kinds of therapeutic vaccines including autovaccine, diagnostic sera and Bacillary emulsions. It also maintained type cultures and supplied on request to the other research institutions in India—

(e) *Prophylactic vaccine section.*—This section had manufactured the anti-cholera and T.A.B. vaccines and met the requirements of the State. In addition, 10 lakhs doses of anti-cholera vaccine were manufactured and sold to the Director of Health Services, Lucknow. Plague vaccine was obtained from the Haffkine Institute, Bombay and stocked here for distribution to the Public Health Staff.

IV. Blood Bank Department.

Central Blood Bank of the King Institute is the training centre for Medical Officers in Blood Transfusion and Resuscitation work. During the year under report its activities have increased considerably. A total number of twenty-seven medical officers from the Madras State, Southern Railways and the Government of Mysore were trained in Blood Bank work.

Visitors from various colleges and schools were entertained with lecture-demonstrations pertaining to sectional activities.

The Blood Bank laboratory is carrying out hæmatoserological tests concerning blood transfusion reactions, Rh tests, plasma processing and preparation of diagnostic blood grouping sera. Wet plasma and diagnostic group sera are supplied to blood blanks in Madras, Kerala, Mysore, etc., and also to private institutions. Essential standard equipments are supplied to State blood banks from the Central Blood Bank Supplies, King Institute, Guindy.

The Mobile Blood Bank Team of the Institute was deputed to collect blood from the inmates of the district jails in the State. The team was also directed to participate in exhibitions for carrying out propaganda work in order to popularise blood donations. Charts, models, etc., of blood bank propaganda value have been supplied to various blood banks of the state to enable them to carry out propaganda work. Research work is also carried out in addition to the routine work of the section.

V. Department of Biological Control.

(a) *Drugs section.*—The department continued to function as in the previous years as the Control Laboratory for testing all the Biologicals and injectables manufactured in the Institute and also as the State Laboratory for the analysis of Biologicals and Special products under the provisions of the Drugs Act. The steady increase in the work of the department, both in quantity and variety, noticeable over the past five years was maintained in the year under report also. Five thousand eight hundred and seventy-six specimens were tested during the year involving the performance of 8,345 tests. Corresponding figures for the year 1959–60 were respectively 2,719 and 5,304.

In brief, the usual work of the department included the routine performance of sterility, pyrogen and toxicity tests; the assay of Anti-biotics and Sera for potency; Chemical analysis of all products where necessary; the biological assay of preparations like Tincture Digitalis, Pituitary extract, Insulin, etc.

Under the head of Research, studies on the relative virulence of the Inaba and Ogawa strains of V. Cholera were conducted by means of Mice Virulence Tests.

Anti-biotic Sensitivity Tests on cultures prepared from specimens sent by hospitals and private practitioners were carried out as usual, the number of strains of organisms received during the year being 26.

The male frog test for pregnancy, continued to be an important and daily activity of the department. One thousand five hundred and forty-nine specimens were received under this heading during the year. A good number of specimens were also received from the Private Practitioners.

The department is working under the condition of extreme congestion and requires relief.

(*b*) *Sterile solutions section.*—The department has continued the manufacture of Sterile Solutions in ampoules as well as bottles and the supplies of the same to state hospitals, local fund, municipal and E.S.I. Hospitals, etc. It has not been possible to meet the demands of Hospitals in full for want of adequate facilities like space, staff and equipment. However, efforts have been made to supply as much as possible consistent with the available stocks of the various solutions.

The manufacture of Quinine Di-hydrochloride ampoules has been continued and supplies of the same have been made to the Director, Cinchona Department.

In addition to the above work, the department has also prepared and supplied various stains for bacteriological investigations and various solutions to other sections in the Institute. It has also carried out tests for neutrality of glass on the various samples received from the Institute Stores.

VI. Department of Anti-toxin.

The scare of South African horse disease epidemic in India necessitated immunisation of the King Institute horses against the dreadful disease. Consequently the vaccinated horses had to be given rest for three months. This has affected the output of the department during this period. Efforts are being made to make good this loss as far as possible.

Stables for King Institute horses which are now housed at the different parts of the city will shortly be centralised at the Institute. The stables are nearing completion and are likely to be handed over shortly.

Though there has been diminished production of toxin and toxoids during this year, there is no reduction in the manufacture of sera. The number of standardizations carried out is high. Samples received from various Hospitals for evidence of Cl. tetani were the highest this year and the positives reported also are the maximum on record.

A few special investigations undertaken earlier were continued and preliminary conclusions have been drawn. Further work is in progress.

Animal Section.—The Animal Section is functioning satisfactorily though understaffed. The stock position and maintenance is good regarding guinea pigs, white mice and white rats. None of these animals is purchased and the entire demands of the Institute are met by this section. The position of rabbits is still posing a problem and is receiving special attention. A large number of rabbits are being purchased now to meet the demands of the Institute and breeding has not been satisfactory.

Proposal for the expansion of this Section has been put up.

VII. Preventive Inoculation Centre.

There is a preventive inoculation centre attached to First Aid Room where preventive inoculations are given for the international travellers and the staff and their families.

VIII. Educational.

(*a*) *Training.*—Twenty-seven medical officers were given training in Blood Bank and Resuscitation work. One medical officer was given training in Cholera vaccine manufacture and another in the manufacture of Vaccine lymph.

(*b*) *Laboratory Technicians Course.*—Twelve candidates secured the certificate for Laboratory Technicians.

(*c*) *Educational visits.*—One hundred and two batches of students of medical and vaterinary and other colleges and high schools have been received at the Institute and taken round and given instructions.

(*d*) *Library.*—The Institute has got a very well equipped Library containing over 14,000 volumes of books and bound volumes of periodicals on Medical and allied subjects like Medicine, Bacteriology, Virology, Parasitology, Pathology, Haematology, Immunology, Public Health, Water, Sewage and Industrial wastes, Micro-biology, Food, Pharmacology, Analytical Chemistry, Bio-chemistry, Biology, Zoology, Botany, Vetetrinary Science, folder and touring maps for all the districts and taluks, etc.

It is one of the few specialised medical libraries in India. The vast literature available here is made use of not only by the staff and research workers of this Institute but also by the staff of the Government Analyst Department, Water Analysis Department, B.C.G. Laboratory, the staff and Chemistry, Bio-chemistry, Biology, Zoology, Botany, Veterinary Science, ing to various other Institutions in and outside Madras.

Better accommodation and more congenial atmosphere for the users will augment the value of this library for the local readers.

I. VACCINE LYMPH SECTION.

I. *Charge.*—

Assistant Director.—Dr. (Mrs.) Ambujamma Natarajan, B.A., M.D. from 1st April 1960 to 14th February 1961.

Assistant Director :—Dr. S. Gnanadesikan, M.D., from 14th February 1961 to 31st March 1961.

Medical Officers.

1. Dr. K. S. Balasubramaniam, L.M.P.

2. (*a*) Dr. P. K. Menon, M.B.B.S., from 1st April 1960 to 3rd July 1960.

(*b*) Dr. K. Thirunavukkarasu, M.B.B.S., from 4th July 1960 to 5th October 1960.

(*c*) Dr. K. Tara Bai ,M.B.B.S., from 6th October 1960 to 1st December 1960.

(*d*) Dr. S. M. Muniratnam Chetty, M.B.B.S., from 2nd December 1960 to 15th January 1961.

(*e*) Dr. K. Padmanabhan, M.B.B.S., from 16th January 1961 to 31st March 1961.

Staff.—During the year under report, Dr. (Mrs.) Ambujamma Natarajan was in charge of the Department. On 14th February 1961, she left for the United Kingdom on deputation for training at the Lister Institute, Elstree in Freeze drying of Vaccine Lymph. During that period, Dr. S. Gnanadesikan, Assistant Director, Biological Standardization looked after the duties, in addition to his own.

II. *Manufacture and issue of Vaccine Lymph.*—At the commencement of the year under report, the stock position of glycerinated vaccine lymph had been quite satisfactory, viz., 158,030 ml. of 1 in 3 dilution. Cow calves, male buffalo-calves and female buffalo-calves were used as vaccinifers, and the average yield of crude vaccinial pulp per calf was 30.1 gms., 40.6 gms., and 45.1 gms. respectively. One lakh, forty-eight thousand eight-hundred and seventy-five ml. of glycerinated vaccine lymph in a dilution of 1 in 3 were produced during the year.

During this period, between the middle of October and the end of December 1960, there had been frequent interruptions to the routine production, owing to the incidence of deaths among the buffalo calves. The causes of death had been of varied etiology such as Enteritis, Theilariasis, Haemorrhagic Septicaemia, etc. In spite of these handicaps, the production was satisfactory.

A stock of 8,095 ml. of 1 in 5 dilution of glycerinated vaccine held on hand proved unsatisfactory for issue to the field on repeated tests and hence was rejected and deducted from stock.

During the period, a total quantity of 102,650 ml. of 1 in 3 dilution has been expended, leaving a closing balance of 203,705 ml.

Treatment of the vaccine lymph for purification had been mainly with ether and the additional treatment with Penicillin and Streptomycin was adopted for such of the batches that do not come up to the standard of purity, 142 batches were treated with ether alone and 34 cups with the addition of anti-biotics after etherisation.

The usual tests in conformity with the standards prescribed for purity, toxicity and potency were performed for all the batches of vaccine and issued to the field only after the tests proved satisfactory. A higher potency of the vaccine at the time of issue is ensured by pooling batches of higher titres (1 in 6,000) with those of the minimum standard of potency of 1 in 1,500 for distribution into vials and supplying the field.

Thus, in all the total quantity of Vaccine Lymph issued to the field was as follows :—

(*a*) Routine supplies in a dilution of 1 in 7.

	Doses.
(1) Madras State	4,686,970
(2) Kerala State	75,000
Total	4,761,990

(*b*) Supplies for the Pilot Project for the small-pox eradication in a dilution of 1 in 5.

(1) Chingleput District	786,390
(2) Corporation of Madras	64,750
Total	851,140
Grand total	56,13,130

The individual batches were tested in the observation range before they were issued for use in the field. The figures for the case and insertion success rates for 3,289 primary vaccinations done in the observation range during the year had been 94.6 per cent and 79.9 per cent respectively.

The supply of vaccine had been made in a dilution of 1 in 7 as usual throughout the State till 1st September 1960 till the pilot project of the small-pox eradication programme was commenced in Chingleput district and Madras Corporation. The supply of vaccine lymph for the mass vaccination under the Pilot Project Scheme had been in 1 in 5 dilution. A total quantity of 851,140 doses of vaccine lymph in a dilution of 1 in 5 was supplied to meet the demand under the scheme. Of this 699,960 doses were supplied for the special staff conducting the vaccination according to scheduled programme range-war, 86,430 doses to other ranges of Chingleput district for their routine work by post and 64,750 doses for the Madras Corporation. More intensive programme of the Scheme has been taken up in the Madras Corporation from the last week of March 1961.

A total quantity of 4,686,990 doses of vaccine lymph in a dilution of 1 in 7 were made to the State during the calendar year. A supply of 75,000 doses was made to Kerala State during this period.

III. *Analysis of the result statements received from the Districts, Municipalities, Corporation of Madras, etc.,*

(*a*) *Total vaccinations and types* :—(*Table II*). Returns have been received in respect of 2,770,944 vaccinations of which 18.1 per cent was primary, 0.3 per cent secondary, and 81.6 per cent re-vaccinations.

(b) *Primary vaccinations* :—(*Tables II and III*). Returns have been received for 405, 133 primary vaccinations with the following case and insertion success rates, in comparison with similar figures for the last year.

	1959-		1960-	
	Case success rate. (1)	Insertion success rate. (2)	Case success rate. (3)	Insertion success rate. (4)
	PER CENT.	PER CENT.	PER CENT.	PER CENT.
Madras Corporation	99·9	91·2	10	93·9
Municipalities	95·6	84·5	98·3	90·6
Districts	86·2	64·7	91·4	75·1
State as a whole	89·3	81·2	94·2	81·3

(c) *Re-vaccinations* :—(*Tables II and III*).—Returns for 1,610,700 re-vaccinations have been received with the following case success rate.

	1959 Case success rate.	1960 Case success rate.
	PER CENT.	PER CENT.
Madras Corporation	5·3	4·8
Municipalities	10·3	10·4
Districts	15·2	16·1
State as a whole	13·1	11·7

IV. *Lymph unaccounted for* (*Tables II and III*).—Out of a total quantity of 4,686,990 does of vaccine supplied 3,124,104 remain unaccounted for. It will be seen from the table that receipt returns from the field till the end of March 1961 for the vaccine supplied till the end of December 1960, had been poor. No returns have been received from Tirunelveli district and practically nil from Coimbatore, Thanjavur and Kanyakumari districts.

Special Features.

I. *Research*.—(a) The assessment of yield by scalpel, three and four bladed lancets 1 m.m. depth was continued during this year and the observations made during the previous year were confirmed. The yield in the case of buffalo-calves was definitely more with the three and four bladed lancets than with scalpel technique. There was no appreciable difference in the yield in the case of cow calves between the different instruments. It is intended to investigate the cause for this difference by using a modified lancet and observing the results.

