

E.P.H (1948) Department.

MLC SERIES.

Class
M
M/S

G.O. NO. 633 Edu.

Dated

23-3-48

for R.S.

100

[Despatch Abstract.]

Technical Education - Scientific Manpower
Committee - Questionnaire - Papers record

663/65
R.H.

Back Papers.						
G.O.	No.	Department.	Date.	G.O.	No.	Department.

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

ASSY. SECRETARY TO GOVERNMENT
83874 A
9 0001 1947
EDUCATION AND PUBLIC HEALTH DEPT.

DEPUTY SECRETARY
To
20 OCT 1947
PUBLIC DEPARTMENT

The Chief Secretary
Government of Madras; Fort. St. George, Madras - 9.

Sir,

I am directed to state that the Government of India have set up a Scientific Man-Power Committee under the Chairmanship of Sir S.S.Bhatnagar, Director, Council of Scientific and Industrial Research with the following terms of reference :-

- (a) To assess the requirements for different grades of scientific and technical manpower, taking comprehensive view over a period of the next ten years, of the needs of Government (civil and Defence), of teaching and research, and of industry agriculture, transport, medicine and other fields dependent on the use of scientific and technical manpower ;
- (b) To make recommendations regarding action to be taken during the next five years to meet these requirements, in particular with reference to (a) the immediate improvement and expansion of facilities for scientific and technical training in Indian universities and special institutions, (b) training overseas in scientific and technical subjects, (c) the promotion and development of scientific and technical research (d) the utilisation of scientific and technical manpower, and (e) the maintenance of a register of scientific and technical personnel to facilitate their utilisation to the best advantage.

I wish to
 see the
 questionnaire
 form by C.F.
 regarding the
 question of the
 committee, about
 London. Please
 send me the
 form to Dept.
 of Education.

B.

Also a copy
 of the question
 form
 The address of the
 S.L. Officers
 on mailing in
 London, Mysore
 No. 86606

2. With a view to collecting up-to-date statistical and other information required for the work of the Committee it is necessary to carry out a survey of the educational, research and industrial training facilities available in the country. For this purpose the Committee have drawn up a comprehensive questionnaire, *copy attached, for issue to all Provincial Governments, Universities and educational institutions, industrial concerns etc. It is appreciated that a considerable amount of work is involved in answering the questionnaire and it has therefore been decided to depute certain special officers of the Committee to contact the recipients of the questionnaire, if they have no objection, so as to facilitate and expedite the collection of the required information.

3. I am to express the hope that the Provincial Governments would extend their full cooperation and help to the Scientific Manpower Committee in this survey and kindly arrange that the enclosed questionnaire is filled up as far as possible pending the arrival of the special officers referred to in paragraph 2 above. The names of these officers will be communicated very shortly and I am to request that the Provincial Governments would kindly intimate at a very early date the names and designations of their officers whom they might contact.

*with 50 spare copies for issue to Governments Departments and educational institutions administered by Provincial Government.

3 3
4. A copy of the interim report (without appendices) of the Scientific Manpower Committee is sent herewith for the information of the Provincial Governments. Printed copies of the complete report are expected to be available for issue in about two months time.

5. I am to request that replies to the questionnaire may kindly be furnished by the middle of November 1947 at the latest to enable the Committee to complete its task within the time allotted.

I have the honour to be,
Sir,
Your most obedient servant

100-15-9-47-D

J. R. Lingard 17/9/47
for Secretary
MINISTRY OF EDUCATION.

4
MINISTRY OF EDUCATION.
SCIENTIFIC MAN-POWER COMMITTEE. 4

New Delhi, 8th October 1947.

My dear *Shri Chellian*,

This is to introduce Mr. L.S. Chandra Kant and Dr. T.S. Sadasivan, Officers on Special Duty, Scientific Man-Power Committee.

*Have
read*

The Government of India has set up the Scientific Man-Power Committee to assess the requirements for different grades of scientific and technical man-power taking comprehensive view over a period of the next 10 years of the needs of Government (civil and defence), of teaching and research and of industry, agriculture, transport, medicine, and other fields dependent on the use of scientific and technical man-power; and to make recommendations to the Government regarding action to be taken during the next 5 years to meet these requirements. With a view to collecting up-to-date statistical and other information required for the work of the Committee Mr. Chandra Kant and Dr. Sadasivan have been deputed to carry out a comprehensive survey of the educational, research and industrial training facilities available in the Southern Zone, viz., Madras, Travancore, Mysore, and Cochin.

I shall be grateful if you will kindly extend every

possible

possible help to Mr. Chandra Kant and Dr. Sadasivan in this survey.

With best regards,

Yours sincerely,

S. S. Bhatnagar

(S.S. BHATNAGAR)

Hon'ble Shri Avinasalingam Chettiar,
Minister of Education,
Government of Madras,
M A D R A S.

Special agent
10/11/47
22/10/47

63

Edu and P.H. Dept

Memo NO. 83660-A1/47/Edu. d. 21/10/47

Scientific man power survey.

A copy of the letter from Sri S.S. Bhatnagar of the Ministry of Edu Govt of India is forwarded to the D.P.S. S.G.

He is requested to circulate Principals of all colleges, both Govt and aided, under his control to give Messrs L.S. Bhandarkar Kant and T.S. Sadasivan all the information for their work in connection with the Scientific Man Power Committee.

And only D.P.S. with effect to the D.P.S. (with a copy of letter) C.P. to D.P.S. 21/10/47

10/11/47
20/10/47

10/11/47
20/10/47

10/11/47
20/10/47

II

Letter NO. 83660-A2/47/Edu. d. 21-10-47

Ref. To

The Regr. University of Madras
Andhra University
Annamalai University

Sir,

Scientific man power survey

I am directed to forward copy of a letter from Sri S.S. Bhatnagar of the Ministry of Edu Govt of India and to request that the University will be so good as to give Messrs L.S. Bhandarkar Kant and T.S. Sadasivan all the information that they may require in connection with their work on the Scientific Man Power Committee.

Copy to the D.P.S. S.G.

10/11/47
20/10/47

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20/10/47

10/11/47
20/10/47



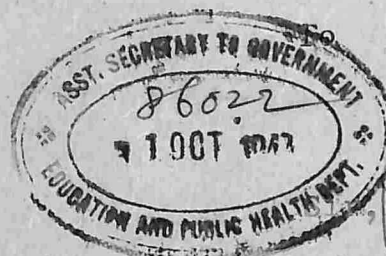
No. 6895

From

ANNAMALAI UNIVERSITY

29th Oct. 1947

THE REGISTRAR,
ANNAMALAI UNIVERSITY
ANNAMALAINGAR



The Secretary,
Education and Public Health Department,
Government of Madras,
Madras.

Ref: No. 83660-A2/47/Edn.

The University will be glad to afford all facilities to the two special officers mentioned deputed by the Government of India in connection with Scientific Man-Power Committee.

N.29.

S. Ramachandran
AG. Registrar. 25.10.47



No.F.21-41/47-E.III(P).

By Air Mail.

GOVERNMENT OF INDIA.
MINISTRY OF EDUCATION.

New Delhi, 14th October 1947.

From

Sir John Sargent, C.I.E.,
Secretary to the Government of India.

To

The Chief Secretary to the Government of Madras,
M A D R A S.

Sir,

I am directed to say that the Government of India have set up a Scientific Man-Power Committee to assess the requirements for different grades of scientific and technical personnel taking a comprehensive view over a period of next 10 years of the needs of Government (civil and defence) of teaching and research and of industry, agriculture, transport, medicine and other fields dependent on the use of scientific and technical man-power; and to make recommendations to the Government regarding action to be taken during the next 5 years to meet these requirements.

2. With a view to collecting up-to-date statistical and other information required for the work of the Committee, the Government have decided to depute Mr. L.S. Chandra Kant and Dr. T.S. Sadasivan, Officers on Special Duty in this Ministry to carry out a comprehensive survey of the educational, research and industrial training facilities available in the Southern Zone, viz., Madras, Mysore, Travancore, Cochin and Pudukottah.

3 I am to request that you may kindly extend every possible to the above-named officers especially in the matter of visiting the various industrial concerns in your Province.

I have the honour to be,
Sir,
Your obedient servant,

S. R. Lingappa

For Secretary to the Government of India.

ANNAMALAI UNIVERSITY

From

THE REGISTRAR
ANNAMALAI UNIVERSITY
ANNAMALAINAGAR



The Registrar will be glad to afford all facilities to the two special officers mentioned above by the Government of India in connection with their work for the Man-Power Committee.

N. 20.

Memo No. 83874A-2/4AFda. dated. 6-11-47

Scientific Man-Power Committee - Questionnaire.

Letter from the Secy. to the Govt. of India, Ministry of Education, No.F.21-34/47 F.III (P) d.15-9-47.

Acopy of the letter from the Govt. of India, together with copies of the ~~question~~ questionnaire is forwarded to the ~~-----~~. He is requested to arrange for the questionnaire to be completed and returned to the Secretary, Scientific Man-Power Committee, by the middle of November, unless ~~directly~~ handed over to an officer of the Committee and to report the fact to this dept. He is also requested to report at once the ~~names~~ ^{and designations} of the officers under him whom the ~~Secy~~ Special Officer of the Committee might contact.

226/16/47

226/16/47

II.

Letter No. 83874A-3/4AFda. dated 6-11-47

To

The Registrar, University of Madras
Annamalai University
Tandhra University.

(with encl.)

Sir,

Scientific Man-Power Committee - Questionnaire.

I am to forward copy of the letter from the Secretary to the Government of India, Ministry of Education, No.21-34/47 F. III (P) dated 15-9-47, together with copies of the questionnaire and to request that the questionnaire ^{kindly} may be completed and ^{kindly} returned to the Secretary, Scientific Man-Power Committee, by the middle of November unless ^{it is} handed over directly to an officer of the Committee. I am ~~also~~ also to request that the names and designations of the officers of the University

- * The D.P.I. ✓
- " S. G. ✓
- " D. P. H. ✓
- " D. of I. & C. ✓
- " D. A. ✓
- " D. V. S. ✓
- " Chief Engrs. (Genl. Engrs.) ✓
- " (Spl. Engrs.) ✓
- " C. E. (Highways) ✓
- " C. E. (Electricity) ✓

with enclosures attached to each. Dpd into end 7.11.47

To The as above (copy of letter and copies of questionnaire.)

(Kept in sect. 6)

Dpd into end 7.11.47

226/16/47

10
Committee's
whom the Special Officer might be asked to contact
may be communicated to this department at a very ^{early} date.

g. o. s. by (initials)
B.M.
23/10/47

EDPH Dept.
Letter/Ref No 83660 A-5 Educ. d. 7.11.47.

To The Secretary to the Govt of India
Ministry of Education
New Delhi.

For Scientific Man-Power Survey.

Ref:- Your letter No F.21-41/47-E III(P) dated
20.10.47.

With reference to your letter cited
above, I am directed to state that on receipt
of a letter from Sri S.S. Bhatnagar, dated
8.10.47 on the same subject, addressed to
the Honourable Minister for Edu. this Govt.
have already issued instructions to the
various heads of depts under their
Control and to the universities in this

P.T.O.

2 drafts

CP.

pp 4-5 CP

CP

10 12
proceed to give ~~Mr. Bha~~ Mr L. S. Chandra
Kant and Dr T. S. Sadasivan all the
information that they may require for
their work in connection with the Scientific
Man-Power Committee.

Eff
6.11.47
hm
6/11/47
J.M.
6/11/47
G. O. S.
w/
7/11/47.

10 13
Medical Department.

From

Dr. S.L. Bhatia, C.I.E., M.C., V.H.S., M.A., M.D., (Cantab.)
F.R.C.P., (Lond.) F.R.S.(E).
Surgeon-General with the Govt. of Madras, Madras 6.

To
The Joint Secretary to Government,
Education and Public Health Department, Madras.

Ref.No.91408-4-P.W. dated 13th November 1947.

Subject.- Scientific Man-power Committee - collection of
information by the Special Officers of the Committee.
Reference.- Government Memorandum No.83874-A2/47 dated
6th November 1947. p9 ante

9002
The following officers of this Department may be contacted
by the Special Officers deputed by the Government of India, for the
purpose of collecting information for the Scientific Man-power Committee
set up by the Government of India:-

p.t.o.

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-2-

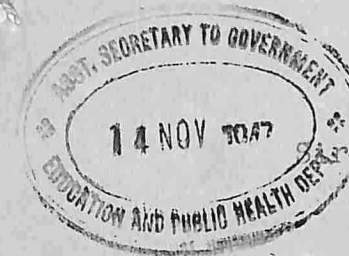
<u>Name of the Officer.</u>	<u>Designation.</u>
1. Dr. P.V. Cherian, M.B.E., F.R.C.S.(E) D.L.O., etc.	Principal, Madras Medical College, Madras.
2. Dr. P. Kutumbiah, B.A., M.D., M.R.C.P., (Lond.)	Principal, Stanley Medical College, Madras.
3. Dr. C.G. Pandit, M.B.B.S., Ph.D.,	Director, King Institute, Guindy.
4. Lt.-Col. Sangham Lal.	Superintendent, Govt. General Hospital, Madras.
5. Rao Bahadur Dr. M.G. Kini, M.C., F.R.C.S.(Edin.) etc.	Superintendent, Stanley Hospital, Madras.
6. Dr. T. Bhaskara Menon, M.D. M.R.C.P., D.Sc.,	Principal, Andhra Medical College, Vizagapatam.
7. Lt.-Col. M.V. Ramanamurthi, F.R.C.S.E.,	Superintendent, King George Hospi- tal, Vizagapatam.

2. Necessary action is being taken regarding the question-
naire received with the Government Memorandum cited above.

Your obedient servant,

M. H. Rao 13/11
for Surgeon-General with the Govt.
of Madras.

kcv.13/11.



90281

From W.H. Turner, Esq., B.Sc., A.M.I. Mech.E.,
M.I.E.(Ind.), Chief Engineer(Highways),
Chepauk, Madras 5.

To The Secretary to
Government, Education
and Public Health
Department.

Letter No. 6510 B2/47-1 dated 13-11-47:

Sub: Scientific Man-Power Committee - Questionnaire
Ref: Government Memo. No. 83874 A-2/47-A, Education,
dated 6-11-1947.

The special Officer of the Committee may contact
the Chief Engineer(Highways) (W.H. Turner, Esq.,) at his
office at Chepauk, Madras.

W.H. Turner,
Chief Engineer (Highways)

(By order)

KRS.13/11-

J. G. Rao 13/11
For Chief Engineer(Highways)

J. G. Rao
13/11

158

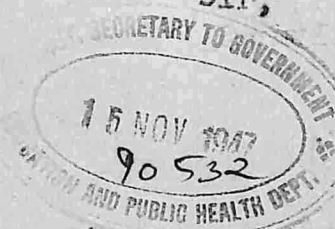
From
M.S. Sivaraman, Esqr., I.C.S.,
Director of Agriculture,
Chepauk, Madras.

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16 8
AGRICULTURAL DEPARTMENT

To
The Secretary,
Ministry of Education,
Government of India, NEW DELHI.

No.D.2. 907/47 dated 13th November 1947.

Sir,



Sub: Scientific Man Power Committee - Questionnaire
replies furnished.
Ref: His letter No.F.21/34/47-E/3-P dated 15.9.47
to the Chief Secretary, Government of Madras.

--O--
I am furnishing herewith replies to the questionnaire
issued by the Scientific Man Power Committee.