(b) Assessment of potency of the vaccine after exposure to prevailing room conditions for one week.

With a view to determine whether the vaccine lymph issued to the field continued to give successful takes after exposure to room temperature for a week, samples from the batches issued to the field were exposed to room temperature for one week and then examined by rotary insertions on the calves as is being carried out in the field. Four insertions were made with the vaccine as issued to the field.

It was observed that the vaccine gave an insertion success rate of nearly 100 per cent. During the next year, it is intended to actually estimate the variation in potency, after exposure to room temperature.

II. *Smallpox Eradication Programme*—(a) *Conference*.—In connection with the small-pox eradication programmes both general and pilot projects that are to be taken up in India, from 1960 onwards, a conference of the heads of the Institutes in India, that are engaged in the manufacture of vaccine lymph was held at the King Institute, Guindy, from 15th to 17th April, 1960. Sri N. R. Pillai, I.C.S., Secretary, Ministry of Health, New Delhi, Lt. Col. Srinivasan, Director-General of Health Services, New Delhi, Dr. K. V. Venkataraman, Special Officer in-charge of Eradication Programme and other Government of India officials attended the meeting.

Sri N. R. Pillai, I.C.S. initiated the proceedings of the meeting. Various problems that will have to be tackled before increased production could be ensured to meet the demands of the programme were discussed on the first day. On the subsequent days, the technical aspects of production were taken up and Dr. K. V. Venkataraman conducted the proceedings. The committee was of the opinion, that it was advisable to adopt an uniform standard with regard to purification process, bacteriological purity, dilution and potency tests in all laboratories in India during the programme period, as this would be of considerable value in assessing the work of the programme in different parts of the country. It was agreed that 1 in 5 dilution was to be used for the programme. The use of anti-biotics was to be avoided as far as possible. The potency test by the Egg technique was commended.

(b) *Pilot Project*.—The pilot project of the Eradication scheme was launched in Chingleput district, the population to be covered being two millions. The programme commenced on 1st September 1960 and was completed in March 1961. A total of 6,99,960 doses of 1 in 5 dilution of vaccine lymph was supplied for the project alone, apart from 86,430 doses of vaccine lymph in 1 in 5 dilution supplied to the Chingleput range during this period. The purification process for the batches of vaccine lymph supplied to the pilot project was only treatment with ether and the results of both primary and revaccinations were very satisfactory.

A tabular statement regarding the progresss of small-pox pilot project is given below :—

SMALL POX PILOT PROJECT.

Progress report upto 28th February 1961.

—	Progressive total of vaccinated. (1)	Progressive total verified. (2)	Progressive total successful. (3)	Percentage of successes (progress). (4)
				PER CENT.
Chingleput District—				
Primary vaccination	57,085	23,432	22,809	97·3
Re vaccination	998,145	324,636	113,445	34·9
Total ..	1,055,230	348,068	136,254	..

A total of 57,085 primary and 998,145 revaccinations were performed during the Pilot Programme period. From the statement from the field, it is observed that the success rate in primary vaccination ranged from 96·7 per cent to 99·9 per cent and in revaccination from 29·8 per cent to 51.4 per cent the overall average being 97 per cent and 35 per cent. The vaccine was supplied to the main storage depots in bi-weekly lots in ice boxes, all care being taken to see that the potency of the vaccine was maintained at its maximum. No untoward reactions were reported during this mass vaccination programme.

The Corporation of Madras also took up mass vaccination in the city and 64,750 doses of 1 in 5 were supplied. Again from the last week of March 1961, the programme has started in the city.

Additional technical staff was sanctioned for meeting the demands of this pilot project and will have to be continued till the mass vaccination in the city is completed.

(*c*) *General Programme for Madras State.*—The preliminaries in connection with increased production to meet the requirements of Madras State like procurement of equipment, construction of Additional buildings and sanction of special staff have been taken up and are expected to be finalised early this year.

III. Freeze-dried Small Pox vaccine.—King Institute has been chosen as one of the Centres for the manufacture of Freeze-dried Vaccine in India.

In connection with the manufacture, Dr. (Mrs.) Ambujamma Natarajan, Assistant Director, Vaccine Lymph section was deputed to the Lister Institute, Elstree, United Kingdom and to Edwards High Vacuum Limited, Crawley, Sussex, United Kingdom, for periods of four weeks and two weeks respectively, to be trained in the process of the manufacture of Freeze-dried Small Pox Vaccine and also to learn the principles of Freeze drying and maintenance of the equipment. She left for the United Kingdom on 14th February 1961 and her training was completed on 30th March 1961.

Mr. Fallon, the Refrigeration mechanic of the Institute has been deputed to Edwards High Vacuum Limited, Crawley, Sussex for a period of 6 weeks to learn the principles of refrigeration and drying as well as the maintenance of the equipments used in the process. He left India on 14th March 1961 and is at present undergoing training at Edwards High Vacuum.

During this period, Dr. C. Kondapi Unicef field representative and Dr. M. Radovanovic, Regional Adviser Communicable diseases, World Health Organisation, New Delhi, visited the Institute to discuss and get to know the arrangements for the installation of the Unicef equipment. They inspected the old B.C.G. buildings that are to be temporarily used for housing the equipment and starting the programme and also examined the proposals for a new building. As the preliminaries for the manufacture was to be taken up in March 1961, and the routine production in August 1961, they felt that the buildings need urgent attention.

IV. Training of officers.—Dr. P. K. Jain, Ranchi Vaccine Institute, was deputed to King Institute by the Bihar Government to undergo training in the manufacture of vaccine lymph. He was with us for a period of two months from 20th October 1960.

V. Buildings.—Work in connection with the revival of the cold room and the repair of the air conditioned room in the old B.C.G. building are proceeding.

Proposals have been put up for the construction of a new block for the manufacture of Freeze-dried vaccine parallel to the existing vaccine lymph block on its southern face. A joint inspection of the premises was made by A.D.M.S., Superintending Engineer, the Director of King Institute, etc., and it is expected that the building will be sanctioned and the work will commence early.

II. DIAGNOSTIC DEPARTMENT

Charge.—Dr. C. Venkateswara Rao, M.B.B.S., L.Q.

(*a*) *Clinical section.*—Medical Officer Dr. A. K. Muthu, B.SC. (Hons), M.B.B.S.

This section had examined and reported during this year, 14,915 specimens received for Microscopical, Cultural, agglutination and other Bacteriological tests. The incidence of cholera was very low this year and only one case was reported positive during the whole year for this State. Bacteriological examination of the samples of food received from the Health authorities of this State was also done this year.

At the request of the Director of Public Health, Madras, a bacteriological unit consisting of a Medical Officer, a Technician and a Laboratory Attendant was sent to the districts of North Arcot and South Arcot to investigate the cases of diarrhoea reported to be prevailing in those districts for the last six months. The report on the findings is awaited.

The details of the tests done in this section are shown in tabular statements.

(*b*) *Serology section.*—Medical Officer Dr. Mrs. Anna Raju.

During the year, 54,151 samples of blood were tested for the diagnosis of syphilis and the total number of positives reported were 5,139.

The V.D.R.L. flocculation test was done for all the blood specimens received and for a few cerebrospinal fluid specimens. The quantitative test was done for all positive cases.

The manufacture of Kahn and Wassermann antigens for the Kahn and Wassermann test respectively was continued.

The particulars of the tests done and the antigens manufactured are shown in the tabular statements.

(*c*) *Media Room.*—Medical Officer: Dr. P. K. Menon, M.B.B.S.

The Media Room had continued to supply media for use in this Institute and to the various other hospitals, local fund dispensaries, Public Health department and private practitioners in the State. The details of supply made are shown in the tabular statements.

(*d*) Therapeutic Vaccine Section.—Medical Officer: Dr. K. V. Murthy, M.D.

This section had manufactured the various kinds of therapeutic vaccines including Auto-vaccines and supplied them to the hospitals in this State. In addition, this section had manufactured and supplied Diagnostic Sera, and Bacillary emulsions. The Type cultures are maintained and supplied from this section to the various research Institutions in India. The demand for whooping cough vaccine had continued to be heavy. The details of the vaccines and sera manufactured and supplied are shown in tabular statements.

(*e*) *Prophylactic Vaccine Section.*—Medical Officer: Dr. K. S. Ramaswamy, M.B.B.S.

The incidence of cholera was very low this year and only about 14 lakhs of cholera vaccine was supplied to the whole state this year. In addition, 10 lakhs of cholera vaccine was sold to the Director of Health Services, Lucknow. This section had also manufactured 2,14,009 cc of T.A.B. vaccine and supplied 2,05,409 cc to this state. Plague vaccine was as usual obtained from the Director, Haffkine Institute, Bombay and distributed to the Health department of this State. The details of supply are shown in tabular statements.

III. BLOOD BANK DEPARTMENT.

Staff.—Assistant Director, Dr. N. Sundararajan, M.B.B.S., assisted by Dr. (Smt.) I. Chandra Bai Prahlad, M.B.B.S. and Dr. K. Padmanabhan, M.B.B.S.

(*a*) *Report.*—The mobile blood collection team of the Central Blood Bank was deputed to accept blood donations from the inmates of the district jails in the Madras State. Unused time barred bloods from the city hospitals were also recieved at the blood bank and were pooled together with bloods collected from the inmates of the jails for plasma processing. Wet plasma and diagnostic blood grouping sera were processed in this laboratory for distributing to the blood banks and private practitioners. Blood specimens were received for blood grouping Rh testing and for carrying out other hæmatoserological tests.

As there is a great demand for trained blood bank medical officers, training in blood transfusion and resuscitation work is given every year. Training facilities are extended to officers from other states and also to private medical practitioners. A total number of 27 medical officers from Madras State Southern Railways and Mysore State were trained during the year. Lectures and demonstrations were arranged for people who visited the Institute.

There are now 24 blood banks in the Madras State. Blood banks were organised this year at Taluk Headquarters Hospital, Pudukottai and Vannarpet, Tirunelveli. Every assistance is given by the Central Blood Bank for expanding the activities of the other blood banks in the State and for organising blood banks, sanctioned by the Government of Madras. Blood bank essential equipments of standard quality are supplied to all the State blood banks. Saline tranfusion sets are also supplied to the State hospitals and local fund dispensaries.

Blood bank team is also taking part in propaganda work to popularise blood donations among the lay public. The team has participated in All-India Congress Exhibition and All-India Industrial and Commercial Exhibition, which were held in the Madras City. Charts, models and other exhibits of blood bank propaganda value were displayed at the exhibition stalls. The team carried out blood grouping at the stalls and the results were communicated to the visitors concerned then and there. The visitors were told about the vital part played by blood transfusion in saving lives and the harmlessness of blood donation. Assistance was also given to various Blood Banks in the Madras State by supplying propaganda charts and materials which were required by them.

Research work in blood group, Rh. test, subgroups and other aspects concerned with blood transfusion was carried out in the section along with other routine work of the department.

(*b*) *Features of special interest and importance.*—Five cases of isoimmunisation to Rh. factor were reported. A child was saved in one case by giving exchange transfusion in one of the city hospitals. The review of the five cases is given in the tabular statement (page 21).

(c) *Statistics with particulars regarding the value of services, etc., done.* —I. *Jails visited for collection of blood.*—District jails at Madras, Vellore, Cuddalore, Coimbatore and Pudukottai.

Number of visits made—Nine.

II. *Number of exhibitions participated—*

1. All-India Congress Exhibition, Teynampet, Madras.

2. All-India Industrial and Commercial Exhibition, Madras. One thousand six hundred and ninety-eight persons were tested for blood grouping during the exhibition.

III. Total number of medical officers trained in blood-transfusion and resuscitation work—27.

IV. Total No. of voluntary paid donors—390.

V. Total volume of blood collected—797 litres.

VI. Total volume of plasma manufactured—267.5 litres.

VII. Total volume of plasma issued—227.5 litres.

VIII. Quantity of group sera manufactured—32,874 × ½ cc ampoules.

IX. Quantity of group sera issued—31,629 × ½ cc ampoules.

X. Dry plasma issued—1,679 bottles.

XI. No. of transfusion sets supplied to the Blood Banks in the Madras State—554.

XII. Hæmatological tests.

		A.	B.	O.	AB.	Total.
1 Blood grouping		109	151	205	47	512
2 Rh. tests ..	(Negative).	34	(Positive).	194		228
3 Rh. anti-body test ..	Do.	16	Do.	5		21
4 Cold agglutinin test		36		Nil.		36

(d) *Research work done.*—Carcinogenic nature of certain parenteral fluids :

(1) Plasma substitute (3.5 per cent solution of polyvillin Pyrrolidone was taken for experiment and rats were injected and observed over a long period for the development of cancer. The litters produced by the animals under tests were isolated and injected with material and were kept under observation. Post-mortem done on a few test animals did not reveal any abnormality in the mammary glands, uterus and other-internal organs. The observations are being continued further.

(2) Attempts are being made to produce Rh. serum in experimental animals by using Rh. positive Red Blood Cells and brain tissue. Locally available species of monkeys were used for this experiment.

(3) *Distribution of blood groups among South Indians.*—(a) The investigation which was first started in the year 1957 is being continued. Total number of blood group statistics collected is 37,623. Further blood groupings are being carried out.

The percentage of distribution of Blood groups.

Total number 37,623—			
A Group			21·4 per cent.
B Group			32·9 ,,
O Group			38·7 ,,
AB Group			7 ,,
Sub-groups of A and AB—			
Total number of A Group tested ..	755	A1 587	77·8 percent
		A2 168	22·2 ,,
Total number of AB tested	450	A1B	71·1 ,,
		A2B	28·9 ,,

Review of 5 cases of ISO Immunisation—Rh Factor.

Serial number. (1)	Age. (2)	Group. (3)	Titre of Serum. Date. (4)	Complete. (5)	Incomplete. (6)
1 C/1	34 yrs.	'O' Rh-Negative	1960 26th week.	1 in 4	Negative.
Previous History— Two Transfusions in 1957			1960 32nd week.	1 in 8	1 in 4
1st Pregnancy—1958—Child living.. .. 2nd Pregnancy—1959—Abortion at 2½ months.			1960	1 in 8	1 in 4
3rd Pregnancy—1960—Slight haemorrhages in earlier months and Hyperemesis gravidarum.			38th week.		
2 T/2 ..		'B' Rh-Negative.	1960	1 in 4	Nil.
History not available—					
3 R/8	25 yrs.	'O' Rh-Negative.	1960	1 in 8	Nil.
Previous History— All premature deliveries (7th and 8th months) and still born. Detailed history not available.			..	..	..
4 R/4	33 yrs.	'A' Rh-Negative.	1960	1 in 32	1 in 16
Previous History— Baby developed Jaundice soon after birth.					
5 J/5	28 yrs.	'O' Rh-Negative.	1960	1 in 8	Nil.
Previous History— III—Para—full term—Previous babies suffered from Jaundice.			..	..	..

The information was received that the child developed Jaundice, a few days after birth and two transfusions were given with Rh negative Blood. Child recovered after transfusion.

NOTE.—Rh Negative means Rh negative with Anti D—Rh serum only.
Titre of serum given above is negative in higher dilutions as well.

IV. DEPARTMENT OF BIOLOGICAL CONTROL.

A. Drugs.

Charge—Assistant Director and Government Analyst (Drugs Special).—Dr. S. Gnanadesikan, M.D.

Pharmacologist :—

(1) Dr. R. Seshayyan, M.B.B.S., from 1st April to 13th April 1960.

(2) Dr. K. Padmanabhan, B.SC., M.B.B.S., from 14th April to 5th October 1960.

(3) Dr. K. Thirunavukkarasu, M.B.B.S., from 6th October to 30th November 1960.

(4) Dr. (Kumari) K. Thara Bai, M.B.B.S., from 1st December 1960 to 15th January 1961.

(5) Dr. S. M. Munirathnam Chetty, M.B.B.S., from 16th January to 24th January 1961.

(6) Dr. A. K. Muthu, B.SC. (Hons), M.B.B.S., from 25th January to 8th February 1961.

(7) Dr. K. V. Murthy, M.B.B.S., from 9th February to 24th March 1961.

Bacteriologist.—Dr. C. S. Balaram, M.B.B.S.

Chemical Assistant.—Sri C. S. Raghunathan, B.SC. (Hons.).

The department entered the 14th year of its service as the Special Department for Biological Control of Drugs, the department having been created in the year 1947 when the Drugs Act, 1940, was brought into force in the then composite Madras State. It continued to carry out during the year under report, as in the previous years (*a*) analysis of Schedule C and C1 Drugs received from Drugs Inspectors under the provisions of the Drugs Act, (*b*) the Biological Products and Injectables manufactured in this institute and (*c*) Special Drugs sent by the Government hospitals throughout the State or Private Practitioners or Private Firms, etc. The department continued to accept urine samples for the performance of the purely diagnostic test of the Male Frog Test for pregnancy due to its association with this department ever since this work was started.

From its modest beginnings in 1947, the work of the department has been progressively increasing down the years both in the matter of the number of samples examined and the variety and complexity of the tests required to be performed. If the working of the Drugs Act is to achieve its objective of effective Drugs Standard Control, making it almost impossible or unlikely for any substandard or spurious drugs to be manufactured or marketed in this country, sampling and analysis of drugs should be carried out on a much larger scale than it is done to-day. In the Third Five-Year Plan proposals have been submitted for the expansion of the facilities of the department.

Full details of the nature of samples received and the various tests performed are given below :—

Total No. of specimens tested	...	...	...	5,876
Total No. of tests performed	...	....	...	8,345

(1) *Sterility Test.*—Total number of specimens received for sterility test was 1,252 and the number of tests performed was 1,286. Out of these, 13 samples were found to be not sterile.

(2) Pyrogen Test.—Six hundred and sixty samples were received for pyrogen test on which 743 tests were carried out. All the samples were pyrogen free.

(3) *Chemical analysis.*—Eight hundred and twelve tests were performed on 542 samples referred for chemical analysis and among them two were found to be not of standard quality.

(4) *Toxicity test.*—Two thousand four hundred and twenty-four tests were performed under this head on 1,311 samples and all the samples were found to be non-toxic.

(5) *Antibiotics sensitivity test.*—Twenty-six strains of organisms were received for antibiotic sensitivity test from various sources. One hundred and twelve tests were performed on them.

(6) *Antibiotic assay.*—Twenty-two samples were received on which 76 tests were performed.

(7) *Potency tests on Antitoxins.*—Fourteen samples were received under this head. Nineteen tests were carried out on them.

(8) *Tincture digitalis.*—Six samples were received for biological assay. Twenty-five tests were performed on them. One of the above samples received from a Drugs Inspector is under test. The remaining five samples did not conform to the official requirement for potency.

(9) *Vaccine lymph.*—Sixty-four samples of vaccine lymph were received for colony count, safety test, etc. Three hundred and seventy tests were performed. All of them passed the tests laid down under the Drugs Rules.

(10) *Male Frog test.*—One thousand five hundred and forty-nine specimens of urine were received for Male Frog test for pregnancy from the Government Hospitals in the City and the Mufassal, Private hospitals and Practitioners and other States. Out of these, 410 specimens gave positive results and 1,061 specimens gave negative results. Seventy-eight specimens were found to be toxic to frogs.

(11) *Mice virulence test.*—Six strains of vibrio cholera, three each in Ogawa and Inaba, were received for Mice Virulence test. Thirty-three tests were performed on them.

(12) *Drugs Act.*—Under the provisions of the Drugs Act, 262 tests were done on 47 samples. The samples were received from the Drugs Inspectors working in the City and the districts. Two of the samples were declared to be not of standard quality.

Particulars regarding the tests done in this department are given in Table xiii—

Research—

(1) Study of data collected from the routine performance of the male frog test for pregnancy was continued to evaluate its usefulness in the diagnosis of early pregnancy.

(2) Studies on the relative virulence of the Inaba and Ogawa strains of V. Cholera were continued during the year. Due to paucity of the requisite materials and demands of other work, only six strains in all could be tested. As mentioned elsewhere, 33 tests in all were put up.

(3) Data are being collected on the influence of external temperature on rabbits used in pyrogen tests.

Finance.—A sum of Rs. 3,442 was realised as fees towards the various tests conducted on samples received from private parties.

The interesting samples that were received during the year under report.—(1) One of the samples received purported to be oxytetracycline hydrochloride capsules. The sample was found to contain about 95 per cent Chalk (Calcium carbonate) and a yellow coal-tar colouring matter. There was no oxytetracycline hydrochloride in the sample.

(2) Another interesting sample was a few vials of procaine penicillin (fortified), referred to us by the Medical Officer of a Government dispensary. The sealing of the vials was alright, but the contents had become moist and they did not give a stable and even suspension with water. A curdy suspension which separated quickly was obtained. On examination, the antibiotic was found to retain its potency. The matter was taken up with the manufacturers who hastened to offer replacements for vials of that particular batch which showed such a change in the appearance of the contents. The explanation offered by them for such early physical deterioration of the drug was the phenomenon of 'Breathing' through the caps of the vials due to some defect in the material of which the caps are made. They were trying to eliminate such defective material and secure the most uniformly satisfactory material.

An account of the work done on samples received from parties in other States is given below :—

(1) *Andhra Pradesh*—

(*a*) Two samples of tincture digitalis were received from a private firm. They did not conform to the official requirements for potency.

(*b*) A sample or 5 per cent glucose normal saline received from a Government Hospital was found to be sterile and Pyrogen free but contained an excess of sodium chloride. It was therefore declared to be not of standard quality.

(*c*) Three specimens of urine for male frog test for pregnancy were received from private practitioners. One gave a positive result and the rest negative.

2. *Kerala State.*—Two samples of tincture digitalis received from a private firm in Kerala State did not conform to the official requirements for potency.

3. *Mysore State.*—Two samples of catgut received from K.G.F. Hospital were found to be sterile. Two samples of urine were received from a Mission Hospital for male frog test for pregnancy. One gave a positive result and the other was toxic to frogs.

4. *Assam State.*—One sample of catgut received from a private practitioner in Assam was found to be sterile.

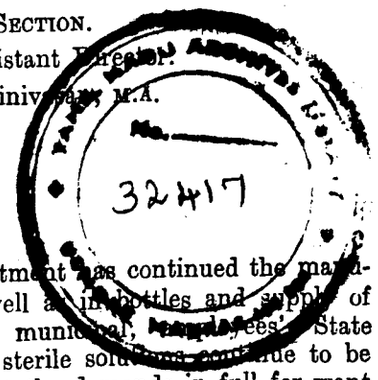
B. STERILE SOLUTION SECTION.

Charge.—Dr. S. Gnanadesikan, M.D., Assistant Director.

Senior Chemical Assistant.—Sri V. R. Srinivasan, M.A.

Junior Chemical Assistants.—

(1) Sri T. Sethuraman, B.Sc.
(2) Sri K. T. Gopalakrishnan, B.Sc.
(3) Sri R. Gopalakrishnan, B.Sc.



During the period under report, the department has continued the manufacture of Sterile solutions in ampoules as well as in bottles and supply of the same to State hospitals, local fund, municipal, Railway employees' State Insurance Hospitals, etc. The demands for sterile solutions continue to be very heavy. It has not been possible to meet the demands in full for want of adequate facilities like staff, space and equipment. However, efforts have been made to supply as much as possible consistent with the available stocks of the various solutions.

The manufacture of Quinine Dihydrochloride ampoules has been continued and supplies of the same made to the Director, Cinchona department.

The manufacture of distilled water ampoules continues to be carried out by the Cholera Vaccine section.

In addition to the above work, the Sterile Solutions section has also prepared and supplied various stains for bacteriological investigations and solutions to other sections in the Institute. It has also carried out tests for neutrality of glass on the various samples received from the Institute stores.

Details relating to manufacture and supplies of sterile solutions are furnished in Annexures A and B respectively. Values of the manufactured products and supplies made, are furnished in Annexure C. Particulars regarding supplies of stains and tests done on samples received from the stores are furnished in Annexure D.

Annexure A—Products manufactured and their value.

Ampoules.	Quantity manufactured.	Value. Rs.	nP.
1 Twenty-five per cent glucose—20 c.c. ..	2,87,945	1,06,539	65
2 Twenty-five per cent glucose—10 c.c.	8,222	2,548	82
3 Normal saline—10 c.c.	41,980	9,235	60
4 Three per cent sodium citrate in normal saline—20 c.c.	22,031	6,829	61
5 Five per cent calcium gluconate—5 c.c. ..	52,240	16,194	40
6 Quinine Dihydrochloride—1 c.c.	37,578	3,131	50
7 Distilled water—10 c.c.	8,480	1,865	60
8 Miscellaneous ampoules	1,610	402	50
Total	460,086	1,46,747	68

Annexure A—Products manufactured and their value—cont.

	Bottles.	Value. Rs.	nP.
Bottles 540 c.c.			
1 Five per cent glucose normal saline	23,158	1,04,211	00
2 Five per cent glucose in pyrogen free distilled water.	10,390	46,755	00
3 Normal saline			
4 Distilled water	2,328	10,476	00
5 Darrow's solution—370 c.c.	1,173	5,278	50
6 Ringer Lactato	523	2,353	50
7 Thirty per cent glucose in pyrogen free distilled water.	562	2,529	00
8 Twenty per cent glucose in pyrogen free distilled water.	425	2,550	00
9 Miscellaneous bottles	910	5,232	50
Total ..	448	2,016	00
	39,917	1,81,401	50

Annexure B—Solutions supplied and their value.