M.S. Sivaraman
Director of Agriculture.

vsd.14.11.47-2 ✓

Copy to the Secretary to Government, Education and Public Health
Department, Madras with reference to Government Memo No.
83874-A.II/47-A dated 6.11.47.

The Special Officer may please be requested to contact
the Principals of the Agricultural Colleges at Coimbatore and Bapatla
and also the Heads of Sections at Coimbatore. The following are the
names of the Officers:

1. Sri Rao Bahadur P.V.Ramiah, M.A., B.Sc. (Edin), Principal, Agricultural College, Coimbatore.
2. " K.M.Thomas, B.A., M.Sc., Government Mycologist
3. " C.Vijayaraghavan, L.Ag., Millets Specialist
4. " M.C.Churian, B.A., B.Sc., Government Entomologist
5. " P.D.Karunakar, B.Sc., M.Sc., A.R.I.C., Govt. Agricultural Chemist, p. 2 b.

- 17
6. Sri R. Balasubramania Ayyar, B.A., B.Sc., (Ag.).
 7. " M.B. Narasinga Rao, B.Sc., (Ag.), Paddy Specialist.
 8. " K. Balaji Rao, L.Ag., Pulses Specialist.
 9. " S.N. Chandrasekara Ayyar, M.A., Government Lecturing and Systematic Botanist.
 10. " R.N.K. Sundaram, C.D.A., N.D.D., Senior Lecturer in Agriculture, Lawley Road, P.O.,
 11. " C.M. John, B.A., Oil Seeds Specialist.
 12. " C.R. Srinivasa Ayyangar, L.Ag., Principal, Agricultural College, Bapatla.

True copy - forwarded - by order.

d. Nam
Gazetted Assistant.

vsd. 14.11.47.2

14/11

18 #

The minimum qualification prescribed for selection into any branch of Departmental activity (except Agricultural Engineering) namely, Research, Teaching, Propaganda and Marketing, is possession of a degree in Agriculture granted by a recognised University.

Candidates with degrees in any one of the science subjects mentioned below are selected in the particular branch of the Department noted against each, only if candidates with degree in agriculture are not available.

Botany	.. Plant Breeding sections
Zoology	.. Entomology section
Chemistry and Physics	.. Chemistry section
Economics	.. Marketing section.

In the Agricultural Engineering section, the minimum qualification prescribed for selection is a possession of a degree in mechanical or civil Engineering, according to the nature of vacancies arising either in mechanical or civil branch.

19

No minimum practical experience is prescribed but candidates with practical experience or post graduate training are generally preferred.

Soil Chemistry, Entomology, Mycology, Plant Breeding, Horticulture, Fruit Preservation and Canning and Malt Making are some of the subjects in which facilities for training are available.

20 + 3
14

A post graduate course of one or two years, may be advantageous in the following subjects.

Soil and Plant Chemistry
Animal Nutrition
Entomology
Mycology
Plant Breeding
Horticulture
Fruit Preservation and Canning
Malt Making.

In England and/or America.

The following number of candidates could be sent abroad for such training.

	First Year	Second Year	Subsequent Years.	Countries to which they should be sent.
Chemistry				
Entomology				
Mycology				
Plant Breeding				
Horticulture				
Fruit Preservation & Canning				
Malt Making.				

	First Year	Second Year	Subsequent Years.	Countries to which they should be sent.
Chemistry	One in each section	One in each section	One in each section once in two years.	America and/or England.

No provision is being made to impart special training in subjects in which training is not available in India at present.

One such subject of high priority is Agricultural Engineering.

The following table gives a tentative requirement of staff required.

	First Year	Second Year	Third Year	Fourth Year	Fifth Year	Sixth to tenth year
(a) Non-Gazetted (Rs. 100-220)						
Agricultural Degree holders	150	150	100	80	60	50
Science " "	12	12	6	4	4	4
Engineering " "	4	4	2	2	2	..
(b) Gazetted (Rs. 230-700)						
Agricultural Degree Holders	12	6	6	6	4	4
Science " "	2	2	2	2	2	1
Engineering " "	2	2	2	2	2	1

In the propaganda side, wherein much development is expected, it is proposed to bifurcate each district and also taluk.

In the research side, it is proposed to have a Research Station for each district to evolve improved strains and carry out research in problems of local importance.

To develop fruit growing, it is proposed to establish model orchards cum nursery and fruit research stations, on regional basis.

Special schemes, partly financed by Central Crop Committees, will be conducted mainly for the development of the following crops: Oil Seeds, Coconut, Arecanut, Sugarcane, Tobacco, Cotton.

The staff required has been included in the tentative estimate furnished in item VI

H 23

- (a) The fundamental or basic research are conducted in the parent breeding stations or sections attached to the Agricultural Research Institute and College, Coimbatore.

The Agricultural College, Bapatla is purely a teaching Institute, at present, and it is proposed to be developed on the lines of the Coimbatore Institute.

- (b) The applied research are conducted in the district farms.

- (c) Testing is being carried out by district staff on cultivators' fields.

- (d) The results achieved in (c) are brought to the notice of the ryots of the locality as a part of propaganda activities of the Department.

Well equipped laboratories and research stations are available for carrying out research

In cases wherein a particular item of work is of interest to other Departments, the details of programme are drawn in consultation and the work is carried out in close co-operation.

16 24 17

The periodical meetings held by Central Crop Committees, happens to be the best medium of ensuring collaboration between research workers of this Department with others working on similar or allied subjects in the rest of India

There is a local Research Council functioning at the Agricultural Research Institute and College, Coimbatore and it acts as an agency for co-ordinating research work carried in different sections and farms of the Agricultural Department.

There is, however, no agency co-ordinating the research work of this Department with other Government Departments, industries or Universities.

~~There are no rules in force, prohibiting loaning of services of scientific and technical personnel to other Departments.~~

There are no rules in force, prohibiting loaning of services of scientific and technical personnel to other Departments.

18 28
Similarly there are no rules in force prohibiting requisitioning services of scientific and technical personnel from other Governments, quasi Government or private bodies temporarily.

There is no advisory body having representatives of other Departments or Government to advise this Department on the training required for scientific or technical personnel.

The salaries to be paid are fixed by the Government of Madras.

26 18
17
The expansion of all nation building Departments, such as Agriculture, Education, Industries, Health, Forestry, and Veterinary should be well balanced.

This will facilitate students to take up all scientific subjects, instead of favouring one or a few of them and neglecting others, causing a severe dearth of trained technical personnel in a few branches.

Malt Making (with jowar) was started in 1942, as a War measure, when imports were completely stopped. This industry which is in its infancy should be supported by levying an import duty on foreign product. Otherwise it is feared the local product cannot compete in price with the foreign product manufactured by well established and by standing firms.

20 27

An Inter-University Board with Sub-Committees for each science subject in which degrees are granted should be formed to bring about standardisation in Syllabus and rules. This is highly essential to bring about uniformity in training.

There is a very well equipped library attached to the Agricultural Research Institute, Coimbatore. There is a Librarian with necessary staff. Each head of a section suggests the latest books published in his line for purchase. Further details will be found in the reply to the questionnaire attached.

From
Rao Bahadur, Dr. R.M. Mathew.,
M.R.C.P., D.T.M., & H., D.P.H.,
Director of Public Health,
MADRAS

R.No. 77551-PWR/47

Sir,

28 21

To
The Secretary to Government
Education and Public Health
Department, Fort St. George,
MADRAS

Dated 17-11-1947

SECRETARY
90985
18 NOV 1947
Ref. Scientific Man Power Committee - Questionnaire
Government Memo No. 83874-A-2-/47-A Education
Dated 6-11-1947. p 9 ante

With reference to the Government memo read above,
I have to state that the Special Officer of the Scientific
Man Power Committee may contact me. Meanwhile, replies to the
questionnaire are being got ready.

17.11.47.
FOR DIRECTOR OF PUBLIC HEALTH, MADRAS

sm. 17/11

3 drafts
pg 90 f.

E.P.H.(A) 29

Memo No. 83874 A-4/47A Edu dated 19-11-47.
Sub: Scientific Manpower Committee - Questionnaire
Ref: Memo No. 83874 A-2/47A Edu d. 6-11-47.

The D.P.J. is requested to expedite his reply to the memo read above.

To the D.P.J. / D. S. S. C.
D.V.S. / C.E., P.W.D., Gunt.
C.E. (Spt.) / C.E. Electricity
18-11-47
18/11/47
18/11/47
19/11

Letter No. 83874 A-5/47A Edu dated 19-11-47.

To the Registrar City of Madras
Annamalai Univ.
Andhra Univ.

Sir,
Sub: Scientific Manpower Committee - Questionnaire.

Ref: My letter No. 83874 A-3/47A Edu d. 6-11-47.

I am to invite your attention to my letter read above and to request for an early reply.

18-11-47

Letter No. 83874 A-6/47A Edu dated 19-11-47.

To the Secretary to the Govt. of India,
Ministry of Education,
New Delhi.

Sir,
Sub: Scientific Manpower Committee
Ref: your No. 7.21-34/47 E III (P) d. 15-9-47.

I am to inform you that the Special Officers of the Scientific Manpower Committee may contact the following officer of this Govt. CA Supplemental list of officers of this Govt. P.T.O.

Copy to the S. S. S. C.
Copy to the C.E. (Highways)
Copy to DGA.
Copy to the D.P.J.
Copy to the Spt. Officers, Scientific Manpower Committee, Gokula, Mysore, Madras.

18-11-47
18/11/47
19/11

whom the Special Officers of the Committee
may contact will be sent ~~very shortly~~ ^{shortly}.

f.o.s.

Name of the officer.

Designation.

1. Dr. P.V. Cherian, M.B.E.,
F.R.C.S.(E), D.L.O., etc., Principal, Madras Medical College,
Madras.
2. Dr. P. Kutumbiah, B.A., M.D.,
M.R.C.P.(Lond.) Principal, Stanley Medical College,
Madras.
3. Dr. C.G. Pandit, M.B.B.S.,
Ph.D., Director, King Institute, Guindy
4. Lt.Col. Sangham Lal. Superintendent, Govt. General
Hospital, Madras.
5. Rao Bahadur Dr. M.G. Kini, M.C., Superintendent, Stanley Hospital,
F.R.C.S.(Edin.), etc., Madras.
6. Dr. T. Bhaskara Menon, M.D.,
M.R.C.P., D.Sc., Principal, Andhra Medical College,
Vizagapatam.
7. Lt. Col. M.V. Ramanamurthi,
F.R.C.S.E., Superintendent, King George Hospital,
Vizagapatam.
8. W.H. Turner, Esq., B.Sc.,
A.M.I.Mech.E., M.I.E.(Ind.) Chief Engineer(Highways), Madras.
9. Sri Rao Bahadur P.V. Ramiah,
M.A., B.Sc.(Edin.) Principal, Agricultural College,
Coimbatore.
10. Sri K.M. Thomas, B.A., M.Sc., Government Mycologist.
11. " C. Vijayaraghavan, L.Ag., Millets Specialist.
12. " M.C. Cherian, B.A., B.Sc., Government Entomologist.
13. " P.D. Karunakar, B.Sc.,
M.Sc., A.R.I.C., Government Agricultural Chemist.
14. " R. Balasubramania Ayyar, B.A.,
B.Sc.(Ag.)
15. " M.B. Narasinga Rao, B.Sc.(Ag.) Paddy Specialist.
16. " K. Balaji Rao, L.Ag., Pulses Specialist.
17. " S.N. Chandrasekara Ayyar, M.A., Govt. Lecturing and Systematic
Botanist.
18. " R.N.K. Sundaram, C.D.A., N.D.D., Senior Lecturer in Agriculture,
Lawley Road, P.O.
19. " C.M. John, B.A., Oil Seeds Specialist.
20. " C.R. Srinivasa Ayyangar, L.Ag. Principal, Agricultural College,
Bapatla.
21. X Rao Bahadur Dr. R.M. Mathew,
M.R.C.P., D.T.M. & H., D.P.H., Director of Public Health, Madras.

Doc.No.2358-I/47.

Civil Veterinary Department,
Triplicane P.O. Madras,
Dated 18-11-47.

From

T.J. Hurley Esq., OBE., MRCVS., DVSM., IVS.,
Director of Veterinary Services, Madras.

To

The Secretary to Government,
Education and Public Health Department,
Madras.

Sir,

Sub: Scientific Man-Power Committee - Questionnaire.

Ref: Government Memorandum No.83874 A-2/47-A, Education, dated
6th November 1947.

-o-

I have the honour to furnish below the names and designations of
the officers in this Department whom the Special Officer of the Scientific
Man-Power Committee might contact:-

- (1) Mr. T.J. Hurley, Director of Veterinary Services, Madras.
- (2) Sri K.S. Nayar, Joint Director of Veterinary Services, Madras.
- (3) Sri G.R. Viswanathan, Principal, Madras Veterinary College, Madras.

2. The questionnaire forwarded with Government Memorandum cited above
will be completed and returned to the Secretary, Scientific Man-Power
Committee, as desired.

Replies from the D.P.H. (A)
are still awaited. This
may be added to the file.

I have the honour to be,
Sir,
Your most obedient servant,

PT.18-11.

Director of Veterinary Services, Madras.

Civil Veterinary Department,
Triplicane P.O. Madras,
Dated 18-11-47.

No. 83874-1/47.

From
T. J. Warley Esq., O.B.E., M.B.V.S., D.V.M., F.V.S.,
Director of Veterinary Services, Madras.

To
The Secretary to Government,
Education and Public Health Department,
Madras.

Sub: Scientific Man-Power Committee - Questionnaire.
Ref: Government Memorandum No. 83874 A-3/47-A, Education, dated
28th November 1947.

I have the honor to furnish below the names and designations of
the officers in this Department whom the Special Officer of the Scientific
Man-Power Committee might contact:-
(1) Mr. T. J. Warley, Director of Veterinary Services, Madras.
(2) Mr. K. S. Nayar, Joint Director of Veterinary Services, Madras.
(3) Mr. G. R. Viswanathan, Principal, Madras Veterinary College, Madras.

2. The questionnaire forwarded with Government Memorandum cited above
will be completed and returned to the Secretary, Scientific Man-Power
Committee, as desired.

I have the honor to be,
Sir,
Your most obedient servant,

[Signature]
Director of Veterinary Services, Madras.

No. **A6171** UNIVERSITY OF MADRAS.
From
THE REGISTRAR,
UNIVERSITY OF MADRAS.

To
The Secretary to the Government of
Madras,
Education and Public Health Dept.

University Buildings,
Chennai, Madras,
19 Nov 1947

Sir,
Ref: Your letter No. 83874 A-3/47-A Edn. *p9-10 ante*
Sub: Scientific Man-Power Committee-Questionnaire.

I am to inform you that on receipt of a communication from
the Government of India, Ministry of Education regarding the above
copies of the Questionnaire have been sent to all the constituent and
affiliated institutions and requested to furnish the information
required therein and to give the necessary facilities to the Officers
deputed by the Central Government when they visit the places. A
copy of the communication sent to the colleges is forwarded for your
information.

Your obedient servant,

[Signature]
Ag. REGISTRAR.

SVA/19/11/-16

[Handwritten note:] This may be added to the
file.

[Handwritten note:] 21-11-47

No. A.5144

From

THE REGISTRAR,
UNIVERSITY OF MADRAS.



To

The Principals of Colleges.

University Buildings,
Chapauk, Madras,

21st October 1947.

Sir/Madam,

Sub: Questionnaire - Man Power Committee.