	Ampowles. Quantity supplied.	Value. Rs.	nP.
1 Twenty-five per cent glucose—20 c.c. ..	3,37,174	1,24,754	38
2 Twenty-five per cent glucose—10 c.c.	7,424	2,301	44
3 Distilled water—10 c.c.	210,562	46,323	64
4 Normal saline—10 c.c.	36,550	8,041	00
5 Three per cent sodium citrate in normal saline—20 c.c.	21,961	6,807	91
6 Five per cent calcium gluconate—5 c.c.	50,222	15,568	82
7 Ten per cent calcium chloride—10 c.c.	876	324	12
8 Quinine dihydrochloride—1 c.c. ..	37,566	3,130	50
9 Miscellaneous ampoules	1,770	442	50
Total ..	7,04,105	2,07,694	31
Bottles 540 c.c.			
1 Five per cent glucose normal saline	24,535	1,10,407	50
2 Five per cent glucose in pyrogen free distilled water.	9,227	41,521	50
3 Miscellaneous bottles	338	1,521	00
4 Normal saline	1,895	8,527	50
5 Distilled water	958	4,311	00
6 Darrow's solution—370 c.c.	350	1,575	00
7 Ringer Lactate	660	2,970	00
8 Fifty per cent glucose in pyrogen free distilled water	1	7	50
9 Thirty per cent glucose in pyrogen free distilled water. ..	305	1,830	00
10 Twenty per cent glucose in pyrogen free distilled water.	659	3,789	25
Total ..	38,928	1,76,460	25

Annexure C.

	Rs.	nP.
1 Total value of the manufactured sterile solutions in ampoules and bottles	3,28,149	18
2 Total value of the supplies of sterile solutions to state hospitals and other Medical Institutions.	3,84,154	56

Annexure D.

1 Number of Chemical assays carried out	230
2 Number of samples received from Institute stores for tests for neutrality of glass, etc.	66
3 Total quantity of stains like Gram's Iodine Leishman's stain, carbol fuchsin, etc. supplied to various departments in the Institute.	24,120 ml.
4 Total quantity of reagents like Benedict's qualitative and quantitative solutions, etc., supplied to various departments in the Institute.	12,200 ml.

V. DEPARTMENT OF ANTITOXIN.

Assistant Director.—Dr. N. B. Kuppurajan, M.D.

Medical Officers.—I (*a*) Dr. P. Ramaswamy, L.M.P., from 1st April 1960 to 12th March 1961.

(*b*) Dr. K. V. Murthy M.D., from 25th March to 31st March 1961,

II. (*a*) Dr. (Mrs.) R. F. Sargunar, M.B.B.S., from 1st April 1960 to 5th October 1960.

(b) Dr. R. Sehayyan, M.B.B.S., from 6th October 1960 to 25th February 1961.

(*c*) Dr. (Mrs.) R. F. Sargunar, M.B.B.S., from 26th February 1961 to 21st March 1961.

III. Dr. S. Ramanathan, B.SC., M.B.B.S., from 1st April 1960 to 31st March 1961.

IV. No Medical Officer available throughout the year.

Biochemist.—Sri T. R. Krishnaswamy, M.SC.

Junior Chemist—

(1) Sri S. Srinivasa Raghavan, B.SC.

(2) Kumari R. Radha, B.SC.

Veterinary Assistant Surgeon.—I (*a*) Dr. H. C. Samanna, B.SC., B.V.SC. from 1st April 1960 to 14th February 1961.

(*b*) Dr. S. A. Joseph, B.V.SC., from 15th February 1961 to 31st March 1961.

II. Dr. G. Jayaraman, B.V.SC., from 1st April 1960 to 1st March 1961 and again from 23rd March 1961 to 31st March 1961.

General.—The most important event which has affected the Antitoxin Department during the period under review is the South African Horse Disease epidemic which occurred in India. There was a rapid spread of the South African Horse sickness among the horse population in certain parts of India resulting in a serious equine loss. A protective inoculation against this disease could not be avoided for the King Institute horses in view of the serious threat. The preventive inoculation resulted in the suspension of Immunization and Bleeding programmes of the horses for a period of three months, which was considered absolutely essential after the vaccination. All the horses stood the inoculation well without much observable reaction. Following the protective inoculation and rest, all the horses were immunized once again in the routine way. Only after an elapse of another two months could the bleedings be started.

It is a matter of satisfaction to note that " Hundred horses' stables " are nearing completion and will be handed over next year.

Staff.—Due to the general paucity of Medical Officers in the King Institute, the staff position continues to be unsatisfactory. One post of Medical Officer in the department remained vacant throughout the year.

In the Veterinary section, there were some transfers and the section is depleted of all the experienced staff. There are at times only one Veterinary Assistant Surgeon to look after the work of two, which interferes with satisfactory functioning of this section.

Routine work.—The anærobic section had to produce less of toxins and toxoids since immunization was suspended for some months. The biological standardizations however had increased, except during the last quarter of 1960, when there was paucity of mice. The assay of Anti diphtheretic serum which was standardised last year was incorporated as a routine this year. In addition to the standardization of sera that are manufactured and purchased, three foreign and one Indian antisera were received from the Assistant Director (Drugs) for testing whether they were of a standard quality. All the three were examined and reported to have passed the prescribed tests.

The number of samples investigated during this year for Cl tetani is the highest on record. The number of positives reported are also the highest on record. Cl tetani was isolated from the specimens received from three hospitals in the City.

The manufacture, testing, stocking and issue of sera were carried on as usual. The supply of antisera to the erstwhile Andhra State was discontinued since 19th December 1960. Antiscorpion serum was not available throughout the year either from indigenous sources or from the usual source in the United Kingdom.

Special work.—(1) Special attention was paid to minimize the hepatic damage in the horses by reducing the quantity of toxin injected to the minimum required for raising the antibody level, instead of the injection of routine graded doses. The practical value of Arginase test to find out the extent of hepatic damage is under investigation.

(2) The office copies of a number of time expired sera were assayed to find out the loss of potency when stored between 2 degrees and 5 degrees Centigrade. The results so far show that most of the time expired sera tested retained the minimum potency claimed in the label even after ten years. The loss in potency did not exceed, in most cases, the extra unitage ensured for the deterioration at the time of manufacture (i.e. 20 per cent).

(3) The preliminary work to select the best adjuvant for immunization work in animals is under progress. The results achieved so far show that in laboratory animals adjuvants play a definite roll in raising the antibody level. Collosol Manganese (Crookes) and Typhoid vaccine (K.I.P.M.) appear to have a distinct advantage over plain toxoid or toxoid with tapioca. Alum shows an intermediary value. Further work is progressing.

The preliminary work also confirms the view that two doses of antigen show a better immunogenic response than a single bigger dose. The work is being continued.

(4) The serum proteins, the blood calcium and hæmoglobin contents were tested for a few horses. It is intended to extend the estimation to cover all the horses.

Statistics.

		LITRES.
(*a*) Manufacture of Tetanus toxin		104
(*b*) Manufacture of Welchi. toxin		22
Total ..		126

Biological Standardizations—

		SPECIMENS
(*a*) Tetanus antisera		631
(*b*) Perfringens antisera		41
(*c*) Diphtheria antisera .. .. —		47
		719

Investigations for presence of Cl tetani :—

		SAMPLES.
(*a*) K. G. Hospital, Madras		22
(*b*) Women and Children Hospital, Madras		8
(*c*) Stanley Hospital, Madras thro' S. M. C.		2
(*d*) Royapettah Hospital, Madras .. .. .. —		9
Total ..		41

Positive reported—3.

Horse Strength—

Number of Horses during the beginning of the year ..	52
Number of Horses during the close of the year	57
Number of Horses under tetanus immunisation (including those under bleeding : 41).	51
Number of Horses under perfringens immunisation (including those under bleeding : 4.)	5
Number of Horses on experimental immunisation not bled so far.	1
Total number of horses under immunisation ..	57

Bleeding—

Blood volume from horses immunised against tetanus ..	1594	Litres.
Blood volume from horses immunised against perfringens.	90	,,

Gift horses.—We are grateful to the Military authorities for the donatic of fifteen gift horses to the Institute this year. The sources of the gi horses are given below :

Serial number and source of gift. (1)	Number of gift horses. (2)	Date of acquirement. (3)
1 Indian Academy, Dehra Dun	4	20th April 1960.
2 Special officer, Military Dairy Farm, Bangalore	1	10th August 1960.
3 Military Head quarters, Assam	1	9th September 1960.
4 Indian Military Academy, Dehra Dun ..	3	27th September 1960.
5 Military Head quarters, Poona	6	28th November 1960.

Manufacture of Antisera.

A. T. S. Prophylactic

Tetanus antiserum (single dose ampoules).	16,291 doses of 1,500 I.U. each.
Tetanus antiserum (five dose vials) ..	2,531 doses of 5×1,500 I.U. each.
Tetanus antiserum (ten dose vials) ..	9,589 doses of 10×1,500 I.U. each.
Tetanus antiserum (twenty dose vials).	2,087 doses of 20×1,500 I.U. each.

Total number of doses 1,66,576 doses of 1,500 I.U. each.

A. T. S. Curative.

Tetanus antiserum curative 25,000 I.U. per vial 2,300 vials.

A.G.G.S.

Antigas gangrene serum 4,000 I.U. vial .. 5,547 vials.

Antisera supplied during 1960–61.

Name of Sera. (1)	Madras State. (2)	Erstwhile Andhra up to 18th December 1960. (3)	Total. (4)
1 Tetanus Antitoxin Prophylactic 1,500 I.U./dose.	3,65,677	11,210	3,76,887 doses
2 Tetanus Antitoxin curative 25,000 I.U./dose.	31,359	1,046	32,405 ,,
3 Tetanus Toxoid 1 cc/dose	681	86	767 ,,
4 Antigas gangrene serum 10,000 I.U./dose.	1,851	192	2,043 ,,
5 Antivenene (Ampoules of 10 cc.) ..	1,988	161	2,149 ampoules
6 Diphtheria Antitoxin (Units of 1,000 cc. each).	16,977	182	17,159 units
7 Diphtheria Prophylactic TAF (Ampoules).	8	..	8 ampoules
8 Diphtheria Prophylactic PTAP (Ampoules of 0·5 cc. each)	113	..	113 ,,
9 Antiscorpion serum (Ampoules of 1 cc. each).	20	..	20 ,,
10 Haemostatic serum (Ampoules of 20 cc. each).	1,060	268	1,328 ,,

ANIMAL SECTION.

The section continues to cater to the needs of the Institute and also to some extent of other Institutions in the City. The breeding and maintenance of Guinea Pigs, mice and white rats were satisfactory and there was no purchase of these animals during the year. The position of rabbits however remained unsatisfactory and about 600 rabbits had to be purchased during the year to meet the demands of the Institute.

Guinea pigs.—The position of Guinea pigs is good and a stock of more than 1,000 is being maintained. The breeding of the "King Institute of Preventive Medicine strain" of guinea pigs is satisfactory and is being continued.

Mice.—During the first half of the year under review there was deterioration in the stock position of mice due to cannibalistic tendency which resulted in sudden loss of a large number of young ones. Effective steps were taken immediately and the stock position has recovered by the end of the year.

Rabbits.—The stock position of rabbits is not satisfactory and over 600 rabbits had to be purchased during the year to cater to the needs of the Institute. As a large number of rabbits were not available in one lot from any of the sources in the Madras City or neighbourhood breeding of rabbits could not be carried out on large scale. Attempts are being made to improve the stock position of rabbits.

White rats.—Seventeen white rats were received from the Stanley Medical College and the breeding has been satisfactory, the present stock being about 200.

Staff.—The Animal section is under-staffed and adequate attention could not be given to breeding and further expansion. Proposal for extra staff has been put up and is under consideration.

Accommodation.—The present accommodation is insufficient for further expansion. Already the verandahs have been sacrificed to provide space for breeding of guinea pigs. Further expansion is under consideration in the Third Five-Year Plan.

Special investigation.—(*a*) With a view to step up the breeding of mice and guinea pigs further, an investigation was undertaken to ascertain the optimum proportion of male and females to be used for breeding.

(*b*) The experiment on feeding with a proprietary preparation was tried. The results were not encouraging.

Animal.	Stock on 1st April 1960.	Stock on 31st March 1961.	Purchases during 1960–61.	Bred.	Issued for experiments.	Death	
						Normal.	Experimental
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Guinea Pigs ..	1,318	1,073	..	1,843	2,360	213	1,81
Mice	3,036	3,418	..	12,366	5,957	..	..
Rabbits	98	101	639	31	1,485	22	606
White Rats ..	17	230	..	236	94	11	13

Rabbits, 1960–61.

Months.	Stock.	Purchased.	Brought to adult.	Issued to experiment.	Deaths.		
					Sold.	Normal.	Experimental.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
April	98	73	..	92	..	4	32
May	169	109	..	167	..	..	26
June	228	92	..	199	..	..	33
July	163	17	..	196	..	1	81
August	193	73	..	163	..	..	43
September	113	22	13	168	..	3	112
October	108	57	7	95	..	9	60
November	83	18	4	90	..	1	46
December	39	8	..	61	..	..	53
January	66	56	2	66	..	..	31
February	120	95	..	98	..	3	40
March	101	19	5	90	..	3	40
Total ..	1,481	639	31	1,485	..	24	606

Guinea pigs, 1960–61.

Month.	Stock.	Purchased.	Bred.	Sold.	Issued.	Death.	
						Natural.	Experimental.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
April	1,318	..	134	..	300	8	138
May	1,225	..	113	..	238	16	190
June	1,184	..	128	24	159	14	131
July	1,295	..	272	..	198	11	150
August	1,205	..	126	2	178	28	186
September	1,231	..	189	..	149	8	161
October	1,147	..	114	..	190	18	180
November	1,095	..	135	..	208	6	181
December	966	..	80	..	213	..	209
January	888	..	80	..	240	38	120
February	901	..	152	..	176	12	86
March	1,078	..	320	..	112	54	82
Total ..	13,533	..	1,843	26	2,366	213	1,814

Mice swiss, mice Jap and mice K.I.P.M. Strain, 1960–61.

Month.	Stock.	Brought to adult.	Issued to experimental.	Sold.	Stock	Brought to adult.	Issued to experimental.	Sold.	Stock.	Brought to adult.	Issued to experimental.	Sold.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
April	1,806	632	214	..	836	256	56	..	292	104	..	..
May	1,673	290	167	..	791	184	94	..	195	9	100	..
June	1,375	344	432	..	771	190	142		204	22	..	..
July	2,049	1,123	272	..	950	233	106	..	151	7	20	..
August ..	1,864	494	393	..	895	246	152	..	178	30	..	..
September ..	1,765	361	251	..	905	163	68	..	251	84	..	..
October ..	1,256	1,063	360	..	933	343	186	..	240	..	..	..
November ..	2,307	1,101	553	..	964	354	181	..	291	65	..	..
December ..	1,964	561	266	..	969	195	40	..	359	76	..	..
January ..	1,907	895	414	..	1,070	389	150	..	300	..	50	..
February ..	1,864	782	503	12	1,169	332	68	..	420	143	19	..
March ..	1,819	886	553	..	1,099	230	57	..	500	179	90	..
Total ..	21,649	8,532	4,378	12	11,352	3,115	1,300	..	3,381	719	279	..

White rats, 1960–61.

Month.	Stock.	Purchased.	Bred.	Sold.	Issued to experiment.	Deaths.	
						Normal.	Experiment.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
April	17	..	..	..	..	..	..
May	17	..	17	..	..	1	..
June	33	..	23	..	13	..	..
July	56	..	9	..	1	..	..
August	65	..	28	..	8	2	5
September	86	..	20	..	7	..	1
October	105	..	49	..	6	2	1
November	151	..	15	..	8	1	1
December	164	..	9	..	8	2	..
January	171	..	5	..	22	2	2
February	172	..	61	..	21	1	2
March	230	..		..			
Total ..	1,267	..	236	..	94	11	12

OTHER SECTIONS.

1. Mechanic section.

The present position with regard to the additional facilities proposed for this branch of the servicing department of the Institute reported in previous years, is as follows :—

(*a*) *Subsidiary water-storage tanks.*—The work of installation of these tanks over isolated buildings has been completed.

(*b*) *Stand-by boiler.*—The work of construction of a room and installation of a stand-by boiler is nearing completion.

(*c*) *Steam-steriliser.*—The steam connections to the huge steam steriliser obtained last year from the Public Works Workshop Stores have not yet been provided.

(*d*) *Construction of a new building and installation of two more gas producers and* 5,000 *cubic feet high pressure gas tank.*—This work was taken up by the Public Works Department and the constructio nof the room came up to the basement level and it is over eight months since the work has come to a standstill.

The general routine work of (*a*) supply of gas, water and steam; (*b*) repairs and maintenance of equipments in the various laboratories had been carried out satisfactorily.

Maintenance and repairs to refrigerating plants including air-conditioned rooms have been carried out satisfactorily. Ice is still being manufactured and supplied to sections and water-sample collectors.

The usual services facilities are being continued to the Water Analysis and Government Analyst Departments which are under the administrative Control of Director of Public Health, Madras.

II. Dispensary and First Aid Room.

The Dispensary is situated in the centre of the Institute Campus adjacent to which is attached the First Aid Room. The First Aid Room and Dispensary cater to the needs of the employees and their families in respect of any illness or accidents. One of the Medical Officers of the Institute is in part time additional charge of the First Aid Room and Dispensary and a qualified Pharmacist and a I-Grade Laboratory Attendant assist the Medical Officer. First Aid Room is open from 10-30 a.m. to 5-00 p.m.

Preventive Inoculation.—Preventive Inoculations were being given in the respective departments which function at different times. This was considered not satisfactory as the Public had to wait for a long time. All preventive inoculations except Yellow Fever Inoculation are given at this Centre daily between 11-00 a.m. and 1-00 p.m., the Yellow Fever Inoculation being given on Fridays at 11-00 a.m. in the Director's Laboratory. The entire staff of the Institute were vaccinated against small-pox in the First Aid Room.

On an average 50 to 55 persons attend daily the First Aid Room and Dispensary, Serious cases are given first aid and sent to hospitals for further treatment. Bacteriological and Clinical examinations of the persons attending

the First Aid Room are done in the Clinical Section after being advised by the Medical Officer in-charge. Injections are given and dressings are carried out in the First Aid Room.

Outside the working hours, urgent cases and cases of snake bites and scorpion bites are attended to by a Medical Officer resident in the campus. Rs. 3,500 has been spent towards the cost of medicines, etc., supplied to the patients during the period from 1st April 1960 to 31st March 1961.

Statistics for first aid room and dispensary.

1	Total number attended	11,543
2	Number referred to hospitals	8
3	Number of Snake bites	1
4	Number of Scorpion bites	14
5	Number of Accident cases	150

III. Library.

Assistant Director in-charge of Library—Dr. N. B. Kuppu Rajan, M.D.

Librarian—Smt. S. Sundaramma, B.SC., Dip. in Lib., SC., Dip. in French and German.

Stock and other statistics—Acquisitions.—During the year under report, 78 latest Editions of books, 347 bound volumes of periodicals and 53 annual reports from various Institutions were added to the library, bringing the total holdings to 14,145.

Issues.—The number of books, journals, reports, etc., consulted in the Library and issued to the staff of this Institute and others was 9,720.

The reference facilities available at the Library of this Institute are made use of by other Institutions. There were about 66 outside readers to the library and 43 books and journals were lent to other Institutions.

Books.—Main subjects that form the new collection of books are bacteriology, virology, immunology, medicine, pathology, pharmacology, biochemistry, epidemiology, etc.

Periodicals.—Three new journals, viz., (*a*) journal of clinical pathology, (b) British journal of Veneral diseases, and (*c*) Applied Microbiology were added to the current list of periodicals bringing the total number to 177.

Journal of Clinical Pathology published by British Medical Association, is issued in six numbers every year. British Journal of Venereal Diseases was previously subscribed for the period 1945–1955 and in the year 1961 the subscription was revived for this journal. This is also published by British Medical Association, which is a quarterly publication containing original contributions on the investigation of venereal diseases.

Applied Microbiology.—An official publication of the Society of American bacteriologists published bi-monthly: It is devoted to the publication of studies directed towards the application of microbiological sciences, food, sanitation, agriculture and other branches involving the use or control of micro-organisans with the exception of plants and animals.

During the year under report, British information library was addressed for the gift copies of back volumes of (1) British Journal of Venereal Diseases, and (2) Journal of clinical pathology, with a view to fill up the gap for the years

1956–60 in the case of British Journal of Venereal Diseases and to obtain the back issues of the Journal of Clinical Pathology for as many years as possible. We gratefully record their kind donation of the volumes for the years 1958–59.

During the year under report, the periodical " drug standard was merged " with Scientific Edition of the Journal of American Pharmaceutical Association and issued under the new title " Journal of Pharmaceutical Sciences ".

The following periodicals have ceased publications in the year 1961 :—

(1) U.S. Armed Forces Medical Journal.

(2) Medical Technicians Bulletin.

(3) Studies from the Rockefeller Institute for Medical Research.

The library has stopped subscribing for the following periodicals during the year 1961 :—

(1) Indian and Eastern Engineers;

(2) Proceedings of the National Institute of Science of India; and

(3) Journal of Endocrinology.

During the period under report, the ratio of the expenditure on periodicals to that of books is 8 : 2. 7. Several periodicals were recived gratis or in exchange for the Annual Report of this Institute and their cost is not included in the expenditure for periodicals.

The current issues of periodicals are displayed in the library reading room for about a week and then distributed among the Medical and Scientific members of the Institute according to the subject of specialisation of the member so that every one will be kept informed of the latest developments in his field.

Staff meeting.—Members of the staff of this Institute met as usual once a week in the library hall and reviewed the articles of interest from the current issues of journals which were circulated to them earlier. The total number of current issues of periodicals thus circulated to them was 1,265.

The annual report of this institute was distributed to 174 institutions all over the world.

Accommodation.—The need for a separate library building for the safety of the valuable collection as well as to afford better facilities for the users is keenly felt and necessary proposals have been put up in the Third Five-Year Plan.

IV. Training.

(a) Training in Blood Transfusion and Resuscitation work.—A list of Medical Officers who have undergone training in the Technique of Blood Transfusion during the year 1960–61 at King Institute, Guindy, is given below :—

Madras State.

(1) Dr. A. Nafeesa Beebi, Assistant Surgeon, Government Kasturba Gandhi Hospital, Madras.

(2) Dr. V. R. Kanakavalli, Assistant Surgeon, Government Women and Children Hospital, Madras.

(3) Dr. E. A. Krishnamoorthy, Assistant Surgeon, Government, .M. Hospital, Tanjore.

(4) Dr. R. Padmanabhan, Assistant Surgeon, Government Headquarters ospital, Coimbatore.

(5) Dr. (Kumari) P. Suseela, Assistant Surgeon, Pentland Hospital, ellore.

(6) Dr. R. J. S. Ganapathy, Assistant Surgeon, Government T.B. Sanarium, Tambaram, Madras.

(7) Dr. Abdul Hakkim, Assistant Surgeon, Government Mental Hospital, adras.

(8) Dr. (Mrs.) P. Meera Sri Kumari, Assistant Surgeon, Port Trust ospital, Madras.

Mysore State.

(9) Dr. I. F. Devadetta, Assistant Surgeon, Wenlock Hospital, Mangalore.

(10) Dr. C. V. Margund, District Surgeon, Kolar.

(11) Dr. Khaleel Ahmed, Assistant Surgeon, Bangalore.

(12) Dr. B. K. Vasanthamma, Assistant Surgeon, Bangalore.

(13) Dr. Saraswathy, Assistant Surgeon, Bangalore.

(14) Dr. B. S. Devendra, Assistant Surgeon, Kolar.

(15) Dr. Gubbanna, Assistant Surgeon, Bangalore.

(16) Dr. B. K. Sampath Kumar, Assistant Surgeon, Chitradurga.

(17) Dr. N. R. Narayanamoorthy, Assistant Surgeon, Badravathi.

(18) Dr. P. H. Javarappa, Assistant Surgeon, Mangalore.

(19) Dr. R. Lalithi, Assistant Surgeon, Mysore.

Southern Railways.

(20) Dr. K. Mohamed Dastagir, Assistant Surgeon, Mysore.

(21) Dr. Ranga Rajan, Assistant Surgeon, Madurai.

(22) Dr. S. Nagabhushnam, Assistant Surgeon, Podanur.

(23) Dr. Johi Ranjan Dass, Assistant Surgeon, Guntakal.

(24) Dr. Thirumalapathy, Assistant Surgeon, Podanur.

(25) Dr. P. Krishnamoorthy, Assistant Surgeon, Golden Rock.

(26) Dr. Masilamoney, Assistant Surgeon, Mysore.

(27) Dr. M. V. Narayanaswamy, Assistant Surgeon, Arkonam.

List of trainees in the various sections of this Institute during the year 960–61.

Serial number and name of trainees.	Subject.	Period from to
1. Dr. J. P. Sarin, Medical Officer (Senior) in charge of Cholera Vaccine section, Provincial Hygiene Institute U.P., Lucknow.	Training in the manufacture of cholera vaccine.	15 days from 9th June 1960.
2. Dr. P. K. Jain, Deputy Superintendent, Government Vaccine Institute, Belgaum.	Training in the manufacture of vaccine lymph.	2 months from 20th August 1960.

(c) Visits from Educational Institutions.—One hundred and two batches ! students from the Medical, Veterinary and other colleges have visited this

Institute. They have been taken round the Institute and shown the working of different sections. The staff concerned gave them short talks and put up demonstrations.

(*d*) *Training School for Laboratory Technicians.*—The present course was started in the King Institute, Guindy, in January 1960. The Government of India wanted a unified technicians' course (during the Second Five-Year Plan period) and the training candidates were to be appointed as qualified technicians in teaching medical institutions, big hospitals and public health departments.

The Government of India as per their letter No. F. 28-113-57-M3, dated 3rd April 1958 decided to give central assistance for the establishment of a training centre in Madras for training medical laboratory technicians in the King Institute, Guindy, on an approved pattern of 100 per cent of non-recurring expenditure on a sliding scale during the Plan period. As per G.O. Ms. No. 2087, Health, dated 2nd July 1958, of the Government of Madras and the Director of Medical Services Office reference Immediate P. No. 234-E2/58, dated 16th July 1958, arrangements were made to start this unified technicians' course. One of the Medical Officers who was to be appointed as a Lecturer was sent to the Madras Medical College for six months to undergo a course of training in Biochemistry, Pathology and Entomology. At the end of the period, he was posted as the Lecturer and Officer-in-charge of training of technicians. The Director, King Institute, Guindy, was authorised to take necessary steps to put up the plans and estimates for buildings and equipments for conducting the course. Based on the grant of Rs. 1½ lakhs for buildings, Rs. 79,000 for equipment and Rs. 10,000 for furniture the expenditure was worked out. The construction of the buildings was started in June 1959. But due to some difficulties experienced by the constructing authorities, this building could not be occupied even now even though the arrangements were made to conduct the classes and practicals in a small room. Equipments worth about 70,000 have been purchased.