I have the honour to inform you that the Government of India have set up a Scientific Man-Power Committee under the Chairmanship of Sir S.S.Bhatnagar, Director, Council of Scientific and Industrial Research, with the following terms of reference:--

- (a) To assess the requirements for different grades of scientific and technical manpower, taking comprehensive view over a period of the next ten years, of the needs of Government (Civil and Defence), of teaching and research and of Industry, agriculture, transport, medicine and other fields dependent on the use of scientific and technical manpower.
- (b) To make recommendations regarding action to be taken during the next five years to meet these requirements, in particular with reference to (a) the immediate improvement and expansion of facilities for scientific and technical training in Indian Universities and special institutions, (b) training overseas in scientific and technical subjects, (c) the promotion and development of scientific and technical research, (d) the Utilisation of scientific and technical manpower, and (e) the maintenance of a register of scientific and Technical personnel to facilitate their utilisation to the best advantage.

2. I have to state that with a view to collecting up to date statistical and other information required for the work of the Committee it is necessary to carry out a survey of the educational, research and industrial training facilities available in the country. The Government of India have also deputed two officers (Dr.T.S.Sadasivan and Mr.L.S.Chandrakant) in this connection to contact the Principals and other officers to whom the questionnaire is sent and the Vice-Chancellor desires that all facilities be given to the officers if and when they come to your place on their tour.

I am to request you to be so good as to fill up the enclosed questionnaire and forward the same before the 10th of November 1947.

R.R. Radhakrishnan
Ag. REGISTRAR.

ks/21/10

ANDHRA UNIVERSITY

[102-45-12-8-46-5000.]

WALTAIR, 20th November 1947

No. C5-4750-47.

Encl.

From



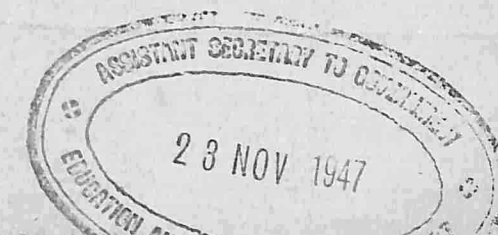
To

THE REGISTRAR, ANDHRA UNIVERSITY

The Secretary to the Government of India,
Ministry of Education,
New Delhi.

Sir,

Sub: Scientific Man-Power Survey.



In acknowledging receipt of your letter No. F.21-34/47 E.111(P), dated the 15th September 1947 (received here on the 27th October 1947) together with the copies of questionnaire and the interim Report as mentioned therein, I have the honour to submit for your information the following names with designations of the teachers of the University whom Mr. L.S.Chandra Kant and Dr. T.S.Sadasivan, the Special Officers of the Scientific Man-Power Committee might contact:

1. Prof. V.S.Krishna, B.A.(Oxon), Ph.D.(Vienna),
Principal, University Colleges, Waltair.
2. Prof. S.Bhagavantam, M.Sc., Hon.D.Sc.(Andhra), Head of the Department of Physics,
J.V.D.College of Science & Technology, Waltair.
3. Dr. T.Vijayaraghavan, B.Sc., D.Phil.(Oxon), Head of the Department of Mathematics,
University College of Arts and Commerce, Waltair.
4. Dr. A.Narasinga Rao, M.A., L.T., Ph.D., Head of the Department of Mathematical Physics,
J.V.D.College of Science & Technology, Waltair.
5. Prof. T.R.Seshadri, M.A., Ph.D.(Manchester), F.I.C.(Lond.), Head of the department
of Chemistry, J.V.D.College of Science & Technology, Waltair.
6. Prof. C.Mahadevan, M.A., D.Sc., F.A.Sc., F.N.I., Head of the Department of Geology,
Erskine College of Natural Sciences, Waltair.
7. S.T.Krishnaswami Chetti Esq., M.A., Head of the Department of Applied Physics,
J.V.D.College of Science & Technology, Waltair.
8. C.J.Dasa Rao, Esq., B.Sc.(Ag.), M.Sc.(Hons.), Head of the Department of Chemical
Technology, J.V.D.College of Science & Technology, Waltair.
9. Prof. R. Gopala Ayyar, M.A., L.T., M.Sc.(L'Pool), F.N.I., F.A.Sc., Head of the
Department of Zoology, Erskine College of Natural Sciences, Waltair.
10. Dr. J. Venkateswarlu, M.Sc., D.Sc., Department of Botany,
Erskine College of Natural Sciences, Waltair.

CR.

K. J. Srinivasan
Registrar.

Copy for information to -

- ✓ (1) The Secretary to the Government of Madras, Education and Public Health Department,
Fort St. George, Madras, with reference to his letter No. 83874 A-3/47-A,
Education dated 6th November 1947.
- (2) The Principal, University Colleges, Waltair.

WALSH



THE REGISTRAR, ANDHRA UNIVERSITY

The Secretary to the Government of India,
Ministry of Education,
New Delhi.

No. 05-070-055

Encl.

ПОТН

ET

...wie

Sup : Scientific and Social Survey

[illegible]

Principal, University College, Walsby,
I. Prof. V. S. Krishna, B.A. (Oxon), Ph.D. (Vienna).

1.V.D.College of Science & Technology, Warangal
2. Prof. S. Bhargavanam, M.Sc., Ph.D., (London), Head of the Department of Physics,
J.V.D.College of Science & Technology, Warangal

S. Dr. T. Wistner-Havon, F.R.S., B.Phil. (Oxon), Head of the Department of Mathematics,
University College of Arts and Sciences, Allahabad

5.V.D.College of Science & Technology, Wodonga
 A. Dr. A. Housheer Res. S.A., U.T., M.B., and of the Department of Mathematical Physics

5. Prof. T. A. Gammali, M.A., Ph.D. (Manchester), F.R.S. (London), Head of the Department of Chemistry, J. V. N. College of Science & Technology, Bangalore

Dr. G. I. Kabanov, N.S., D.Sc., M.I.T., Head of the Department of Polymer Science, University of California, San Diego

Y. V. D. College of Science & Technology, Waiyat
Y. V. D. College of Applied Sciences

Technology, J.V.D. College of Business Administration, University of the Philippines at Diliman, Quezon City, Philippines, 1101

Prof. R. Bogale Ayer, M.A., J.T., M.Sc. (I.I.C.S.), B.M.E., V.A.F.O., Head of the
Department of Zoology, Government College, Bangalore

Dr. J. Verhulst, M.D., Department of Botany,
University College of Natural Sciences, Utrecht

- of collection for year

(S) The Principal, University College, ...

Post Copy of Telephonic Message dated 25-11-1947.

From the Director of Public Instruction, Madras.

To the Secretary to Government,
Education and Public Health Department, Madras

Scientific Manpower Committee - Questionnaire.

Ref: Government Memo No. 83874 A-4/47 dated 19-11-1947.

The questionnaire referred to in the Government Memo quoted above, has been forwarded to the Principal, Presidency College and the Principal, College of Engineering, Guindy for furnishing the particulars required and a reply will be submitted to Government as early as possible.

for Director of Public Instruction.

k.h.26-11.

SPECIAL:

PUBLIC WORKS DEPARTMENT.
No. 6964-AD/47- 1 - dated 27th Nov.1947.

From: Sri Rao Bahadur A.R.Venkata
Acharya, B.E., I.S.E.,
Chief Engineer, P.W.D. (Genl)
Chepauk, Madras.

To: The Secretary to Government,
Education and Public Health
Department, Fort St.George,
Madras.



Sub: Scientific Manpower Committee - Questionnaire -
Ref: Government Memorandum No.83874-A-4/47-A Edn. d/19-11-47.

The particulars required by the Scientific Manpower
Committee are being collected. A reply will be sent within
about a week.

P. R. Annam
27.11.47.
for Chief Engineer, P.W.D.
(General)
27/xi

ppr.27/11.

All official letters, packages
etc., should be addressed
to the Registrar by desig-
nation and not by name.

ANDHRA UNIVERSITY

[221/46 (19-12-46) 5,000]

Waltair, 28th Nov. 1947.

GRAMS: "UNIVERSITY" WALTAIR.
PHONE: WALTAIR. No.



No. C5-4750(1)-47.

Encl.

From THE REGISTRAR, ANDHRA UNIVERSITY.

To The Secretary to the Govt. of Madras,
Education and Public Health Department,
Fort St. George,
Madras.

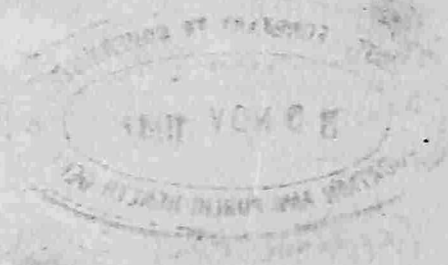
Sir,

Sub:- Scientific Man Power Committee--Questionnaire.
Ref:- Your letter No. 83874 A5/47-A Edn. d/19-11-47.

With reference to your letter referred to above,
I have the honour to invite your attention to my letter
of even number dated 20-11-47 addressed to the Secretary
to the Govt. of India, Ministry of Education, New Delhi
and copy sent to you.

hvr.

Registrar



Speci' Bn

Extract notes from the ^{special} ser sept
C.No. 116680 Di/47. the hearing 38

Sub: Education - Technical - Scientific Manpower
Committee Constituted by the Govt. of India
Visit to this Province during Dec 1947
and Jan 1948.

Ref. From Dr. T.S. Sadasivan of the Ministry of Education
Govt. of India, (Camp Madras) No. 1495 MC
D/28. 11.47.

To A.S.

Cop. attached

A draft memo to the Collectors, D.A. & D.I. &c
is submitted below for approval.

After issue, a copy of the letter may be
sent to E.P.H. Dept for information & for
issue of suitable instructions regarding
educational institutions proposed to be visited
by the Committee.

Sl. No. 116680 Di/47

1. 12.47

Sd/
28.11.47

C.P.G.
(true copy) 28.11.47

K. G. N. N.
28.11.47
Examination
1. 12.47 Superintendent

Government of Madras
Development Department.

Memorandum No. 116680 DI/47-1 dated 29th November 1947.

Sub: Education - Technical - Scientific Manpower Committee
Constituted by the Government of India - Visit to this
Province during December 47 and Jan. '48.
Ref: From Dr. T.S.Sadasivan of the Ministry of Education,
Government of India, (Camp Madras) No.149/SMC dt.
23-11-47.

A copy of letter from Dr. T.S.Sadasivan, a member
of the Scientific Manpower Committee, constituted by the
Government of India, together with a copy of their programme
of tours in this Province during December 1947 and January
1948 is enclosed. The Collectors of Coimbatore, Vizag,
East Godavari, Kistna and Guntur Districts are requested to
arrange with the local authorities in charge of the several
institutions, which the committee propose to visit, to give
all information and the necessary assistance for stay and
transport required by the Committee during their visit.

The Director of Agriculture is requested to make
necessary arrangements for the stay of the Committee at the
Agricultural College Rest House, Coimbatore, as desired in
the letter.

The Director of Industries and Commerce and the
Director of Agriculture are also requested to afford the
required facilities to the Committee to visit the several
institutions in their control as well as the industrial
concerns which the Committee desire to visit.

K.G.Menon,
Joint Secretary to Government.

To the Collector of Coimbatore.

Vizag.
East Godavari.
Kistna-
Guntur.

To the Director of Industries and Commerce.
Director of Agriculture.

Copy to Dr. T.S.Sadasivan, 'Gokulam' Mylapore, Madras.

Copy to Public Works Department.

Copy to the Education and Public Health Department. ✓

sc.10.

Forwarded/By Order.

Superintendent!

Copy of letter No.149/SMC dated 23-11-47 from Dr. T.S.
Sadasivan, of the Ministry of Education, Government
of India (Camp Madras) to the Joint Secretary to Government
Development Department.

The Government of India have set up a Scientific
Man-Power Committee to assess the requirements for different
for

grades of scientific and technical man-power taking a comprehensive view over a period of the next 10 years of the needs of Government (Civil and Defence) of teaching, and research and of industry, agriculture, transport, medicine and other fields dependent on the use of scientific and technical man-power; and to make recommendations to the Government regarding action to be taken during the next 5 years.

With a view to collecting up-to-date information relating to development projects of educational and research institutions, industrial concerns, departments of Government, etc., drift and leakage of scientific talent in the country and to assessing the resources of and the requirements for different grades of scientific and technical man-power, Mr. L.S.Chandrakant and myself have been deputed by the Government of India to visit the various educational and research institutions, industrial concerns, departments of Government, etc. in South India. A separate letter has been sent to Travancore and Cochin States.

I shall be grateful if you will kindly arrange for our stay and transport while in Coimbatore area as well as in Waltair, Rajhamundhry, Bezwada, Guntur and other places. A copy of our tour programme together with a list of various educational and research institutions, industrial concerns and departments of Government, which ~~we~~ we propose to visit in Coimbatore area is enclosed herewith for your information. Our party will consist of Mr. L.S.Chandrakant, two assistants, a peon and myself in the Coimbatore area but we are splitting ourselves up and only an assistant, a peon and myself will visit Waltair, Rajhamundhry, ~~Bezwada~~ Bezwada, Guntur and other places. ~~Our~~ work in Coimbatore area will extend over a period of three days from 11th to 13th December 1947. The exact date of our arrival in Coimbatore will be communicated to you as early as we can. Since most of our work will be in the Agricultural Research Institute, arrangements for our stay there may kindly be made in the Agricultural College Rest House.

I shall be grateful if your Department will extend to us every facility for carrying out the above work of the Scientific Man Power Committee. I shall be indebted if your reply could be sent to the above address.

TOUR PROGRAMME of Dr. T.S.SADASIVAN AND MR. L.S.CHANDRAKANT, Officers on Special Duty, Scientific Man-Power Committee, Ministry of Education, Government of India, in the States of Travancore and Cochin and Coimbatore and Waltair Areas.

26 - 11 - 47	Wednesday	- Leave Madras.
27 - 11 - 47	Thursday	- Arrive Trivandrum
28-11-47 to		
4-12-47	-	Halt at Trivandrum
5-12-47	Friday	Leave Trivandrum for Cochin
-do-		Arrive Cochin.

p.t.o.

6-12-47 to		
9-12-47		- Halt at Cochin.
10-12-47	Wednesday	- Leave Cochin for Coimbatore.
"	"	- Arrive Coimbatore.
11-12-47 to		
13-12-47		- Halt at Coimbatore.
13-12-47	Saturday	- Leave Coimbatore for Erode.
14-12-47	Sunday	- Arrive Mettur.
15-12-47	Monday	- Visit Hydro-electric Project.
"	"	- Leave Erode for Madras.
16-12-47	Tuesday	- Arrive Madras.
"	"	- Departure for Waltair (in the evening)
17-12-47	Wednesday	- Arrive Waltair.
18-12-47 to		
21-12-47		- Halt at Waltair.
21-12-47	Sunday	- Leave Waltair for Rajhamundhry.
"	"	- Arrive Rajhamundhry.
22-12-47	Monday	- Halt at Rajhamundhry
"	"	- Departure for Bezwada (in the evening)
23-12-47 and)		
24-12-47)		- Halt at Bezwada.

p.t.o.

42

-4-

25-12-47	Thursday	- Departure for Cuttack (to attend the Science Academy Meeting).
26-12-47 to 28-12-47		- Halt at Cuttack
29-12-47	Monday	- Leave for Waltair.
"	"	- Arrive Waltair.
30-12-47 & 31-12-47	Tuesday & Wednesday	- Halt at Waltair.
1-1-48	Thursday	- Leave for Guntur.
1-1-48	Thursday	- Halt at Guntur.
2-1-48	Friday	- Leave for Madras.
2-1-48	"	- Arrive Madras.

/True copy/

O. Krishnamoorthy
Superintendent. 1.12.47
SS
1/12-1.12.47

..

30

43

-5-

To be visited by Dr. T.S. Sadasivan and Mr. L.S. Chandrakant, Officers on Special Duty, Scientific Man-Power Committee, Government of India, while touring in the Coimbatore area.

Educational Institutions:

Agricultural College, Coimbatore.
Sugar Cane Research Laboratory, Coimbatore.
Arthur Hope College, of Technology, Coimbatore.
Government College, Coimbatore.

Industrial Concerns:

Somasundaram Mills, Coimbatore.
Pankaja Mills Ltd., Coimbatore.
Pykara Sub-Station (Hydro-Electric Project), Coimbatore.
Central Studios Ltd., Coimbatore.
Stanes Motor Ltd., Coimbatore.
G.D. Naidu Engineering Works, Coimbatore.

P.T.U.

To be visited by Dr. T.S. Sadasivan, M.Sc., Ph.D., Officer
on Special Duty, Scientific Man-Power Committee, Ministry
of Education, Government of India, while touring in the
Waltair area.

Educational Institutions:

University College, Waltair.
Maharaja's College, Vizianagaram.
Andhra Medical College, Vizagapatam.
King George Hospital, Vizagapatam.
Central Tobacco Research Station, Rajahmundry.
Medical College, Guntur.
Andhra Christian College, Guntur.

Industrial Concerns:

Cement Factory, Bezwada.
Andhra Paper Mills Co., Ltd., Rajahmundry.
Canning Factory, Bezwada.
Ship Building Industry, Vizagapatam.

/True copy/

Superintendent.

Letter No. 83874 A-3/47 A Edu. Dated 9.12.47
Ref.

To the Secy to the Govt of India
Ministry of Edu.
New Delhi

Sir,
Scientific Manpower Committee.

In continuation of this dept letter no:
83874 A-6/47 Edu D 19.11.47. I am to forward
the following further list of officers of this Govt whom the
special officers may contact:-

Mr. T. J. Hurley, Director of Veterinary Services
Madras

Sr. K. S. Nagan, Joint Director of Veterinary Services
Madras

Sr. J. R. Viswanathan, Principal, Madras
Veterinary College, Madras

Memo. No. 83874 A-8/47 A Edu. Dated 9.12.47.

Scientific Man Power Committee

In continuation of Govt Memo no:
83874 A-2/47 Edu D 6.11.47, a copy of the tour
programme of Messrs. T. S. Sadasivan and
A. S. Chandra Sekhant is commd to the D.P.S.C.

Copy to Principal
Andhra Christian
College Guntur
Teaching
Committee
Principal, Govt
College, Bezwada

Copy to the Regr, Andhra University, Waltair with enclosure. H-40-44cf

SPECIAL

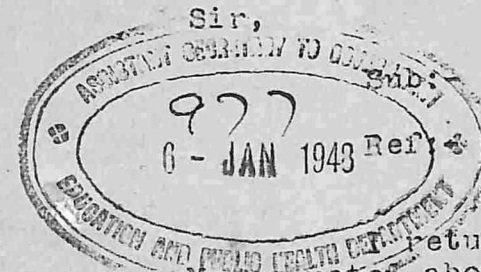
PUBLIC WORKS DEPARTMENT

From Sri Rao Bahadur
A.R.Venkata Acharya, B.E., I.S.E.,
Chief Engineer (Irrigation)
General, Chepauk, Madras.

To the Secretary to Government,
Education & Public Health
Department,
Madras.

Letter No.6964-Ad.1/47 CR 3/3-1-48.

Sir,



Sub: Scientific Man Power Committee - Questionnaire.
Ref: Government Memo No.83874-A-2/47-A Enn. 3/6-11-47.

I return herewith the Questionnaire sent with the Government
Memo quoted above duly completed for transmission to the Secretary,
Scientific Man Power Committee.

AGK: 3/1

Encl:
1 Questionnaire.

R. S. Acharya

5.1.48

For Chief Engineer, P.W.D.

5/1

2 drafts
as
p 290 f.

23

E. P. H. (A)

Memo. No. 83874A-7/47A Edm. d. 9-1-48.

Sub: Scientific Manpower Committee -
Questionnaire.

Ref. Memo. No. 83874A-4/47A Edm. d. 19-11-47.

The D. P. J. is requested
thereas in
margin

to expedite his reply to Memo. No. 83874A
2/47A Edm. d. 6-11-47.

To the D. P. J. / Dg Jdc
C.E. (Spl.) / C.E. (Elt.)
(para. only) is requested to furnish the names
and designations of the officers ^(including) on the Spl. Officer
To the C.E. (Lrign.), Genl. of the Committee may contact.
(para. only)

Def
15-1-48

8-1-48
8/1/48

iml
9/1/48

P.T.

Letter No. 83874 A-16/47A Dated 9-1-48.

To the Secy., Scientific Manpower Committee,
New Delhi. (with encl.)

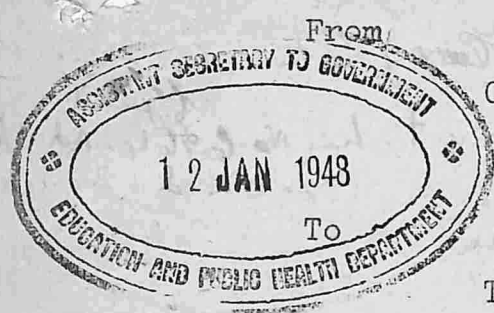
Sir,

I am to enclose a copy of the questionnaire
issued by you duly completed by the
C.E. (Irrig.), Genl.

Y. O. S.
8-1-48
8/1/48

Copy to the C.E. (Irrig.),
Genl.
w.r.t. his No. 6964-Ad. 1/48
47-C.R. 2. 3.1.48.

placed below.



Medical Department.

Col. S.L. Bhatia, CIE. MC. ~~MB~~ MA. MD. (CANTAB).
FRCP (LOND). FRS (E).
Surgeon-General with the Govt. of Madras, Madras 6.

The Secretary to Government,
Education and Public Health Department, Madras.

Ref. No. 91408-11/P.W./47. Dated 8-1-48.

Sir,

Sub:- Scientific Man-Power Committee - Questionnaire.

Ref:- Government Memo. No. 83874-A.2/47-A^{Edw.} dated 6-11-47.

The questionnaire received from the Government of India
has since been completed and sent direct to Dr. T.S. Sadasivan,
Officer on Special Duty, Scientific Man-Power Committee who happens
to be now on tour in Madras.

Your obedient servant,

for Surgeon-General with the Govt. of Madras.

R.G.7-1.

PUBLIC WORKS DEPARTMENT.

From

Sri Rao Bahadur
A.R.Venkata Acharya, B.E., I.S.E.,
Chief Engineer (Irrigation), General Branch,
Chepauk, Madras.

To

The Secretary to Government,
Education and Public Health Department,
Fort St. George, Madras.

Letter No.349-Ad.1/48-1, dated 19-1-

Sir,

SCIENTIFIC MAN POWER COMMITTEE -- QUESTIONNAIRE.

In continuation of Chief Engineer (General)'s letter
No.6964-Ad.I/47-C.R., dated 3-1-1948, I enclose a supplemental
statement furnishing replies to the questionnaire, relating
purely to Irrigation, for transmission to the Secretary, Scien-
tific Man Power Committee.

for Chief Engineer (General).

Enc.- One Statement.

Copy to Chief Engineer (Irrigation),
Irrigation Branch.

ssc./19-1.

III. State the number of engineers, scientists and technicians in the permanent and temporary cadres of the department under sub-heads given below or the corresponding sub-heads and classifications prevalent in your Department. These should be shown under gazetted and non-gazetted or Commissioned and non-commissioned officers.

Gazetted Officers	Non-Gazetted Officers.	Commissioned Officers.	Non-Commissioned Officers.
(1)	(2)	(3)	(4)

One Senior Laboratory Assistant.

One Junior Laboratory Assistant.

One Chemical Assistant.

Assistant Research Officer.

1. PHYSICAL SCIENCES.

(i) Physics.

(a) Theoretical Physics.

(ii) Chemistry

(a) Inorganic & General Chemistry.

5. Engineering

(c) Irrigation, Irrigation work and Hydraulic Engineering.

VI. State the annual intake of technical personnel under categories indicated in Question III above in the first, second, third, fourth and fifth years and in block in the sixth to tenth years. (This intake should be given by classifications as well as by grades of pay ****.)

FOR IRRIGATION POSTWAR RECONSTRUCTION AND GROW MORE FOOD SCHEMES AND INLAND WATERWAYS.

(a) Upper Staff

5 Superintending Engineers (Mechanical and Civil).

30 Executive Engineers (Mechanical and Civil).

150 Assistant Engineers (Mechanical and Civil).

1000 - 100/2 - 1,200.

500 - 50/2 - 850

290 - 30/2 - 380 - 40/2 - 500.

(b) Lower Staff.

345 Engineer Supervisors

170 Licentiates in Civil Engineering Supervisors

5 Draftsmen - Special Grade

45 -do- I Grade

45 -do- II Grade

145 -do- III Grade

100 Tracers

150-10-250

100-5-150-10-250

150-5-180 200 - 250.

150-5-180.

120-5-150.

70-2-90-3-120

35-1-55

The requirements of staff mentioned above are for the first 5 years. The staff required for the next 5 years will be more or less the same and it may not be possible to forecast now whether there will be an increase or decrease in the intake of the technical personnel.

* The above does not include the requirements of the Mammoth projects--Ramapadasagar Project and the Kistna Pennar projects. If

52
-3-
both these are sanctioned, the total expenditure will be nearly 5 times as much as those involved in the above and atleast 4 times the above staff will be required. One project is about to be sanctioned and the other under investigation.

VII. What are your development plans for the next five and ten years respectively? State the number of recruits under various categories in addition to the annual intakes mentioned under question VI required for these development plans, also the consequential modifications in the permanent and temporary cadre mentioned in question III.

IRRIGATION POSTWAR RECONSTRUCTION AND GROW MORE FOOD SCHEMES AND INLAND WATERWAYS.

The end of war gave an opportunity to review plans for the Postwar ~~Reconstruction~~ Development of Irrigation side by side with the execution of small schemes under "Grow More Food" drive. The problem of rehabilitation of returning soldiers and the provision of occupation for other man power released from the army necessitated the launching of big irrigation schemes as part of the general Post War Reconstruction. Almost all the schemes included in the post war plan are financially not satisfactory, but the schemes are programmed for execution as they might help to promote the welfare of the province on large scale by bringing under Irrigation vast extent of lands.

A five year plan of Grow More Food and other postwar reconstruction schemes comprising 300 schemes estimated to cost about Rs.77 crores has been approved by the Government.

XVI. Give information regarding the library facilities at the disposal of your Department and the way the library is maintained.

In the Irrigation Section of the Chief Engineer's Office, a library relating mostly to books on Irrigation problems is maintained. Technical papers and quarterly bulletins of the Central Board of Irrigation are also received and distributed to subordinates. Important technical books, both Indian and Foreign are also obtained.

A.R. Venkata Acharya,
Chief Engineer (Irrigation).
(General Branch).

True copy.

B. J. Narayanaiah
Senior Super.

37
Letter No. 83874A-11/47A Edn. dated 21-1-48.

To the Secy., Scientific Manpower Committee,
New Delhi. (with Encl.)

Sir,

In continuation of my letter No. 83874A-10/47A Edn. d. 9.1.48, I am to forward herewith a copy of the ~~letter~~ ^{Supplementary} statement received from the C.E. (Irrigation) furnishing replies to the questionnaire, relating purely to Irrigation.

20.1.48

11/1/48

20/1/48

J. S. S.

To the Secy, Scientific Manpower Committee
 (D. 10. 1. 48)
 New Delhi
 (D. 10. 1. 48)
 In continuation of letter No. 8387A-11/48 dated 21-1-48
 I am enclosing a copy of the letter (D. 10. 1. 48) for your reference
 regarding the question of the appointment of a person to the post of
 Secretary to the Committee.

(D. 10. 1. 48)
 New Delhi
 (D. 10. 1. 48)

N.B. 3/14 Lr. 8387A-11/48
 dated 21-1-48
 New Delhi 21 Ste 48
 Chy Secretary Govt of Madras
 f 21-347-e . K. (kindly expedite
 return of question & nair from all
 your colleges and departments stop
 nonreceipt of replies from you has considerably
 delayed our work here stop the matter
 is urgent and we seek your cooperation
 Secy (EPH)
 Scientific manpower
 committee



Eden Press, Calcutta—No. 2 (5176/D-9)—12-8-47—90,000 Bks.
(Not to be signalled.)

Signature of Sender. } FROM

TO

Code. } Prefix
Class }
At. H. M. }
By }
Sent to }
Recd. from }

INDIAN POSTS AND TELEGRAPHS DEPARTMENT

OFFICE STAMP.

2 drafts

55
E. P. H. (A)

Mem. No. 83874A-12/47A Edu. dated 2/1-48.
Sub: Scientific Manpower Committee - Questionnaire
Ref: Mem. No. 83874A-2/47A Edu. d. 6.11.47.
From the Scientific Manpower Committee, Telegram
d. 24.1.48.

*p9c-f
p54c-f*

p54c-f

A copy of the telegram received from the Scientific Manpower Committee read above is forwarded to the D.P.I. and he is requested to thereupon despatch report at once whether the questionnaire referred to has been completed and returned to the Secretary, Scientific Manpower Committee or handed over direct to an officer of the committee as required in the memo read above.

With copy to
To me D. P. I. / C. S. / D. P. A.
D. J. S. C. / D. J. A. / D. J. V. C.
C. E. (Special)
C. E. (Highways)
C. E. (Electricity)

26/1/48

P.T.O.

56

II

Letter No. 83874 A-13/47 A Edu. dated 26-1-48.

To the Registrar, nty. of Madras
Annamalai nty.
Andhra nty. } (with copy of p 9-10 c.f.)
26/1/48

Sir,

Sub: Scientific Manpower Committee Questionnaire.
Ref: My letter No. 83874 A-3/47 A Edu. d. 6-11-47.

p 9-10 c.f.

I am to forward herewith a copy of the telegram received from the Scientific Manpower Committee and to request you to say whether the questionnaire referred to has been completed and sent to the Secretary, the Scientific Manpower Committee, or handed over direct to an officer of the Committee, as desired in my letter read above.

ps 4 c.f.

An immediate reply is requested.

p 9-10 c.f.

26-1-48

26/1/48

F.C.S.

P.T.O.

By Air Mail

26/1/48

Letter No. 83874 A-14/47 A Edu. dated 26-1-48.

57

To the Secretary,
Scientific Manpower Committee
New Delhi. (with copy of p 9-10 c.f.)

Sir,

Sub: Scientific Manpower Committee - Questionnaire.

Ref: your telegram dated 21-1-48

p 9-10 c.f.

p 1-3 c.f.

vide p 9-27 c.f.

vide p 49 c.f.

vide p 46 & 50 c.f.