The staff consists of one Lecturer, one Laboratory Assistant, one Technician, one Laboratory Attendant, Grade II and one Cleaner.

The minimum general educational qualification for admission to the course was fixed as completed Pre-University Course with a pass in English and Science subjects, the age-limit being 18 to 25 years. A provision to admit 15 candidates is made and the course lasts for a period of one year. During the training period, the candidates are paid Rs. 50 per mensem as stipend.

In 1960, 19 candidates applied for the course—13 candidates were selected reserving two seats for those that are to be deputed by the Director of Medical Services and to be posted as Bacteriological Assistants. As these two candidates did not join and one of the selected candidates had to discontinue for personal reasons, the course was started in January 1960 with 12 candidates. These candidates completed the training in December 1960. An examination was held in all the subjects by a Board of Examiners and all the 12 candidates were declared successful. This entitled them to receive a certificate in the Medical Laboratory Technology and thus work as Medical Laboratory Technician, Grade I.

In January 1961, there were 14 applicants. Of these, only 10 were eligible for undergoing the course. Five candidates joined the course in January 1961 and one more candidate in March 1961. At present there are six candidates undergoing the course and five of those who joined in January 1961 are still paid a sum of Rs. 50 as stipend.

A gist of the subjects taught is given below :—

General Chemistry, biology and physics (pre-university standard) general knowledge of human anatomy and physiology with a comparative knowledge of animal anatomy, general laboratory management with knowledge of use and maintenance of laboratory equipments and appliances, accommodation, and care of experimental animals and their disposal after use, despatch of infected material for examination and their disposal, maintenance of records, etc., and different methods of sterilization and their application, Bacteriological technique of collecting and identifying the pathogenic organisms from materials like blood, urine, stools pus, sputum. C.S.F., etc., preparation of different artificial media and methods of identifying micro-organisms, serological tests for diagnosing certain diseases like typhoid, typhus, syphilis, etc., water and milk bacteriology, testing of disinfectants, elementary knowledge including section cutting and staining, preparation of stains, parasitological methods in identifying helminthic and protozoan infections, elementary entomology, hæmotology including setting up a blood bank, blood grouping, etc., Chemical pathology including pH estimations, buffers, titrations. Routine examination of urine, knowledge of estimation of blood sugar, urea, uric acid and other non-protein nitrogen, cholesterol, phosphate, etc., gastric analysis, liver function tests, chemical analysis of C.S.F., etc.

The candidates are given greater opportunities to learn the practical aspects of these subjects along with a knowledge of the theoretical part applicable to them. More time is spent on practicals so that these trained candidates will be found more useful in the medical and public health departments.

Madras State Research Committee.

The Madras State Research Committee held its Annual Meeting on 15th February 1960 at the office of the Director of Medical Services (President of the Committee).

A budget provision of Rs. 37,426 has been made for the research schemes during the year 1960–61. An amount of Rs. 26,838.65 (Total of counter-signed bills up to the end of 31st March 1961) has been spent and an amount of Rs. 16,588 has been surrendered.

During the year under report, 23 schemes were approved by the State Research Committee, the expenditure sanctioned for the schemes being Rs. 37,426. Six schemes did not start functioning at all. Fifteen schemes started functioning from April 1960. Details of grants allotted to the various research schemes are furnished in Annexure-I.

One Assistant Surgeon was deputed from the Madras Medical Service for duty as Research Assistant under Dr. S. T. Achar, M.D., Director, Institute of Pediatrics, Government General Hospital, Madras. She was relieved of her duties on 30th September 1960 A.N. to take the D.C.P. course and no substitute is posted in her place.

In accordance with G.O. Ms. No. 2549, Health, dated 13th September 1954 clinical trials of Antibiotics and other preparations from the manufacturing concerns have been permitted to be conducted by Dr. M. K. K. Menon, Director, Institute of Obstetrics and Gynæcology, Government Women and Children Hospital, Madras.

The following papers were permitted to be published and presented during the year under report :—

(1) Paper on " Indian Childhood Cirrhosis by Dr. S. T. Achar, M.D., Director, Institute of Pediatrics, Government General Hospital, Madras, in the Journal of Pediatrics.

(2) An article " Hydrochlorthiazide in the treatment of pre-eclamptic toxaemia by Dr. M. K. K. Menon, B.A., M.D., Director, Institute of Obstetrics and Gynæcology, Government Women and Children Hospital, Madras, in the Journal of Obstetrics and Gynaecology of India.

(3) Ventilatory functions in Pulmonary Normal convalascents at the Annual Meeting of the Association of Physiologists and Pharmacologists of India in December 1960, Dr. H. D. Singh, M.B.B.S., M.SC., Prof. of Physiology, Madurai Medical College, Madurai.

(4) Comparative study of Minute volume and vital capacity determination.

(5) Learning Factor in Ventilatory Function tests by Dr. H. D. Singh, M.B.B.S., M.SC., Professor of Physiology, Madurai Medical College, Madurai, before the Physiology Section of the Indian Science Congress 1961.

(6) A paper entitled " Etiological Diagnosis of Pleural effusions in the elderly by Needle Biopsy of parietal pleura by Dr. (Mrs.) V. C. Anguli, B.SC., M.D., Professor of Pathology, Stanley Medical College, Madras, before the Joint Conference under the Association of Chest Diseases.

For the State Research Schemes for the year 1960–61, one Civil Assistant Surgeon has been deputed to work in one scheme and an amount of Rs. 250 per mensem is being reimbursed to the Government from the State Research Committee fund.

A technician from the Madras Medical College has been deputed to work under Dr. S. T. Achar for his enquiry on " Infantile Cirrhosis of Liver and Infective Hepatitis in Infancy and Childhood."

ANNEXURE 1.

Schemes sanctioned during the year 1960–61.

Old schemes to be continued during the year 1960–61.

Serial number. (1)	Name of Investigator. (2)	Details of schemes. (3)	Amount sanctioned for the schemes. (4) Rs.
1	Dr. S. T. Achar, M. D. Director, Institute of Pediatrics, Government General Hospital, Madras.	Infantile Cirrhosis of liver	5,176
2	Dr. T. Janardhanan, M. B. B. S., M. Sc., Professor of Anatomy, Madras Medical College, Madras.	Biometry of Foot	3,000
3	Dr. N. R. Ratnakannan, M. D., Professor of Bacteriology, Madras Medical College, Madras.	Antibody response in chloramphenicol treated cases of typhoid.	2,408
4	Do.	Evaluation of a simple bedside agglutination test for diagnosis of typhoid.	500
5	Dr. T. R. Krishnamurthi, M. B., B. S., M. Sc., Professor of Pharmacology, Stanley Medical College, Madras.	The action of indigenous drugs on blood sugar in animals.	1,000

ANNEXURE 1.

Schemes sanctioned during the year 1960–61.

Old schemes to be continued during the year 1960–61.

Serial number. (1)	Name of Investigator. (2)	Details of schemes. (3)	Amount sanctioned for the schemes. (4) Rs.
6	Dr. M. K. K. Menon, B. A., M. D., Director, Institute of Obstetrics and Gynaecology, Government Hospital for Women and Children, Egmore, Madras-8.	Coagulation defects in obstetrics ..	2,060
7	Dr. M. G. Varadarajan, M. B. B. S., D. M. R., F. C. C. P., Radiologist, Barnard Institute of Radiology, Government General Hospital Madras.	Assesment of Normal Physiological Incidence of Calcification occurring in Indian Subjects.	500
8	Dr. K. S. Bhanan, M. B. B. S. D. P. M., Deputy Superintendent, Government Mental Hospital, Madras.	The influence of the different phases of the moon on mental illness.	200
9	Dr. Thyagarajan, M. A., M. B. B. S., Assistant Psychiatric Department, Government Stanley Hospital, Madras.	(a) History of Psychiatry in South India. (b) Incidence of Mental illness in relation to social strata in South India. (c) Puerperal Psychosis in relation to the Psychological attitude of the patients to marriage.	500

New schemes sanctioned for the year 1960–61.

10	Dr. T. George, M.B.B.S., D. P. M., F. I. P. S., Superintendent, Government Mental Hospital, Madras.	Study of the medicine Manasamitra, vati, Prabhanabhasma and Vacha, Jyothismatui and Aswagandha.	1,000
11	Dr. Sarada Subramanyam, M. B. B. S., M.Sc. Ph.D., Physiology Department, Stanley Medical College, Madras.	Occurrence or Catechol a mines in the Suprarenal gland and biological fluids.	1,000
12	Dr. K.V. Tiruvenkadam, M.D., Reader in Clinical Medicine, Stanley Medical College, Madras.	Studies in Bronchial Asthma ..	2,000
13	Dr. M. Viswanathan, M. D., Honorary Physician and Medical Officer in charge of Diabetic Clinic, Stanley Hospital, Madras.	Prediabetic State	2,000
14	Sri K.S. Srinivasavardhan. M.Sc., Professor of Pharmaceutics, Madras Medical College, Madras.	Investigation of the use of easily available cheap indigenous vegetable products as binding and disintegrating agents in making compressed tablets.	2,000
15	Dr. V. Sivarajan, M. D., Professor of Bacteriology, Stanley Medical College, Madras.	Determination of agglutination titres in people who had enteric fevers previously.	1,100
16	Sri K. G. Veeraraghavan, M. Sc., Chief Water Analyst, King Institute, Guindy.	A comparative study of the British and American standard methods for the coliform test on water samples.	2,000
17	Dr. (Mrs.) V. C. Anguli, B. Sc., M. D., Professor of Pathology, Stanley Medical College, Madras.	A correlative clinicopathological study of pleural effusions in the aged with special reference to pleural and Scalene made biopsies.	1,100

Schemes sanctioned during the year 1960–61—cont.

New shemes sanctioned for the year 1960–61—cont.

Serial number. (1)	Name of Investigator. (2)	Details of schemes. (3)	Amount sanctioned for the schemes. (4)
			Rs.
18	Dr. P. N. Rangiah, M. D., Director, Institute of Venereology, Government General Hospital, Madras.	A study of Non-Gonococcal urethritis, clinical, bacteriological cultural and therapeutics.	2,500
19	Dr. P. N. Rangiah, M. D., Director, Institute of Venereology Government General Hospital, Madras.	Histopathological studies of lesions of Donovanosis to determine the epithelial changes suggestive of malignancy and the periods at which such changes occur.	500
20	Dr. P. N. Rangiah, M. D., Director, Institute of Venereology, Government General Hospital, Madras.	A follow up study of patients with ocular syphilis treated during the period 1957–59 under the auspices of the Madras State Research Committee.	2,132
21	Dr. (Mrs.) Suseela Pappu, M. B. B. S., Physiology Department.	Studies on blood volume in South Indian subjects.	1,520
22	Dr. M. G. Varadarajan, M. B. B. S, D. M. R., F. C. C. P., Radiologist, Barnard Institute of Radiology, Government General Hospital, Madras.	Investigation about variations in blood flow in the brain caused by intracranial pressure changes.	890
23	Dr. S. P. Vedachalam, M. D., Professor of Pathology, Madras Medical College, Madras.	Evaluation of the Ex. foliative cytologic technique with Papani column stain in the diagnosis of malignant growths of the respiratory tract.	740
		Total ..	36 826

Director's Laboratory.

CUTANEOUS DIPHTHERIA.

(1) Dr. A. K. Muthu, B.SC. (Hons.), M.B.B.S.

(2) Dr. S. Govindarajan, M.D., D.B. (Manch).

(3) Dr. E. Somasekhar, F.R.C.S.

A case of chronic leg ulceration in an European, male, aged 45 years, referred on 8th August 1960 by Dr. E. Somasekhar, F.R.C.S., Madras for bacteriological examination was diagnosed as a condition of extrafaucial diphtheria or " Veldt-Sore ". The ulcers responded readily to anti-diphtheritic serum 40,000 units, followed by 20,000 units on the second day, and Synermycin. On 22nd August 1960 it was reported that healing had gone on to formation of a healthy scar. Clinically the presenting features were, a large ulcer about 2 inches in diameter on each leg on the antero-lateral aspect. The ulcers were fairly deep with a " punched-out " appearance with rounded margins and clean base with little or no exudate. Surrounding each ulcer was a zone of hyperaemia about 5 inches in diameter. The general condition of the patient was good. The duration of the ulcers was over one month, having first started as boils and gradually gone on to the present condition. Treatment with penicillin, glucose, Vitamin C and Mag. Sulph. compresses had had no effect.

Serological examination at the Institute showed the Wasserman, Kahn and V.D.R.L. tests to be negative.