I am to enclose herewith copies of Memo. No. 83874 A-2/47 A Edu. d. 6-11-47 and Letter No. 83874 A-3/47 A Edu. d. 6-11-47, issued w.r.t. the letter of the J.G.J., Ministry of Edu. No. 7. 21-34/47 (P) d. 15-9-47 and to say that the D.G.A. has completed the questionnaire and sent it direct to the Secy. to the J.G.J., Ministry of Edu. in his No. D. 907/47 d. 13-11-47, that the S.G. has also completed it and sent it direct to Dr. T.S. Sadasivan, Officer on Spl. Duty, and that the completed questionnaire as well as a supplemental statement received from the C.E. (Design.) have been forwarded.

P.T.O.

58
to you with my letters Nos. 83874 A-10/47 A Edu. dated 9-1-48 and 83874 A-11/47 A Edu. dated 21-1-48. The other heads of Depts. and the cities in this Province to whom the questionnaire has been sent are being reminded, and a separate reply will be sent on receipt of their replies.

6
26-1-48

RM
26/1/48

J. O. S.

No. 3280 A1/47 dated 20-1-48

Industries and Commerce Department.

From : The Director of Industries and Commerce, Chempak, Madras.

To : The Secretary to Government, Education & Public Health Department, Madras.

Sir,



Scientific - Man-Power Committee - Questionnaire.
Ref: Government's Memo No. 83874-A.2/47-A Education dated 6-11-47.

6168
The questionnaire after completion was despatched to the Secretary, Scientific Man-Power Committee, Ministry of Education, Government of India, New Delhi, with this Office letter No. 3280 A1/47 dated 12-1-48. The Officers of the Committee called here and were given all facilities for collection of the information required by them.

S.B/23-1

Maybe added to
the file.
28-1-48
28/1/48

for Director of Industries and
Commerce.
Sattabujar

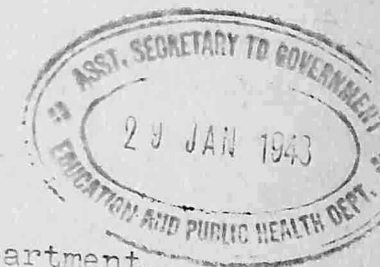
Electricity Department.

From

The Chief Engineer for Electricity,
Chepauk, Madras.

To

The Secretary to Government,
Education and Public Health Department,
Madras.



No. 10232 E/47-4 dated 28th January 1948.

Sub: Scientific Manpower Committee - Questionnaire.
Ref:--Government Memo. No. 83874 A/12/47A Edn. dated
26-1-1948

The questionnaire received with the Government
Memorandum no. 83874 A.2/47A Edn. dated 6-11-1947 has been
duly completed and returned to the Secretary, Scientific
Manpower Committee with this office letter No. 10232 E/47-3 dated 10-1-1948. A copy of the letter with a copy of
the questionnaire referred to above and replies has been
furnished to the Secretary to Government, Public Works Department.

The Officers of the Committee met me, the General
Superintendent, Operating System, and some of the Superintending
Engineers.

N. Venkatarana
For Chief Engineer (Electricity)

6901
E.P.H.(A)
May be added
to the file.
20-1-48
M
2/2/48
3/2/48
PSS auto

62

(1) 49.5
pale and pale
8-1-48

A 43 63

From
Rao Bahadur, Dr. R. M. Mathew,
D.T.M., & H., D.P.H.,
Director of Public Health,
Madras
Dis. No. 6451-1-PWR.48
Sir,
To
The Secretary to Govern-
ment, Education and Public
Health Department,
Fort St. George, Madras
Dated 28-1-1948

Ref:- Scientific Man Power Committee - Questionnaire
Ref:- Government Memo No. 83874-A-13-47 A.Edn dated
26-1-1948



7024

I am to state that the questionnaire referred to
has been already completed and returned direct to the
Secretary, Scientific Man Power Committee, New Delhi.

Maybe added
to the file.
E.P.H. (A)
J. Thomas 28/1/48
FOR DIRECTOR OF PUBLIC HEALTH
MADRAS
sm. 28/1
3/2/48

66

From
W.H.Turner, Esq., B.Sc., M.M.I.,
Mech.E., M.I.E.(Ind).,
Chief Engineer, Highways,
Chepauk, Madras.

AS ✓ AT 264 65

To
The Secretary,
SCIENTIFIC MAN POWER COMMITTEE,
Government of India,
Ministry of Education,
New Delhi.

Letter No.6510-B2/47-H.P., dated 20-1-48.

Sir,

Sub:-Scientific Man Power committee-questionnaire. p1-3 ante

Ref:-Letter No.F.21-34/47-E-III(P), dated 15-9-47 from the secretary
to the Government of India, Ministry of Education, New Delhi to
the Chief Secretary to the Government of Madras.

7338
27 FEB 1948
SECRETARY TO GOVERNMENT
EDUCATION AND PUBLIC HEALTH
DEPARTMENT

I enclose herewith the questionnaire sent with the
above letter duly filling in the various columns thereof. With reference
to the particulars furnished under items VI & VII of the questionnaire
this department will require Engineering graduates, licentates and
draftsmen as below for normal and post war development requirements.
Engineers and licentates: 150 total per year for the first two years and
thereafter 80 total per year (at least one third the number each year
should be Engineers and ten of these every year should be Mechanical
Engineers). Draftsmen:-50 per year for the first two years and there-
after 20 per year.

For Chief Engineer, Highways.
Copy to the Secretary to Government, Education and Public Health Depart-
ment with reference to Government Memo No.83874-A2/47-A, Edn., dated
6-11-47 for information.

S.N.22/1

66

UNIVERSITY OF MADRAS
The Registrar,
University of Madras.
New Delhi.

20-1-48

The Government of India,
Ministry of Education,
New Delhi.

I enclose herewith a copy of the
communication No. A 366 dated 23-1-'48 sent to the Secretary to the
Government of India forwarding the completed questionnaire received
from certain Colleges.

Yours obedient servant,
R. R. Sundaram
Ag. REGISTRAR.

UNIVERSITY OF MADRAS

From
The Registrar,
University of Madras.

To
The Secretary to the Government
of Madras,
Education and Public Health
Department,
M_a_d_r_a_s.



29 JAN 1948

UNIVERSITY BUILDINGS,
CHEPAUK, MADRAS.

S i r,

7340

Ref: Your letter No. 83874 A.13/47 A. Edn.
dated 26-1-'48 regarding questionnaire
of the Scientific Man Power Committee.

I have the honour to forward, herewith, a copy of the
communication No. A 366 dated 23-1-'48 sent to the Secretary to the
Government of India forwarding the completed questionnaire received
from certain Colleges.

Your obedient servant,

R. R. Sundaram
Ag. REGISTRAR.

mk3/29/1.

68

UNIVERSITY OF MADRAS

To The Registrar, University of Madras,
Education and Public Health
Department,
Chennai.

Copy of letter No. A 366 dated 23rd January 1948 from the Registrar, University of Madras to the Secretary to the Government of India, Ministry of Education, New Delhi.

69

Sub: Questionnaire on Scientific and Technical Personnel.

In continuation of the letter of the Vice-Chancellor, I am forwarding under separate registered cover, the completed questionnaire received from the undermentioned 14 colleges. Dr. T.S. Sadasivan must have contacted the other Colleges. St. Thomas' College, Trichur has stated that the questionnaire has been sent to you direct. The completed questionnaire in respect of the A.C. College of Technology and two other Departments are sent herewith. For further information, if necessary, the respective Colleges may kindly be addressed.

1. Presidency College, Madras.
2. Stanley Medical College, Madras.
3. Women's Christian College, Madras.
4. Vivekananda College, Madras.
5. St. Albert's College, Ernakulam.
6. Holy Cross College, Trihinopoly.
7. Sarah Tucker College, Palamcottah.
8. Government College, Anantapur.
9. St. Aloysius' College, Mangalore.
10. Government College, M Palghat.
11. The Raja's College, Pudukottah.
12. Government College, Coimbatore.
13. Arthur Hope College of Technology, Coimbatore.
14. Madura College, Madura.

70

and that the Government of India, Ministry of Education, New Delhi, has been informed of the above.

I am, Sir, very respectfully, Sir,

Yours faithfully,
W.H. Turner, Esq., B.Sc., A.M.I.,
Mech.E., M.I.E.(Ind).,
Chief Engineer, Highways,
Chepauk, Madras.

1. Chief Engineer, Highways, Madras.
2. Chief Engineer, Highways, Bangalore.
3. Chief Engineer, Highways, Calcutta.
4. Chief Engineer, Highways, Coimbatore.
5. Chief Engineer, Highways, Hyderabad.
6. Chief Engineer, Highways, Madras.
7. Chief Engineer, Highways, Mysore.
8. Chief Engineer, Highways, Panaji.
9. Chief Engineer, Highways, Pondicherry.
10. Chief Engineer, Highways, Raichur.
11. Chief Engineer, Highways, Salem.
12. Chief Engineer, Highways, Srirangapatna.
13. Chief Engineer, Highways, Tanjore.
14. Chief Engineer, Highways, Tiruchirappalli.
15. Chief Engineer, Highways, Tirunelveli.
16. Chief Engineer, Highways, Tutukudi.
17. Chief Engineer, Highways, Vijayanagara.
18. Chief Engineer, Highways, Warangal.
19. Chief Engineer, Highways, Yerrapalle.
20. Chief Engineer, Highways, Zonal Office, Bangalore.

From
W.H. Turner, Esq., B.Sc., A.M.I.,
Mech.E., M.I.E.(Ind).,
Chief Engineer, Highways,
Chepauk, Madras.

To
The Secretary to Government,
Education and Public Health, Department,
Madras.

Letter No.564-B2/47-H.R., dated 30-1-48.

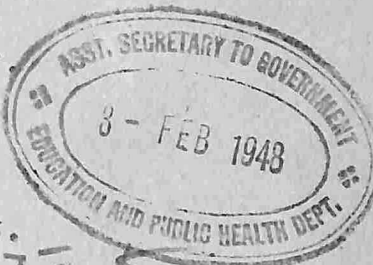
Sir,

Sub:-scientific man power committee questionnaire.

Ref:-P.W.D., Memo No.83874-A-12/47-A, dated 26-1-48.

7806

With reference to the above, I have to state that the questionnaire referred to has been completed and is being returned to the Secretary, scientific Man power committee in my letter No.6570-B2/47-H.P., dated 20-1-48.



W.H. Turner
4448.

For Chief Engineer, Highways.

S.N.30/1
W.H. Turner

72

R.C.2694-E.2/47

Office of the
Director of Public Instruction,
Madras, Dated 28-1-1948.

From Sri D.S.Reddi, M.A.(Oxon),
Director of Public Instruction, Madras.

To The Secretary to Government
Education and Public Health Department.

9887
Sir, Sub: Scientific Man-power committee - Questionnaire.

Ref: Govt. Memo.No.83874-A.12/47 Edn-A.Edn dated 26-1-1948

PSSante

I have the honour to state that the questionnaire completed by the Principal, Presidency College, Madras is being furnished to the Secretary, Scientific man-power committee. A part of the questionnaire relating to the Engineering Colleges will be returned to the Secretary immediately on its receipt from the Principal, College of Engineering, Guindy.

3/29/11
RVR 29/1/-

1RR
for Director of Public Instruction.

73

24

Roc.No.8992-III/47.

A
Vg

Civil Veterinary Department,
Triplicane P.O. Madras,
Dated 2-2-48.

25

From
T.J. Hurley Esq., OBE., MRCVS., DVSM., IVS.,
Director of Veterinary Services, Madras.
To
The Secretary to Government,
Education and Public Health Department,
Madras.



Sir,
Sub: Scientific Man power Committee - Questionnaire.
Ref: Government Memorandum No.83874 A.2/47 A.Edn.,
dated 6th November 1947.

8058

p9 ante

I have the honour to state that the questionnaire has not yet been completed. It will be completed soon and returned to the Secretary, Scientific and Man-Power Committee.

I have the honour to be,
Sir,
Your most obedient servant,

T.J. Hurley

Director of Veterinary Services, Madras.

PT.2-2.

2/2

26

All official letters, packages
etc., should be addressed
to the Registrar by desig-
nation and not by name.

[221/46 (19-12-46) 5,000] 5 27

ANDHRA UNIVERSITY

Waltair, 30th Jan. 1948

TRLB { GRAMS: "UNIVERSITY" WALTAIR.
PHONE: WALTAIR. No.

No. C5-4750-1/47

Encl.

From THE REGISTRAR, ANDHRA UNIVERSITY

To The Secretary to the Govt. of Madras,
Education and Public Health Department,
Fort St. George, M a d r a s.

8373
Sir,

Sub: Scientific Man-Power Committee--Questionnaire

Ref: Your letter No.83874 A.13/47 A Edn, D/26.1.48.

JSS ant

With reference to the above, I have the honour to
inform you that the questionnaire has been duly completed
and sent to the Secretary, Scientific Man-Power Committee
on 23--1--48.

MSD

L. G. Cheluvu
Registrar.



All communications should be addressed to the Registrar, Annamalai University, Annamalainagar by designation and not by name.

ANNAMALAI UNIVERSITY

No. 10169

4th February, 1948.

From

THE REGISTRAR,
ANNAMALAI UNIVERSITY,
ANNAMALAINAGAR.

To

The Secretary,
Education and Public Health Department,
Government of Madras,
M a d r a s.

Sir,

Ref: No.83874 A.13/47 A Edn. dated 26--1--48 -
Scientific Man Power Committee - Ques-
tionnaire.

The questionnaire of the Scientific Man Power Committee was duly completed and sent by registered post on 16th January 1948 to Mr. Chandra Kant, the Special Officer deputed by the Government of India, as desired by him when he was here last month.

Your most obedient servant,

S. Ramachandran
Ag. Registrar.

PR B
6/2/48

80

4 drafts
 Draft I
 3248546
 16/2
 x copy of P.B. of
 9/10
 19/2/48

Education and P.H. Department (A)

Letter No. 83874 A-15/47 A ^{Edn.} dated 14-2-48.

To
 ✓ The Secretary,
 Scientific Man-Power Committee,
 New Delhi. (with enclosure)

Sir,
 Sub: Scientific Manpower Committee -
 Questionnaire.

In continuation of my letter No. 83874 A-14/47 A Edn dated 26-1-48, I am to state that the Heads of Departments and the Universities mentioned below have sent the questionnaire to you after completion with their letters noted against each of them:-

Heads of Departments Letter No. & Date

- | | | |
|--|---|---|
| 1. Director of Industries and Commerce |) | No. 3280 A1/47 dated 12-1-48. |
| 2. The Chief-Engineer, (Electricity) |) | No. 10232 E/47-3 dated 10-1-48. |
| 3. The Director of Public Health |) | Reports on 28.1.1948 that (handwritten) questionnaire was already started. |
| 4. The Chief-Engineer, (Highways) |) | No. 6510-B2/47-H.P. dated 20-1-48. |
| 5. The Registrar, University of Madras |) | No. A.366, dated 23-1-48 (to the Secretary, Govt. of India, Ministry of Edn.) |
| 6. The Registrar, Andhra University |) | Letter dated 23-1-48. |
| 7. The Registrar, Annamalai University |) | Sent by registered post on 16-1-48 to Mr. Chandra Kant, the Special Officer deputed by the Government of India. |

vide 59 c.f.
 vide p 61 c.f.
 vide p 63 c.f.
 vide p 5871 c.f.
 vide p 67-69 c.f.
 vide p 77 c.f.
 vide p 79 c.f.

2. I am also to enclose a copy of the letter No. 2694 E2/47 dated 28-1-1948 received in this connection from the D.P.I., Madras, for your information, and to state that a further report will be sent to you.

3. I am to add that only the Chief-Engineer (Special) and the Director of Veterinary Services have yet to send the questionnaire after completion; they are being specially reminded, and further information will be furnished to you on receipt of their final replies.

Your obedient servant,

6/2-48

13/2/48

14/2/48

17308

unapplied at all

17308

4/17/42
p 5508

DRAFT II.

Memorandum No. 83874 A-16A Edn. dated 14-2-48

Subject: Scientific Manpower Committee - Questionnaire.

Reference: Memorandum No. 83874 A2/47 A Edn. dated 6-11-47.
Memorandum No. 83874 A-12/47 A Edn. dated 26-1-48.

The attention of the Chief-Engineer (Special) is invited to the references cited above and he is requested to report at once whether the questionnaire referred to has been completed and returned to the Secretary, Scientific Manpower Committee, or handed over direct to an officer of the Committee; and if not, to see that it is so returned expeditiously, after completion, and to return report the fact to Government.

To the C.E. (Special)

DRAFT III.

Memorandum No. 83874 A-17A Edn. dated 14-2-48

Sub: Scientific Manpower Committee - Questionnaire.

Ref: From the D. of V.S. No. 8992-III/47 dated 2-2-48.

The Director of Veterinary Services is requested to arrange for the return of the questionnaire to the Secretary, Scientific Manpower Committee as expeditiously as possible; and to report the fact to the Government.

To the D. of V.S.

DRAFT IV.

Memorandum No. 83874 A-18A Edn. dated 14-2-48

Sub: Scientific Manpower Committee - Questionnaire

Ref: From the D.P.I. No. 2694-E2/47 dated 28-1-48.

The Director of Public Instruction is requested

P.T.O.

80
to state whether the questionnaire completed by the Principal,
Presidency College, has since been furnished to the Secretary,
Scientific Manpower Committee and, if so, when. He is
informed, in this connection, that as the matter is one of
'special urgency', there should be no further delay in the
return of the questionnaire ^{relating to} the Engineering
Colleges as well.

Depu
19/2/48
To the D.P.I.

Mem. No. 83874 A-19/17 A Edu. dated 27-2-48. E.P.H. (A)
Sub: Scientific Manpower Committee - Questionnaire

Re E.E. (Special)
D.G.V.S. is
D.P.J.

requested to expedite his reply to
Mem. No. 83874 A-16 A Edu. d. 14.2.48
~~No. 83874 A-17 A Edu. d. 14.2.48~~
~~No. 83874 A-18 A Edu. d. 14.2.48~~

p79-8007
To Mr C.E. (Spl.)
D.G.V.S.
D.P.J.

25.2.48
Jus
25/2/48

JSM
26/2/48

82

Handwritten notes in Tamil script, including dates and administrative references.

Ref: your No. 2979 E4/47 dated 28-1-48.

Sub: M.E.R. - Rule 89(B) - Collection fees in govt. colleges for Madras women, Madras.

To the D.P.G.

T.H.No.

date

2-48.

2-48.

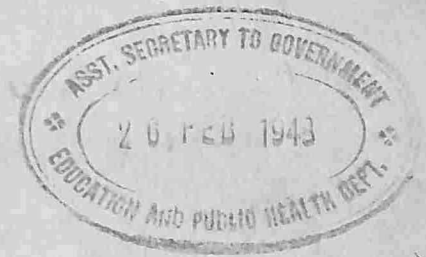
R.C.No. 224 L.4/48

Madras, 24--2--1948

83

From Sri D.S. Reddi, M.A(Oxon),
Director of Public Instruction,
MADRAS.

To The Secretary to Government,
Education and P.H. Department.



Sir,
Sub: Scientific Manpower Committee - Questionnaire - p79-80 ante
Ref: Govt. Memo No. 83874 A-18/47-A Edn., dated 14-2-1948.

14050
p73 ante

I have the honour to state that the questionnaire completed by the Principal, Presidency College, Madras was despatched to the Secretary, Scientific Manpower Committee on 2-2-1948 with my letter R.C.2694 E2/47, dated 28-1-1948. The questionnaire relating to the College of Engineering, Guindy was received from the Principal to-day and it is being sent to the Secretary to-day.

P. M.

For Director of Public Instruction

P.R.K. 24/2/48

3/24/2

PROV
26/2/48

84
ROC.No.8992-III/47.

From

T.J.Hurley Esq., OBE., MRCVS., DVSM., IVS.,
Director of Veterinary Services, Madras.

To

The Secretary,
Scientific Man-Power Committee,
Ministry of Education, New Delhi.

Sir,

Sub:- Scientific Man-Power Committee - Questionnaire.

Ref:- Government memorandum No.83874 A.2/47-A Edn. (Government
of Madras) dated 6th November 1947.

I have the honour to return herewith the questionnaire duly
completed.

I have the honour to be,
Sir,
Your most obedient servant,

T.N./24-2.

Director of Veterinary Services, Madras.
Copy to the Secretary to Government, Education and Public Health
Department, Madras for information.

86

Civil Veterinary Department,
Madras, dated 23rd February 1948.

ROC No. 6998-III/47.

E-P-H-(A)

Please see the letters of the
D.P.G. and the D.V.S. on p 83 and 85 ante.

The reply of the C.E. (Spl.) to the memo
on p 87 ante may be awaited till 25.3.48.

Already
replied on
27/2/48
(Vide p 81 ante)

5-3-48

Sub: Scientific Manpower Committee - Questionnaire
Ref: Government Memo No. 83874 A-2/47-A Edn. dated 6th November 1947.
of Madras dated 6th November 1947.

I have the honor to return herewith the questionnaire duly
completed.

I have the honor to be,
Sir,
Your most obedient servant.

T.M./24-2.

Director of Veterinary Services, Madras.
Copy to the Secretary to Government, Education and Public Health
Department, Madras for information.

87

Public Works Department.

From Sri N. Govindarajan, BA., BE.,
Chief Engineer (Special)
Chopanki, Madras.

To The Secretary to Government,
Public Works Department,
Fort St. George, Madras.

No. 1655/47-G-1 dated 1st March, '48.

Sir,

Sub: Scientific Manpower Committee Questionnaire.

Ref: Government Education and Public Health Department Memo 83874-
A-2/47-A Edn. dated 6.11.47.

Messrs. L.S. Chandrakanthan and T.S. Sadasivan, Officers on Special duty
for the Scientific Manpower Committee, saw me on the day they came here. From what
I understood from them it would appear that we cannot expect any substantial help
from the Government of India in the next few years, as measures to be taken here-
after for increasing the scientific manpower of the country will not bear fruit
until after three or four years from now.

2. Madras has already advanced, I believe over other Provinces, in that
she has now five Engineering Colleges. Therefore I should not be surprised if
Government of India are unable to meet my urgent requirements in the next 5 years,
and if as I expect the Ramapadasagar dam is to be started within a year, from now,
little help in manpower can be had from Government of India in the first few years.
after the next 3 or 4 years, I think our colleges can produce all the technical men
needed for us and may perhaps be able even to lend men to other provinces.

3. I enclose herewith a rough forecast of personnel which we may require
if Ramapadasagar Project is started next year. The statement gives the personnel for
Tungabhadra Project and Ramapadasagar separately and the probable distribution also
for the next 8 years to come.

p.t.o.



Ms/8-3-

90

6/3/48
x 2 And copies of p 83 & 87-88 of

Letter No. 83874 A-20/47A Dated 16-3-48.
To the Secy., Scientific Manpower Committee,
New Delhi (with enclosures)

Sir,
Sub: Scientific Manpower Committee -
Questionnaire.

p 77-78 of

p 87-88 of

(L)

p 83 of

In continuation of my
letter No. 83874 A-15/47A Dated 14.2.48, I
am to enclose ~~herewith~~ a copy of the
letter of the C.E. (Spl.) No. 1655/47-91 d. 1.3.48
with its enclosures in original (which
include the completed questionnaire).
I am also to enclose a copy of the further
letter received from the D.P.G. No. 2244/48
dated 24.2.48. I am ~~also~~ to add that

P.T.O.

92
the D. of V. S. has also sent the complete &
questionnaire to you direct with his letter
No. 8992-III/47 dated 23.2.48; and that
~~there is no other officer of this Govt.~~
the questionnaire is due to be sent to you
by an other officer of D. of V. S.

15.3.48

15/3/48

16/3/48

VERY EMERGENT.

No. 500/48-G-1(11.)

10 MAR 1948
1250A

TELEPHONIC MESSAGE BY POST.

Office of the Chief Engineer (Special),
Chepauk, Madras, dated 8th March 1948.

From: The Chief Engineer (Special), Chepauk, Madras.
To: The Secretary to Government, Education & Public Health
Department.

Sub: Scientific Manpower Committee - Questionnaire.
Ref: Your Memo No. 83874 A/L, Edn. dated 27-2-48. L 19/47.A.

My reply has been sent to the Secretary to the Government,
P.W.D. in my No. 1655/47-G-E-R., dated 1-3-48.

for CHIEF ENGINEER (SPECIAL)

Copy to the Secretary to Government, P.W.D.

Ms/8-3-

P.T.O.

18719

PWD (S.S.)

ADS

Please see the copy of T.M. from this place on 1st inst. The spl. C's report was sent to E & P.H. in original in this dept's no. 1503-S.S./48-1 D. 6.3.48. This may also be sent to that dept in continuation.

Slk
11.3.48

RAM E.P.H.

PWD (S.S.)

12 MAR 1948

PRB
12/3/48
11.3.48

Secretary, E. & P.H.

Please see herewith a letter from Sri S.S. Bhatnagar, of the Ministry of Education, Govt. of India. They have sent Messrs. L.S. Chandra Kant and Dr. T.S. Sadasivan, on special duty to survey the scientific man-power in this Province. Circulars may be sent to all our institutions to give them the necessary information that they require in this connection.

Circulars may be sent to the following institutions:-

- (1) All Colleges, Govt. or aided.
- (2) All Engineering Colleges, Govt. or belonging to Universities.
- (3) All Technical Institutions, Polytechnics etc.. and
- (4) any other institutions.

P.t.o.

83660
20 OCT 1947

DEPARTMENT OF MINES

For such of those Institutions which are under the Industries Dept., Circulars may be sent through that Dept.

They want to see also Medical and Agricultural Colleges and so circulars may also be sent to these Institutions through their respective departments.

ISA
20.10.47
H.M. Education.

Copies of Sri Bhatnagar's letter and ^{P.W.D. and Home} ~~all~~ minute may be sent to the Dev. depts for necessary action.

2 A draft memo to the D.P.S./S.G. and a draft letter to the Regs of the three Universities are subd.

All (P.H.) who may see.

1/10/47
referred to S/H/D (P.H.) 21/10

And only the
Dev. P.W.D. and Home
21/10
E.I.P.H. No. 83660-A3
21-10-47

21 OCT 1947
GOVERNMENT OF MADRAS

b bcp. [Issued as Memo No. 83660 A-1 Bdn. d 21-10-47]
C. No. 86022 A/47. From the Registrar, Annamalai University No 6895 d 29/10
" the Govt of India, Ministry of Edu. No F.21-41/47
E III (P) d 20.10.47.

6/11

b bcp

b bcp
B.P.H. No. 83660 A-4
7.11.47

8/11/47

Please see the reply from the Registrar Annamalai University on p s c f. to the Dept's letter on p s c f. on p t c f. a draft letter is submited.

2 A Copy of the letter from the Govt of India among also be Communicated to Dev. P.W.D. and Home in continuation of their Dept's Memo 83660 A-3 d 21.10.47.

6.11.47
6/11/47 S 7/11/47
[Issued as Letter No. 83660-A-5 Bdn. d. 21/10/47]

From the Government of India, Ministry of Education,
No.21-34/47 E.III (P) dated 15-9-1947.

Scientific Man-Power Committee - Interim report and
Questionnaire.

The letter from the Government of India and the
questionnaire may be sent to the Heads of Dept.s noted in
margin and the Registrars of the three Universities with
the request that the questionnaire after completion may be
returned to the Secretary, Scientific Man-Power Committee,
by the middle of November, unless handed over directly to an
officer of the Committee.

No action is now called for on the interim report of
the Committee.

Two drafts are submitted. Development and P.W.D.
may see before issue.

*
D.P.I.
S. G.
D.P.H.
D.I & C.
D. of Agr.
D. of V. S.
C. E.s

para 4,
p3 CF

21.11.47
dated 28.10.47

29 OCT 1947

29x47

6 A.S.

21.11.47
are being addressed
by E.P.H. - V.S.C.
large I. Bels

Notes of E & P.H. dept above and the drafts
memo below may be perused. The file may be
on to P.W. dept. after perusal of the interim report.

29x47
30/10/47
TO AS-IV

31.10.47

P.W.D. (SI)

Notes of Edu P.H. above and the drafts
below may be perused. A copy of the Memo
is being communicated to all the C.E.s
as information is being furnished in the
Questionnaire in re: to Elec, Roads, Bldgs, Irrig
etc. The file may be returned to E & P.H. Dept

2/5
after perusal of the report at flag (V)
4.11.47

4.11.47
S.P.H.
A

ASST. SECRETARY TO GOVERNMENT
B - NOV 1947
EDUCATION AND PUBLIC HEALTH DEPT.
P-2-2006.2006 SI/47-1
S. 11.47.

Issue
over
6/11/47

[Issued as Memo. No. 83874A-2/47 A Edu. d. 6.11.47] p90 f
[Issued as Letter. No. 83874A-3/47 A Edu. d. 6.11.47] p9-100 f
C. no. 90002 from the S. G. No. 91408-4-PW. d. 13.11.47. — p13-140 f
C. no. 90231 from the C. E. (Highways) No. 6510 B2/47-1 d. 13.11.47. — p150 f
C. no. 90532 from the D. of A. No. D2 907/47 d. 13.11.47. — p16-170 f
C. no. 90985 from the D. P. H. No. 77551-PWR./47 d. 17.11.47. — p280 f

Please see the letters from the S. G., C. E. (Highways), D. of A., and D. P. H. Replies to the draft memo on p. 40 f. are still due from the D. P. H., D. of D. & C., D. V. S., C. E., P. W. D., Genl., C. E. (Spl.) and the C. E. (Electricity). The replies of the U. P. to the letter on p. 50 f. are also still due. They may be reminded. A draft memo and a draft letter are subd. for approval.

Meanwhile, the G. of S. may be ~~intimated~~ informed of the names of the officers, as given by the S. G. etc., whom the Spl. officers of the Scientific Manpower Committee may contact. A draft letter is subd. for approval. (When other replies are received, the G. of S. will have to be informed again)

6/11/47

18/11/47

[Issued as Memo. No. 83874A-4/47 A Edu. d. 19.11.47, Letter No. 83874A-5/47 A Edu. d. 19.11.47 and Letter No. 83874A-6/47 A Edu. d. 19.11.47] p29-300 f

See letter on p. 920 f. No further action is necessary in this file. The papers may be recorded.

22/11/48

24/11/48

G.O. 633 Edu. 20-3-48

Abstract
Specimen for H
Questionnaire
Papers recd

20 OCT 1947
DEVELOPMENT DEPARTMENT

For official use only.

64

BUREAU OF EDUCATION, INDIA.

SCIENTIFIC MAN-POWER COMMITTEE.

INTERIM REPORT

Programme for the Immediate Improvement and Expansion of Facilities for Scientific and Technical Education, Research & Training.

New Delhi,
August 22, 1947.