Bacteriological examination of the ulcers revealed the presence of toxigenic strains of C. diphtheria and Staphylococcus aureus coagulase positive).

The patient was visited on 14th September 1960 in his house, in an attempt to locate a possible carrier among his household contacts, numbering six adult persons. Throat and nasal swabs were taken from each person. The patient himself was now in good condition; both lesions had completely healed and there was only a small scar to mark the site of the ulcers.

A further swab was taken from the scars and from his throat and nose. On questioning, the patient denied possible contact with horses but mentioned his habit of playing golf-in shorts. His only pet at the time was a cat in the house. The cat was included for examination and swabs were taken from the mouth and fur.

Bacteriological examination of the swabs from the above sources were negative for C. diphtheria.

This case is interesting in that clinically, it had not been suspected to be diphtheritic skin infection, because of the rarity of such isolations as per records of the Health statistics for the country and State and Hospital reports. Skin diphtheria of the type described as " desert sore ", " Veldt Sore ", " Septic Sore " or " Barcoo Rot " have been frequently reported during the First and Second World Wars, mainly in white soldiers serving in tropical desert regions (Craig 1919, Hollander 1951).

Hollander (1951) brings upto-date some of the known facts regarding cutaneous diphtheria which he describes as any lesion of the skin caused by virulent C. diphtheria, causing a typical " punched-out " ulcer. These and other features noted by Hollander can be very well applied to this case of leg ulcers. This case has therefore been diagnosed as a case of skin diphtheria of the type called " Veldt Sore " or " Desert Sore " occurring in an European resident of Madras.

OCULAR DIPHTHERIA.

Dr. A. K. Muthu, B.SC. (hons.), M.B.B.S. :—

2. Eye infections characterized by discharge are a common problem, constituting a good percentage of all cases of eye disease.

In eye cultures examined at this Institute the predominating organisms are Staphylococci and Diphtheroids. Other less commonly isolated organisms are streptococci, Aerobic gram-positive spore-bearers, coliforms and Haemophilus species.

It was therefore of great interest, because of the rarity, when the case reported below showed the presence of toxigenic strain of C. diphtheria and Staphy lococcus aureus (coagulase positive) in cultures from both eyes.

The patient was a male, Hindu, Child aged one year having corneal opacity in the left eye and a staphyloma of the right eye. Both eyes had in addition a purulent discharge. Swabs from both eyes, taken separately, were sent to the Institute for a routine bacteriological examination by the Government Ophthalmic Hospital, Madras. As preliminary smear examination indicated organisms similar in morphology to C. diphtheria and Staphylococci the appropriate media were inoculated. The organisms grown, were finally identified by cultural tests, bio-chemical tests and virulence tests to be toxigenic strains of C. diphtheria and coagulase positive staphylococcus aureus.

TABLE I.

Statement 1.

EXPENDITURE.

(a) *Actuals*, 1960–61.

		Rs.	nP.
1	Pay of officers	1,32,373	00
2	Pay of establishment	2,84,205	00
3	Other compensatory allowances and Travelling Allowances	73,872	00
4	Dearness allowance	92,822	00
5	Medical Charges	2,017	00
6	Pay of Menials	9,843	00
7	Dearness Allowances to Menials	13,607	00
8	Madras Allowances to Menials	1,212	00
9	Telephone charges	5,380	00
10	Service postage	27 560	00
11	Cleaning charges and office expenses	4,578	00
12	Rates and taxes	11,085	00
13	Purchase of serum	6,14,146	00
14	Instruments and chemicals	2,1 772	00
15	Purchase and feed of calves and other animals	1,54,317	00
16	Motor car maintenance charges	5,381	00
17	Electric current charges	34.9 2	00
18	Customs duty	337	00
19	Other contingencies	73 200	00
20	Books and periodicals	10 772	00
21	S. C. A. to Menials	10,57	00
	Total	17,76,070	00

(b) *Administration of Drugs Act.*

		Rs.	nP.
1	Pay of officers	13 087	00
2	Pay of establishment	7,489	00
3	Other compensatory allowances	1,802	00
4	Dearness allowance	2 217	00
	Total	24,595	00
	Grand total	18,00,665	00

(c) *Amount borne by other Departments on Institute Account.*

		Rs.	nP.
1	Proportionate cost of management and supervision by Director of Medical Services and his staff.	3 540	00
2	Maintenance charges of buildings and electric installations	10,150	00
3	A. Buildings.		
	B. Electric installation	5,180	00
4	Depreciation and interest charges on—		
	A. Buildings	31,425	00
	B. Electric installation	4,270	00
5	Cost of stationery and printing	10,800	00
	Total	65,365	00
	Grand total	18,66,030	00

Statement 2.

RECEIPTS.

		Rs.	nP.
1	Sale proceeds of Sera and Vaccines, etc.	1,73,836	53
2	Miscellaneous receipts	7,102	21
	Total	1,80,938	74

Statement 3.

Estimated cost of supplies and services rendered

		Rs.	nP.
1	Bacterial and chemical examination	2,27,062	00
2	Bacterial vaccine supplied	1,43,128	00
3	Value of cultures and antigen, etc.	87,476	50
4	Vaccine lymph	2,92 937	00
5	Sera	26,32,042	00
6	Value of plasma and group sera issued	48,638	00
7	Solutions	3,84,154	00
	Total	38,15,435	50

TABLE II

Types of Vaccination, 1960.

Serial number and type.	Total number of cases verified.	Total number of cases not verified.	Total.	Percentage of each type of vaccination to the total cases done.
1 Primary Vaccination	405,133	96,055	501,188	13·1
2 Secondary Vaccination	7,645	..	7,645	0·2
3 Re-vaccination	1,610,700	651,411	2,262,111	81·6
Total	2,023,478	747,466	2,770,944	1·00

		Total.	Percentage to each type to the total cases done.
1	Total quantity of vaccine lymph issued at four insertions per dose.	4,686,990	..
2	Total quantity of vaccine lymph used for vaccinating cases in 1, 2, and 3 above, calculated at four insertions per cases.	1,637,886	34·9
3	Total vaccine lymph unaccounted for	3,049,104	65·1

TABLE III.

Primary, Secondary and Re-vaccination results for 1960.

(The districts are in order of case success rate in Primary Vaccination.)

Serial number and name of the districts.	Primary vaccinations. Case success. Total number of cases verified.	Primary vaccinations. Case success. Percentage of case success.	Primary vaccinations. Insertion success. Total number of insertions verified.	Primary vaccinations. Insertion success. Percentage of insertious success.	Re-vaccinations. Total number of cases verified.	Re-vaccinations. Percentage of case success.	Vaccinations. Total number of cases not verified	Vaccinations. Total number vaccinations.	Percentage of vaccine lymph unaccounted for
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1 Coimbatore	371	97·2	1,476	98·6	1,017	15·2	622	2,010	92·5
2 Chingleput	8,379	95·2	32,752	80·0	29,888	18·0	11,285	52,552	78·6
3 North Arcot	29,915	95·1	117,870	86·5	91,403	16·2	49,331	170,648	63·7
4 Nilgiris	2,723	95·0	10,492	85·6	14,593	12·3	2,585	19,901	69·3
5 Tiruchirappalli ..	41,844	94·5	164,820	83·5	95,573	17·6	101,780	239,197	52·8
6 Thanjavur	13,598	93·7	52,192	79·6	45,001	12·2	31,476	90,075	32·4
7 Madurai	41,303	93·7	165,212	74·7	158,823	14·0	96,219	295,345	45·9
8 Kanyakumari ..	2,740	90·1	10,856	74·2	12,022	22·0	4,932	19,694	91·5
9 Ramanathapuram ..	37,140	88·8	146,190	70·4	91,800	16·8	75,541	207,481	36·8
10 Salem	25,351	87·5	99,346	69·5	73,921	1·0	82,243	18,518	71·2
11 South Arcot	46,271	86·7	171,054	68·1	56,241	29·8	106,820	219,332	6·6
12 Tirunelveli	..	..	..	..	..	..	..	..	100·0
Districts—Total ..	249,635	91·4	972,260	75·1	673,285	16·1	566,811	1,487,753	69·4
13 Municipalities	104,743	98·3	397,484	90·6	617,483	10·4	103,014	824,270	45·9
14 Madras Corporation ..	50,755	10·0	184,940	93·9	318,852	4·8	872,34	456,841	36·2
15 Other bodies	..	..	..	..	1,080	45·8	..	1,80	99·8
Grand total ..	405,133	94·2	1,554,784	81·3	1,610,700	11·7	755,111	2,779,944	65·7

TABLE IV.

Particulars showing the pathological specimens examined during 1*st April* 1960 *to* 31*st March* 1961.

Serial number. (1)	Part and description. (2)	Number examined. (3)	Number positive. (4)	Details regarding positive. (5)
Part I.—Microscopical and bacteriological examination.				
Part I-A.				
1 Blood films ..	56	1	Malaria	1
		..	Microfilaria	Nil.
2 Blood smear for differential count.	239			
3 Blood for total count.	140	..	R.B.C.	37
4 Blood for haemoglobin.	37		W.B.C.	103
5 Blood for Erythrocyte sedimentation rate.	20			
6A Blood for agglutination test for widal.	2,693	2,827	Enteric group—	
			Sal. typhi	997
			Sal. paratyphi A	12
			Do. B	57
			Do. C	3
			More than one	1,758
6B Blood for agglutination test for Weil Felix.	56	31	Weil Felix—	
			o x K	7
			● x 2	10
			● x 19	14

TABLE IV—*cont.*

Particulars showing the pathological specimens examined during 1*st April* 1960 *to* 31*st March* 1961—cont.

Serial number. (1)	Part and description. (2)	Number examined. (3)	Number positive. (4)	Details regarding positive. (5)
Part I.—Microscopical and bacteriological examination—cont.				
Part I-A—cont.				
			Brucellosis—	
6C Blood for agglutination test for brucellosis.	9	4	Brucella abortus	2
			Brucella melitensis	2
7A Blood for aldehyde test.	30	2		
7B Blood for antimony test.	30	2		
			Enteric Group—	
7C Blood for culture ..	1,970	306	Sal. typhi	206
			Sal. para typhi A	23
			Do. B	32
			Do. C	1
			Others	44
Part I-A—Total ..	6,280	3,173		
Part I-B.				
8A Urine for quantitative test.	79	..		
8B Urine for microscopical examination.	61	..		
8C Urine for cultural examination.	1,282	653	B. coli	434
			Enteric group	1
			Other organisms	218
Part I-B—Total ..	1,422	653		
Part I-C.				
9A Motion for microscopical examination	111	24	E. H (Vegetative forms and cysts).	3
			Ova	10
			Cellular exudate	7
			Other organisms	4
9B Motion for cultural examinations.	645	17	V. cholera	1
			Dysentery group	1
			Enteric group	13
			Other organisms	2
Part I-C—Total ..	756	41		
Part I-D.				
10A Cerebro-spinal fluid for cell count.	3	..		
10B Cerebro-spinal fluid for cultural examination.	38	23	Meningococcus	Nil.
			Pneumococcus	Nil.
			Others	23
Part I-D—Total ..	41	23		

TABLE IV—*cont.*

Particulars showing the pathological specimens examined during 1st April 1960 to 31st March 1961—cont.

Part I.—Microscopical and bacteriological examination—cont.

Part I-E.

Serial number.	Part and description.	Number examined.	Number positive.	Details regarding positive.
(1)	(2)	(3)	(4)	(5)
11	Conjunctival cultures ..	149	144	Staphylococcus .. .. ..
				Diphtheroids .. .. ..
				C. diphtheria .. .. ..
				Others .. .. ..
	Part I-E—Total ..	149	144	

Part I-F.

12	Throat swabs for cultural Examination.	181	57	C. diphtheria .. .. ..
				Others .. .. ..
	Part I-F—Total ..	181	57	

Part I-G.

13A	Sputum for microscopical examination for AFB.	2,776	264	
13B	Sputum for cultural examination	2,722	59	
	Part I-G—Total ..	5,498	323	

Part I-H.

14A	Pathological fluid for microscopical examination.	285	3	M. leprae .. .. ..
				N. gonorrhoea .. .. ..
				P. pestis .. .. ..
				Others .. ..
14B	Pathological fluid for cultural examination.	249	199	
	Part I-H—Total ..	534	202	

Part I-I.

15	Test on animals with pathological fluids.	54	..
	Part I-I—Total ..	54	..
	Grand total ..	14,915	4,616

Details regarding the number of histo-pathological specimens examined in the Institute and reported during the period 1st April 1960 to 31st March 1961.

Total number of specimens examined 8

TABLE V

Particulars showing the total number of serology tests done during the period 1st April 1960 to 31st March 1961.

Serial number and name of the test.	Total examined.	Positives
(1)	(2)	(3)
1 Number of bloods for V. D. R. L. test	23,358	2,259
2 Do. Kahn test	22,592	2,047
3 Do. W. R. test	6,954	783
4 Number of C. S. Fs. for W. R. Test	628	31
5 Do. Langes' test	610	19
6 Number of bloods for Pawl Bunnel test	9	..
Total ..	54,151	5,139

TABLE VI

Particulars showing the estimated value of Serology tests done during the period 1st April 1960 to 31st March 1961.