The Scientific Man-power Committee was set up by the Government of India in April 1947 under the Chairmanship of the late Sir Shafaat Ahmed Khan as notified in a press communique issued on April 18, 1947. The present composition of the Committee is as shown below.

1. Sir Shanti Swarup Bhatnagar, F.R.S.
Director,
Council of Scientific and
Industrial Research, Delhi. (Chairman)
2. Dr. Birbal Sahni, F.R.S.,
Professor of Botany,
Dean of the Faculty of Science,
Lucknow University,
Lucknow.
3. Sir K.S. Krishnan, F.R.S.,
Director,
National Physical Laboratories,
University Buildings,
Delhi.
4. Dr. Homi Bhabha, F.R.S.,
Director,
Tata Institute of Fundamental Research,
Peddar Road,
Bombay.
5. Mian Afzal Husain,
Member, Punjab & N.W.F.P. Joint
Public Service Commission,
Lahore.
6. Professor J.N. Mukherji,
Director,
Indian Agricultural Research Institute,
Delhi.
7. Dr. M. Qureshi,
Director,
Board of Scientific & Industrial Research,
Hyderabad (Deccan).
8. Rai Bahadur A.N. Khosla, I.S.E.,
Chairman,
Central Waterways, Irrigation and
Navigation Commission,
New Delhi.
9. Mr. D.N. Wadia,
Mineral Adviser to the Govt. of India,
Ministry of Works, Mines and Power,
New Delhi.
10. Dr. K.A. Hamied,
c/o C.I.P.L.A. Manufacturers of Chemical &
Pharmaceutical Products,
289, Belassis Road, Byculla, BOMBAY

11. Mrs. Hansa Mehta,
16, Altamount Road, Cumballa Hill,
Bombay.
12. Prof. Humayun Kabir,
Member, Railway Enquiry Committee,
Railway Board,
New Delhi.
13. Mr. G.L. Mehta,
7, Wellesley Place,
Calcutta.
14. Major B.N. Mitra,
Defence Department,
New Delhi.
15. Wing Commander H. Singh,
Technical Branch, Air Headquarters,
New Delhi.
16. Rao Bahadur Dr. K.C.K.E. Raja,
Officer on Special Duty,
Ministry of Health,
New Delhi.
17. Dr. S.R. Sen Gupta,
Deputy Educational Adviser, (Technical),
Ministry of Education,
New Delhi.

(Secretary)

The following are the terms of reference of the Committee:-

- (1) To assess the requirements for different grades of scientific and technical manpower, taking a comprehensive view over a period of the next ten years, of the needs of Government (civil and defence), of teaching and research, and of industry, agriculture, transport, medicine and other fields dependent on the use of scientific and technical manpower;
- (2) To make recommendations regarding action to be taken during the next five years to meet these requirements, in particular with reference to
 - (a) the immediate improvement and expansion of facilities for scientific and technical training in Indian universities and special institutions.

3(a)
66

REPORT OF THE SUB-COMMITTEE
OF THE
SCIENTIFIC MAN-POWER COMMITTEE.

67

- (b) training overseas in scientific and technical subjects,
- (c) the promotion and development of scientific and technical research,
- (d) the utilisation of scientific and technical manpower, and
- (e) the maintenance of a register of scientific and technical personnel to facilitate their utilisation to the best advantage.

At its third meeting held on the 22nd and 23rd August, 1947, the Scientific Man-power Committee adopted the following report prepared by its sub-committee adumbrating measures for the immediate improvement and expansion of facilities for scientific and technical education, research and training.

INTRODUCTION.

At its exploratory meeting held on the 12th and 13th May, 1947, the Scientific Manpower Committee came to the conclusion that the available data on ^{to base} which the Committee's work were inadequate and that a considerable amount of information, both qualitative and quantitative, required to be collected before the Committee could begin its work. They thought that the collection, sifting and collation of such data could be made speedily only if the Government placed at the disposal of the Committee 15 Officers On Special Duty. The Government have been good enough to sanction ten posts but owing to certain administrative difficulties, arising mainly out of the present constitutional changes, it has not been possible to fill these posts, excepting one and that also only a few days back. Meanwhile, the health of the Chairman, the late Sir Shafaat Ahmed Khan, had deteriorated greatly and at his request, Sir Shanti Swarup Bhatnagar consented to act as the Chairman of the Committee.

Sir Shanti Swarup Bhatnagar has since been appointed Chairman in place of the late Sir Shafaat Ahmed Khan with effect from the 23rd July, 1947.

On the 7th July, 1947, the acting Chairman was requested by the Government to let them have by the 5th of August, at the latest, an 'Interim Report' based on available information, however, inadequate, recommending measures which should be given the highest priority and initiated within six months in order to meet, to some extent at least, the shortage of scientific and technical personnel - a shortage which is admitted on all hands.

In view of the urgency of the situation, Sir Shanti Swarup Bhatnagar agreed to undertake this work. A Sub-committee consisting mainly of the local members of the Main Committee was constituted at the instance of the Government. The purpose of the Sub-committee was to formulate certain interim recommendations, prompt action on which on the part of the Government could pave the way to meeting partially the scientific and technical manpower shortage. The Sub-committee consisted of:-

Sir S.S. Bhatnagar, F.R.S. (Chairman)

Rai Bahadur A.N. Khosla

Dr. J.N. Mukherjee

Dr. K.C.K.E. Raja,

Dr. J.N. Ray

Wing Comdr. H. Singh

Mr. D.N. Wadia

Dr. S.R. Sen Gupta (Secretary)

and had before it the following terms of reference:-

To advise the Government of India on measures which should be given the highest priority and initiated within the next six months in respect of

(a) the immediate improvement and expansion of facilities for scientific and technical training in Indian universities and in special institutions

and

(b) the promotion and development of scientific and technical research.

The Sub-committee held its first meeting on the 16th July, 1947, and came to the conclusion that the best method of tackling the task before it would be for each member of the Committee to prepare a note on the subject

or subjects with which he was concerned, suggesting what programme of training could be initiated within the next six months, taking due note of the existing facilities for education, training and research with a view to improving and developing them and using them to their fullest extent. Thereafter, the Sub-committee as a whole could consider the facts thus presented and formulate recommendations. The members accordingly prepared the following notes, which are given in Part II of the Report:-

- | | |
|-------------------------|---|
| Sir S.S. Bhatnagar | - Training of personnel for scientific and industrial research and for industry. |
| Rai Bahadur A.N. Khosla | - Programme for provision of facilities for education, training and research for engineering personnel which can be initiated within the next six months. |
| Dr. J.N. Mukherjee | - Measures which can be implemented in the next six months for speeding up education, training and research in agriculture and allied subjects. |
| Dr. K.C.K.E. Raja | - Training of health personnel |
| Dr. J.N. Ray | - Requirements of technical and scientific personnel for industrial development and their training programme. |
| Wing Comdr. H. Singh | - Report R.R.P. training research and development in
collaboration with British and technical personnel
development in collaboration with Civil institutions. |
| Mr. D.N. Wadia | - Programme for provision of facilities for education, training and research in Geology and Mining which can be initiated within the next six months. |
| Dr. S.R. Sen Gupta | - Programme for the improvement and development of higher technical education. |

These notes were considered by the Sub-committee on July 25, 26, 28 and August 3, 1947, and the Sub-committee's findings and recommendations are given in Chapter I. A brief summary of the Sub-committee's recommendations is given in Chapter II.

CHAPTER I.

Programme for the immediate improvement and expansion of facilities for scientific and technical education, research and training.

1. In order to maintain the closest possible relation between the terms of reference before us and our findings and recommendations, we have found it convenient to report under distinct main headings, viz. Education, Research and Industrial Training. It should, however, be mentioned that the subjects are so inter-linked and have such close bearing on each other that any hard and fast demarcation can neither be made nor is desirable. We also mention that owing to the limited amount of information available to us as well as our cognisance of the present scarcity of capital goods, building materials, etc. we have exercised considerable caution and restraint in formulating our recommendations.

SECTION I - EDUCATION.

2. Although we did not have up-to-date statistics concerning the annual output of scientific and technical personnel from institutions, we had before us a certain amount of information, which is necessarily slightly out-of-date. We reproduce below the figures concerning the whole of British India for the year 1940.

Students passing the various examinations.

Matriculation or its equivalent	.. 92,552
Intermediate Arts	.. 19,000
Intermediate Science	.. 5,453
B.Sc. (Pass)	.. 2,199
B.Sc. (Honours School)	.. 359
M.Sc.	.. 428
Medical Degree	.. 875
Agricultural Degree	.. 293
Engineering (Civil, Mechanical, & Electrical)	.. 638
Mining and Metallurgy Degrees	.. 38
Doctorate (Arts, Science, Medicine) Degrees	.. 38

These figures reveal the inadequacy of the 1940 output. We have no reason to suppose that conditions have changed to any great extent.

BASIC SCIENTIFIC EDUCATION.

3. A substantial increase in the facilities for education in general science up to Intermediate Science and B.Sc. standards is clearly an immediate necessity so that the output from these courses may be adequate, in quantity as well as in quality, to feed the professional and post-graduate institutions, which it will be necessary to improve, expand and multiply to meet India's immediate and future needs for scientists, technologists, engineers and medical men.

Double Shift.

4. We have considered in this connection, as an interim measure, the possibility of running double shifts in Colleges. While the double shift system would certainly help us to tide over the present difficulty of providing additional teaching accommodation and perhaps additional equipment, we cannot whole-heartedly support its adoption. We are given to understand that during the war the double shift system was given a trial in some places but was not altogether a success. Teachers should have sufficient leisure not only to prepare lectures, correct home work and laboratory record books, etc. but also to keep themselves up-to-date by reading current literature and latest text books. Although educationally unsound, we, in view of the present emergency, recommend, only as an interim measure, the introduction of double shifts in such institutions where there is a certain amount of spare equipment, provided a completely new set of staff is engaged for lecture and laboratory work in the second shift. The Government should, wherever the introduction of the double

shift system is considered feasible, come to the aid of the institutions if necessary by

(a) bearing a share of the expenses on staff salaries and contingencies and

(b) assisting the institutions in the procurement of equipment and building materials.

5. We note with regret that ^{not much} progress has been made in the establishment of Technical High Schools. We strongly urge the Provincial Governments, etc. to convert without delay some of their existing ordinary High Schools to Technical High Schools, and to simultaneously proceed with the early establishment of new Technical High Schools. We attach considerable importance to the establishment of a large number of institutions of this type. For, the products of these institutions are likely to be better fitted to take to scientific and technical occupations. As the establishment of such schools will reduce the total schooling period as preparation for professional courses by one year, it will also lead to an increase in the available material for admission to the professional and scientific institutions.

Higher Scientific Education.

6. While we are pleased to note that the Central Universities, viz. Aligarh, Benares and Delhi, are being developed to provide wider facilities for higher scientific education, we feel at the same time that there is need for developing also the scientific departments of other universities, especially their post-graduate departments, so that an adequate number of scientific personnel with Honours and M.Sc. qualifications may be forthcoming for teaching posts, for service as specialists, for research and training in the National Laboratories and in industry; for example, each of the proposed higher technical institutions is likely to require over 600 teachers and

and the National Laboratories would require more than 600 men with specialised qualifications. There is also the need for a large number of scientists to provide the expanded facilities for education in universities and other institutions. We, therefore, recommend that the Central Government should come to the aid of all universities by giving them suitable financial and other assistance to expand their post-graduate departments.

Geological Education.

7. In particular, we strongly support the recommendations of the Geological Education Committee and urge the Government to give effect to these recommendations immediately, so that trained geologists adequate in number, say about 80 per year, for the teaching of geology and for the survey and development of the mineral resources of India may become available; for example, the Geological Survey of India alone will require within the next two or three years 150 geologists.

8. In regard to the training of geologists, there is one special aspect which cannot be passed over. The education of a working geologist is different from that of any other scientist. A systematic field training forms an essential part of a geologist's education. This kind of instruction could hardly be provided by universities and colleges. We understand that the Geological Survey of India will soon have adequate staff to help educational institutions by opening field training camps to supplement the education of our geology-graduates. We recommend that the Geological Survey should increase the number of their field training camps in order to train at least 50 geologists annually for field work. (For details see Mr. Wadia's Note)

Engineering and Technological Education.

In view of the uncertainty of the extent of development of Indian industries during the next few years

and as a consequence of the inadequacy of information available to us, we are unable to assess with reasonable exactitude the requirements for technical personnel during the next four or five years. In the absence of other data, the only way in which an approximate assessment can be made of our immediate requirements is to analyse the new capital flotation allowed by the Government and to infer from that India's requirements for technicians. The table below gives the position of new capital issues for some of the various industries since January, 1946. In the last column is shown the number of additional technical personnel that would be required for the successful running of these industries. The technical personnel have been divided into three categories:-

- 'A' = Experts
'B' = Technicians with superior qualifications
'C' = Lower grade technicians including mechanics.

Industries.	New Capital (issued allowed (in 1946 (in lakhs)	Estimated requirements (Number in Grades)		
	Rs.	'A'	'B'	'C'
1. Glass and Ceramics	213	10	30	200
2. Chemicals & Drugs	570	20	100	250
3. Soap and oil (excluding edible oils and Vanaspati)	110	8	10	100
4. Rayon and Art silk	402	6	30	200
5. Paper, Board, etc.	281	10	50	150
6. Plastics	50	10	40	200
7. Leather	85	5	13	35
8. Cement	463	10	20	80
9. Woollen	137	10	36	100
10. Rubber	117	70	94	188
11. Engineering	1,242	25	150	1,000
12. Electrical	910	25	150	300
13. Non-Ferrous Metals	98	6	45	250
14. Machinetools	122	100	400	1,000

10. It is worth noting that the new capital floated since 1946 is about Rs. 47 crores whereas the total capital invested in organised industry up to the year 1937 has been estimated to be about Rs. 80 crores. It is, therefore, clear that since 1946 the capital issue for industry has increased by about 60%. We are informed that since the last Budget

Session of the Central Legislature there has been a considerable falling off of application from industry to start new lines of manufacture and it is therefore, not possible to foresee what would be the requirements of industry for technical personnel unless the precise industrial policy of the Central Government is definitely known. There is, however, every reason to believe that the tempo of capital investment in industry is likely to be faster in the near future provided the Government adopt a benevolent policy to foster the growth of industry.

11. The present (1946) output of graduates in engineering and technology is estimated to be as follows:-

Aeronautical Engineering	15
Architecture and Building construction	20
Civil and Municipal Engineering	467
Chemical Engineering and Chemical Technology	244
Electrical Engineering	285
Mechanical Engineering	258
Metallurgy	27
Mining	27
Total:-	1,343

12. From a comparative study of the figures for the present output with those for the immediate requirements of industry alone, leaving aside the requirement of Governments for their contemplated large-scale public works - we have come to the conclusion that we have to plan for at least a four-fold increase in the output of all categories of personnel, if we are to meet our needs for the next four or five years.

13. We have dealt with the question of training of 'A' grade technicians, i.e. experts, in subsequent sections dealing with Research and Training. In the matters of education in engineering and technology, we, therefore, recommend a short-term and a long-term programme, both of

which require to be initiated within six months.

Short-term programme.

14. Under the short-term programme, we recommend the adoption of the following five measures:-

- I. Introduction of an intensive twelve month training programme in co-operation with industry.
- II. Introduction of three-year degree course in Engineering.
- III. Introduction of double-shift system in engineering colleges.
- IV. Use of science departments of university colleges for the instruction of engineering students in science subjects.
- V. Employment of experts to assist in teaching.
- VI. Improvement of salaries of teachers.