Serial number and name of test.	Number examined.	Rate.	Amount.
(1)	(2)	(3)	(4)
		Rs.	Rs.
1 Number of bloods for V. D. R. L. test ..	23,358	3	70,074
2 Do. Kahn test	22,592	3	67,776
3 Do. M. R. test	6,954	3	20,862
4 Number of C. S. Fs. for W. R. test ..	628	3	1,884
5 Do. Langes' test ..	610	5	3,050
6 Number of bloods for Pawl Bunnel test ..	9	5	45
Total ..	54,151	..	163,691

TABLE VII.

Particulars showing the manufacture and supply of Reagents to various Institutes during the period 1st April 1960 to 31st March 1961.

Serial number and name of Reagent.	Manufacture c.c.	Supply c.c.
(1)	(2)	(3)
1 Kahn antigen for Kahn test	5,940	4,332
2 Bullock heart extract for W.R. test	450	233
3 1 per cent Cholesterol for W.R. test	400	..
4 Anti-sheep ambeceptor	35	13
Total ..	6,825	4,578

TABLE VIII

Particulars showing the estimated cost of reagents supplied to various Institutions during the period 1st April 1960 to 31 st March 1961.

Serial number and name of Reagent. (1)	Rate Rs (2)	Manufacture c. c. (3)	Cost Rs. (4)	Supply c. c. (5)	Cost (6)
1 Kahn Antigen	2·00	5,940	11,880	4,332	8,664.00
2 Bullock Heart Extract	0·50	450	225	233	116·50
3 1 Per cent Cholesterol ..	1·00	400	400	..	..
4 Anti-sheep Amboceptor	6·00	35	210	13	78.00
Total ..		6,825	12,715	4,578	8,858·50

TABLE IX.

Particulars showing the annual receipts, supplies and balance of prophylactic vaccines of Cholera, T.A.B. and Plague for the year 1960–61 (1st April 1960 to 31st March 1961.)

Serial number and name of vaccine. (1)	Opening balance in c.c. (2)	Receipts from mofussal in c.c (3)	Manufacture in c.c. (4)	Total stock columns 3 to 5 (5)	Issues. Madras State. (6)	Andhra State. (7)
1 Cholera	2,060,859	61,712	1,781,788	3,904,359	2,389,697	1,352
2 T.A.B. ..	68,284	530	214, 09	282,823	183,042	8,837
3 Plague ..	5,000	Nil.	*17,460	22,460	16,860	600

	Issues—cont. Kerala State. (8)	Karnataka State. (9)	Kanyakumari district. (10)	Total issues in c.c. columns 7 to 11. (11)	Quantity in c. c. condemned and destroyed. (12)	Closing balance in c.c. (13)
1 Cholera ..	2,409	448	16,350	2,410,256	16,597	1,477,506
2 T.A.B. ..	9,572	348	3,610	205,109	2,264	75,150
3 Plague ..	Nil.	Nil.	Nil.	17,460	Nil	5,000

* Received from the Haffkin Institute, Bombay.

Sterile Solution :—Water for injection 10cc ampoules.

Quantity manufactured :—1,72,307 ampoules.

TABLE X.

Particulars showing the manufacture and supply of various media and sterilised articles in Madras State during the period 1st April 1960 to 31st March 1961.

Serial number and description. (1)	Total, manufacture in c c. and sterile articles. (2)	Total, supply in c.c. and sterile articles. (3)	Remarks. (4)
1 Various media in c.c.	5,892,302	5,869,275	..
2 Various sterilised articles, 5 c.c. ampoules, Faeces tubes, Throat swabs, Test tubes, etc.	187,665	184,962	..

TABLE XI.

Particulars showing supplies of stock vaccines (polyvalent), auto-vaccines, bacterial suspensions, high titre sera, etc., for the period commencing 1st April 1960 to 31st March 1961.

Serial number and name of organisms. (1)	Stock vaccine doses. (2)	Auto-vaccine doses. (3)
Pyogenic Group.		
1 Staphylococcus vaccine	4,267	204
2 Streptococcus (Pyogenus) vaccine	995	18
3 Streptococcus (Pyorrhoea) vaccine	436	..
4 Streptococcus (Filarial) vaccine	8,148	..
5 Strepto plus Staphylococcus vaccine	8,004	24
6 Strepto plus Diphtheroids	..	18
7 Staphylo plus Diphtheroids	..	18
8 C. Acne	..	6
9 C. Acen plus Staphylo	..	12
10 C. acne Plus Staphylo-Diphtheroids	..	6
11 Pyocyaneus	..	6
Intestinal Group.		
12 T.A.B. vaccine for protein shock therapy	562	..
13 T.A.B (curative) vaccine	1,684	..
14 Enterococcus	..	24
15 Paracolon	..	6
Genito-urinary Group.		
16 Gonococcus vaccine	720	..
17 Gono compound vaccine	318	..
18 B. coli-strepto (puerpural) vaccine	351	..
19 B. coli-Entero	..	6
20 Pyocyaneus	..	12
Respiratory Group.		
21 Compound catarrhal vaccine	988	12
22 H. pertussis (curative) vaccine	11,773	..
23 H. pertussis (prophylactic) vaccine	3,476	..
24 Streptococcus	..	36
25 Strepto plus N. catarrhalis	..	64
26 Strepto plus pneumo	..	22
27 Strepto plus H. influenza	..	6
28 Strepto plus Staphylo	..	24
29 Strepto plus Pneumo plus N. cat	..	44
30 Strepto plus Pneumo plus Staphylo	..	6
31 Strepto plus N. cat plus H. influenza	..	70
32 Strepto plus Pneumo plus N. cat. Staphylo	..	6
33 Strepto plus N. cat. plus Diphth plus Staphylo	..	24
34 Strepto plus N. cat. plus H. influenza plus B. friedlanderi.	..	6
35 Strepto plus N. cat. plus Diphth plus H. influenza plus Staphylo.	..	12
36 Strepto plus Pneumo plus N. cat. plus Diphth. plus Staphylo.	..	6

Serial number and name of organisms.	Stock vaccine doses.	Auto-vaccine doses.
(1)	(2)	(3)
37 Staphylo plus Diphtheroids	..	18
38 Staphylo plus Pneumo plus N. cat. plus Diphth	..	12
39 N cat. plus H. influenza	..	18
40 N. cat plus H. influ plus B. friedlander	..	6
41 N. cat. plus Diphth plus Staphylo	..	6
42 N. cat plus Diph plus H. influenza plus Staphylo ..	..	12
Miscellaneous.		
43 Old Tuberculin for V.P. Test	4,165	..
44 Old Tuberculin for Mantoux test	5,300	..
45 Streptococcus	..	12
46 Strep o plus N. cat	..	12
47 Strep o plus Staphylo	..	6
48 Strepto plus Diphtheroids	..	6
49 Strepto plus N. cat plus Staphylo	..	6
50 Staphylococcus	..	6
51 Diphtheroids	..	6
52 N. cat plus Diphtheroids	..	6
53 Live cultures of all organisms	379 tubes	..
54 Bacterial suspensions	1,15,425 c.c.	..
55 High titre sera	1,103 × 1 c.c.	..

TABLE XII

Particulars showing the total supply of Bacterio-phage from the month of 1st April 1960 to 31st March 1961.

Number of tubes—217 × 3 c.c. ampoules.

TABLE XIII.

Department of Biological Control, King Institute, Guindy, Madras-32—Tabular statement of tests conducted during the year 1960-61.

Serial number and nature of tests.	Total number of specimens tested during the year 1960-61.	Total number of tests done during the year 1960-61.	Tests done for various departments of the Institute.	Tests done for Government Hospitals.	Tests done for private firms and individuals.	Tests done for Government Institutions.	Tests done for Inspectors of Manufacturing concern.	Tests done for States other than Madras.	Total number of specimens found not of standard quality.	Value of tests if charged at scheduled rates.	Amount realised, 1960-61.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11) Rs.	(12) Rs.
1 Sterility test .. — —	1,252	1,286	1,177	33	26	..	46	4	13	15,024	120
2 Pyrogen test .. — ...	660	743	713	5	1	..	23	1	..	33,000	250
3 Toxicity test	1,311	2,424	2,372	13	1	..	38	..	..	20,976	16
4 Chemical Analysis	542	812	685	7	4	..	114	2	3	16,760	90
5 Tinct- Digitalis-Bio Assay.	5	25	..	..	8	..	1 under test.	17	4	120	96
6 Antibiotic assay	22	76	..	24	30	..	22	..	3	550	225
7 Antibiotic sensitivity test ..	26	112	..	78	34	..	..	..	..	135	95
8 Prophy — vaccine identity opacity and Bacteriological tests with H.T.S.	424	896	896	..	..	..	..	..	..	10,600	..
9 Vaccine lymph, colony count, Bact-content etc.	65	370	370	..	..	..	..	..	..	1,625	..
10 ATS—Potency test and Bio-assay.	14	19	15	..	..	..	2	2	..	1,050	100
11 ANTI—Cholera vaccine and Strains of V. cholera for mouse virulence test, etc.	6	33	33	..	..	..	..	..	..	300	..
12 Male frog test	1,549	1,549	..	1,064	480	..	..	5	..	7,745	2,450
Total —	5,876	8,345	6,261	1,224	584	..	245	31	23	1,07,385	3,442

EDUCATION AND PUBLIC HEALTH DEPARTMENT
(Health)

G.O. No. 2246, 20th September 1961

King Institute, Guindy—Administration Report for 1960-61—Reviewed.

READ—the following paper :—

From the Director of Medical Services, dated 1st August 1961,
Ref. No. 45435 S/61.

Order—No. 2246, Health, dated 20th September 1961.

Recorded.

2. *Vaccine Lymph Section.*—During the year under review, the quantity of glycerinated vaccine lymph manufactured in the King Institute, Guindy was 148,875 m'. in a dilu ion of 1 in 3, as against 153,700 ml. manufactured during last year (1959-60). The total quantity of glycerinated vaccine lymph issued to the field during the year, after the general test in conformity with the standards pre cribed, was 4,686,990 doses. 75,000 doses of vaccine lymph were also supplied to the Kerala State.

The Pilot Project of Small Pox Eradication Programme was initiated in the Chingleput District from 1st September 1960. A total quantity of 786,390 doses of vaccine lymph in a dilution of 1 in 5 was made to meet the demand of this project.

3. *Diagnostic section.*—During the year under review, this section examined and reported on 14,915 specimens received for microscopical, cultural, agglutination and other bacteriological tests. 54,151 specimens of blood were received for diagnostic test for Syphilis of which 5,139 were reported positive.

4. *Department of Anti-toxin.*—The Department of Anti-toxin continued to manufacture Tetanus and Perfringens anti-sera.

The scare of South African Horse Disease Epidemic in India necessitated the immunisation of the horses in the King Institute. Consequently, the vaccinated horses had to be given rest for 3 months. This had affected the output of the Department. Though there had been diminished production of toxins and toxoids during the year under report, there was no reduction in the manufacture of sera.

5. *Blood Bank.*—As usual, blood grouping sera and wet plasma were processed and distributed to the various blood banks attached to the Government Medical Institutions and also to private medical institutions. The mobile blood bank team of the Institute was deputed to collect blood from the inmates of the District Jails in the State. Twenty-seven Medical Officers were trained in the blood transfusion and resuscitation work during the year under review.

6. An Expert Committee was constituted in July 1960 under the chairmanship of late Dr. U. Krishna Rao to examine the working of the King Institute and to suggest proposals for its improvement with special reference to the establishment of regional laboratories at important centres, separation of the manufacturing side of the institute from its other activities, etc. The report of the Committee was submitted to the Government in May 1961 and the recommendations made therein are under the consideration of the Government.

7. The working of the Institute continued to be generally satisfactory.

(By order of the Governor)

K. SRINIVASAN,
Secretary to Government.

To the Director of Medical Services, Madras.
" Director of Public Health Madras.
" Director, King Institute, Guindy.
" Social Officers of the District Boards.
" Commissioners of Municipalities through Chairmen.
" Commissioner, Corporation of Madras through the Mayor.
" Accountant-General, Madras.
" Inspector of Local Boards, Madras.
" Board of Revenue (F.P.) Madras.
" Inspector-General of Prisons (through the Home Department).
" Principal, College of Engineering, Guindy.
" General Manager, Southern Railway, Madras-3. (with covering letter.)
" Librarian, Legislative Assembly Department.
" Librarian, Secretariat Library.
" Home Department.
" Public (General) Department.
" Director, Pasteur Institute, Coonoor.
" High Commissioner of India with copies for India Office, Ministry of Health, British Museum (with covering letter).
" Madras Medical Association.
" Registrar, University of Madras.
" Registrar, Annamalai University.
" Madras Chamber of Commerce, Madras.
" Secretary to the Government of Andhra Pradesh, Health, Housing and Municipal Administration Department, Hyderabad (with covering letter).
" Secretary to the Government of Mysore, Health Department, Bangalore (with covering letter).
" Controller of Stationery and Printing, Madras (for distribution of copies with reference to G.O. Ms. No. 2562, Health, dated 13th August 1955 as subsequently amended).