15. (I) We recommend the introduction of an intensive 12-month training programme for M.Sc.'s and graduates in chemical technology to be run on co-operative basis, between different universities and relevant industries. We feel that some of the existing institutions, if assisted with suitable grants, capital and recurring, should be able to impart short-term courses to the technological graduates, who can then be placed in appropriate factories for practical training for a further period of six months. For example, an ordinary M.Sc. graduate in applied chemistry can be trained in educational institutions in such subjects as oils, and fats, paints and varnishes etc. for a short period, say six months, to supplement his basic scientific training. This training programme can be shared by two or three institutions depending on the subject and the specialisation required; this academic training to be followed by practical training in a suitable factory for

a period of six months or so. We consider that the following institutions are capable of organising such courses and recommend the grants noted against each.

	Capital grant (in Rs. lakhs)	Recurring grant (in Rs. lakhs)
(1) Harcourt Butler Technological Institute, Cawnpore	5	1
(2) College of Technology, Hindu University, Benares	5	2
(3) Department of Applied Chemistry, Calcutta University	7	2
(4) Laxminarayan Technological Institute, Nagpur	3	0.8
X (5) University College, Andhra University	3	0.5
(6) Indian Institute of Science, Bangalore	-	2
(7) Bengal Tanning Institute, Calcutta	1	0.5
X (8) Institute of Leather Technology, Madras	1	0.5
X (9) Engineering College, Guindy, Madras	2	0.75
X (10) Department of Engineering and Technology, Annamalai University	1	0.5
(11) Department of Chemical Technology, Bombay University	1	0.5
(12) Forest Research Institute, Dehra Dun	2	0.75
(13) College of Engineering and Technology, Jadavpur	2	1
(14) Victoria Jubilee Technical Institute, Bombay	1	0.5
Total	34	13.38

This recommendation on being given effect to will help to a great extent in making good the present shortage of chemical technologists of grade B.

16. (II) At present, the courses in engineering extend over a period varying from three to four years. We have every reason to presume that with judicious selection for admission to engineering colleges, it should be possible to reduce the period of training to three years. We understand that the All-India Council for Technical Education have prepared a draft curriculum and ^{syllabuses} of studies which it should be possible to cover in three academic sessions of 1400 hours each as against the commonly prevailing four academic sessions of less than 1000 hours each. We, therefore, recommend that the universities should consider the introduction of three-year-degree courses in engineering. This would shorten the training period, and also largely help in the increase of the number of engineers.

17. (III) We have also considered the feasibility of introduction of double shifts in some of the colleges. We are given to understand that it was run with some success in the Thomason Engineering College, Roorkee during the war years. Elsewhere, in paragraph 4, we have stated the reasons for our reluctance to recommend the general introduction of double shift system. With the provisos stipulated therein we recommend that the universities may consider the introduction of double shift system, if conditions permit.

18. (IV) Wherever possible use should be made of the teaching facilities of the science departments of suitable colleges to assist in the education in basic sciences for engineering students.

19. (V) As an interim measure we recommend that engineers in Government service should be encouraged, where necessary, to assist in the instruction in engineering colleges. This would relieve the strain on college professors and will save them some of their time for training additional students, who too will derive more benefit

from the latest ideas and knowledge and appreciation of the latest developments in the various engineering activities.

20. (VI) We understand that there is an acute shortage of teachers in most of the engineering colleges and this is mainly due to the inadequate salaries offered for teaching posts. We are definitely of the opinion that the pay and prospects of a teacher should correspond to those that would be open to him had he joined a technical department under the Government.

Long-term programme.

21. As long-term measures which have to be initiated right now if they are to bear fruit within the next four or five years, we recommend the following:-

I. Establishment of Regional Committees of the All-India Council for Technical Education.

II. Improvement and expansion of the existing colleges of engineering and technology.

III. Expansion of the Delhi Polytechnic, especially its departments of Architecture and Engineering.

IV. Equipping of all institutions of engineering and technology, adequately.

V. Arranging for the early operation of the Power Engineering Department of the Indian Institute of Science.

VI. Expediting the establishment of the Regional (Eastern & Western) Higher Technical Institutions.

VII. Expansion of the Indian School of Mines, Dhanbad.

22. (I) We understand that in order to enable the All-India Council for Technical Education to tender judicious advice to the Government for the provision of facilities for technical education in every part of the country, adequate in relation to the possible industrial development of each region, the Council have decided to establish regional committees and that the formation of these

committees has been delayed owing to the present constitutional changes. We strongly recommend that for ensuring co-ordinated development of technical education and generally to raise its standard, it is essential to establish the regional committees immediately.

23. (II) For the improvement of the standard of education as well as the expansion of some of the institutions of engineering and technology, so that the present facilities may be utilised to the fullest extent, the Government of India should immediately make grants to such institutions as are recommended by the All-India Council for Technical Education. We understand that the All-India Council for Technical Education will shortly submit specific recommendations for the improvement and expansion of the following institutions on the basis of reports of Expert Committees set up by them for this purpose.

- (i) College of Engineering and Technology, Jadavpur.
- (ii) Department of Applied Chemistry, University College of Science and Technology, Calcutta.
- (iii) Department of Applied Physics, University College of Science and Technology, Calcutta.
- (iv) Engineering College, Benares Hindu University.
- (v) College of Mining and Metallurgy, Benares Hindu University.
- (vi) College of Technology, Benares Hindu University.
- (vii) Engineering College, Dayalbagh.
- (viii) Engineering College, Muslim University, Aligarh.
- (ix) N.E.D. Engineering College, Karachi.
- (x) Victoria Jubilee Technical Institute, Bombay.
- (xi) Department of Chemical Technology, Forman Christian College, Lahore.
- (xii) Department of Chemical Technology, Bombay University.
- (xiii) Laxmi Narayan Institute of Technology, Nagpur University.

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University

- (xiv) Department of Technology, Andhra University.
- (xv) Department of Chemical Technology, Madras University.
- (xvi) Engineering College, Annamalai University.

With suitable financial assistance the output from these institutions can be increased by more than 50% within the next three or four years. The total capital grant required for the purpose would be in the neighbourhood of about rupees two crores spread over five years and the recurring grant about rupees 31 lakhs. We strongly recommend that adequate funds should be made available and steps initiated by October, 1947, for the improvement of these institutions. This measure would raise the standard of education in these institutions and in most cases also increase their training capacity and thereby lead to a gradual increase in the annual output of graduates.

24. (iii) We understand that some building construction is contemplated for the Delhi Polytechnic to enable it to increase the annual intake to the Architecture Classes. The matter requires immediate attention as there are less than 300 qualified architects in the whole of India and facilities for architectural education are almost non-existent in the country. With the expenditure of about a lakh of rupees, the Government would be providing facilities for the education of 30 or more architects every year.

25. We should have been happier if the progress of the Delhi Polytechnic had been more satisfactory. We understand that the lack of progress has been mainly due to the utterly inadequate salaries which are being offered to the teaching posts in the Delhi Polytechnic. We consider it essential that the Government should forth-

with improve the prevailing scales of pay for teachers in the Delhi Polytechnic and also take steps to shift the institution from its present premises to a more commodious site. The Government should also consider the desirability of setting up a small technical committee to advise the Governing Body on technical matters and also affiliate certain departments of the Polytechnic to the Delhi University.

26. (IV) At present most of the educational institutions are suffering from lack of equipment. We consider the matter worthy of special attention, and have dealt with it in a later section. Here, we would urge the Government to remove immediately all restrictions on the import of scientific and technological equipment and also introduce measures affording relief from import duty by allowing rebate on such imports to educational institutions.

27. (V) We note that the Indian Institute of Science is being developed further and that a High Voltage Laboratory and a Power Engineering Department for the post-graduate training in power engineering are being established. We would urge the Indian Institute of Science authorities to expedite the operation of the Power Engineering Department so that a number of engineers adequately qualified to tackle power development especially hydro-electric, may be available in the very near future.

28. (VI) We note that on the recommendation of the Sarkar Committee the Government have decided to establish within the quinquennium commencing from 1946-47 two regional institutions, namely, the Eastern and the Western Institutions, each with a capacity for the training of about 2000 under-graduates and 1000 post-graduate and research students. Each of these institutions is to have wide facilities for post-graduate study and research. For

example, the Eastern Institutions is expected to provide facilities for post-graduate study and research in the following subjects:-

Fuel Technology
Pharmaceutics and Fine Chemicals.
Regional Planning.
Paper Technology.
Glass and Ceramics.
Plastics.
Paints and Pigments.
Hydraulic and River Research.
Transportation (including Railway Engineering)
Structural Engineering (including High Dams)
Design of Electrical Machinery.
Refrigeration and Air conditioning.
Automobile Engineering.
Machine-Tools.
Design of Machinery and Instruments.
Light Alloys.
Industrial Physics.
Electronics (including Radio Engineering)
Economic Botany.
Geophysics, Geology, Mineralogy.
Meteorology.
Food Technology.

29. We strongly recommend that within the next six months the Government should complete the purchase of the sites and appoint the planning staff and, if possible, arrange to hire temporary buildings to start the institutions. We attach the greatest importance to the early establishment of these institutions, for the sooner they are established the sooner will India be free from the necessity of sending overseas a large number of scholars for advanced training in different branches of technology. We are also of the opinion that in order to expedite construction of buildings for these institutions, it would be desirable to authorise the department concerned to use private agencies instead of the Central Public Works Department.

30. (VII) We understand that a Reorganisation Committee has recommended comprehensive measures for the improvement and expansion (doubling its present output of mining engineers and applied geologists) - of the Indian School of Mines, Dhanbad. We urge that these recommendations be acted upon without delay.

Education and Training of
'C' Grade Technicians.

31. We cannot close this sub-section without making some reference to the matter of education and training of the 'C' grade technicians including mechanics. We understand that the Labour Department of the Govt. of India have under consideration a comprehensive scheme for the training and apprenticeship of craftsmen for industry. We are of the opinion that the implementation of this scheme should not be delayed any longer and that it should be initiated, wherever possible, within the next six months.

32. For this purpose and for the training of foremen and overseer type of personnel, the Government should take over some of the private engineering schools and develop them. We are not able to make any estimate of the financial implications of such a step, but we are convinced that the step recommended by us is the only possible way under the present conditions for quickly developing engineering schools for the training of overseer type of personnel and also for increasing the out-turn of the number of craftsmen. Later on, in Section III dealing with "Industrial Training" we have made further suggestions.

33. Before we close this sub-section, we should also like to refer to the special needs of Footwear and Leather Industries. The available training facilities for both the superior as well as the craftsmen type of personnel are inadequate. The development and promotion of scientific and technical research in leather industries would be stimulated by introducing leather chemistry as one of the subjects for the M.Sc. Industrial Chemistry and encouraging the students qualified in leather technology to do research in leather chemistry for the doctorate degrees. We also consider that

the existing training institutions should be made more efficient and useful by adding to their equipment, and by enabling them to employ better paid staff.

Practical Training of Engineers.

34. One aspect of engineering education deserves special attention viz. facilities for their post-collegiate practical training. We have later, under the section 'Industrial Training' also dealt with certain aspects of this question. Past experience has shown the necessity of some positive steps to ensure that fresh graduates receive an adequate amount of such training. Employers, including Indian mines, metallurgical works, oil companies as well as Government departments should appreciate that engineering colleges cannot provide them with finished products for ready employment in responsible posts and that it would be to their interest to take in fresh graduates and train them properly. Unless employers are willing to face this responsibility and readily undertake to provide facilities for the practical training of fresh graduates, it may be necessary to introduce legislation making it obligatory on the part of organised industry to do so.

Education of Agricultural personnel.

35. It is understood that on the whole the standard of teaching in agricultural colleges in the country is rather indifferent. Certain suggestions, which have been put forward in Dr. Mukherjee's note (Part II, Chapter III) for the improvement of the standard of education deserve serious consideration. It is essential to ensure co-ordinated development of agricultural education, for which purpose the Government should consider the desirability of establishing an Advisory Council for Agricultural Education on an All-India basis. This is specially necessary in view of the large number of agricultural personnel that would be required.

For example, according to the findings of the Agricultural Education Committee of the Central Advisory Board of Education, the Agriculture Departments alone would require during the next 10 or 15 years:-

300 Gazetted Officers.
15,000 Graduate Assistants
30,000 Non-gazetted field assistants for agricultural work.
and 550 Gazetted Officers
4,000 Non-gazetted Inspectors
and 20,000 Stock-men for animal-husbandry work

36. Considering the output figures for the year 1940, i.e. about 293 graduates and 290 licentiates, it is apparent that steps must be initiated without delay to implement all schemes for large scale expansion of facilities for agricultural education. Here again we have to recommend only as an interim measure the introduction of a double shift system subject to the provisos stipulated in paragraph 4 above. In our final report, we hope to be able to make specific proposals on this point in respect of some of the existing institutions.

37. Since agricultural colleges like other professional colleges receive their intake from the general science colleges, it may be pertinent to observe that in so far as agricultural education is concerned, entry qualifications of candidates require improvement in certain ways, some of which have been referred to in Dr. Mukherjee's note.

38. In view of the urgent need for gazetted staff of the Departments of the Central, Provincial and State Governments, we also urge that the training programme of the Central Institutions be speeded up in all possible ways. We would specially recommend that necessary measures be taken to increase the output from the Indian Agricultural Research Institute, the Indian Veterinary Research Institute, the Indian Dairy Research Institute etc.

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39. We note that the Central Agricultural College has just started functioning and will be producing about 40 graduates in three years time and later on 60 every year. We recommend that the institutions be advised to increase the scope of the training programme so as to be able to train double the present number. The various central plans for agricultural education have been outlined in the annexure to Dr. Mukherjee's note.

For purposes of education, research and their applications, it is desirable to promote ecological studies which have been neglected in the past. Soil surveys on a coordinated all-India basis and establishment of a large number of experimental stations in each region distinguished by climatic and soil conditions is an immediate necessity.

A greater degree of diversification and also flexibility is necessary in the curricula of studies of universities in order that facilities for training and research in a larger number of scientific subjects, especially in agriculture, can be provided for. The American unit system is a model which may be adopted with suitable modifications. For example, many chemists should the option of training in bacteriology or in plant physiology. Similarly, Plant Physiologists should be able to take supplementary courses in chemistry. Besides, in view of the importance of agriculture, more universities should be encouraged to open faculties of agriculture. Where the resources of any one university may not be sufficient, two or more of them may combine to establish agricultural colleges if geographical and other considerations make it feasible. The resources of universities and colleges for training in the primary sciences may be utilised to a greater extent for developing technical and agricultural education.

EDUCATION FOR HEALTH PERSONNEL.

40. From Dr. Raja's note (Part II, Chapter IV) it will be seen that 20 medical colleges (new and converted medical schools together) are being established for undergraduate medical education. While the number of existing colleges is thus being doubled the total output of medical graduates in the country as a whole after five years is likely to be about 1800, an increase of only 80%.

41. If India is to be provided with reasonable medical facilities it is clearly necessary to initiate immediately, measures for stepping up the output of doctors. As a short term measure, we have examined the possibility of introduction of double shift system in medical colleges. We understand that the Calcutta Medical College authorities are prepared to try out the system and it is expected to cost 1.30 lakhs recurring and 0.10 lakhs capital expenditure. Subject to the provisos set out in paragraph 4 above we recommend its introduction in the Calcutta Medical College to begin with. The possibility of introducing this system in the G.S. Medical College, Bombay, where the authorities seem hopeful of doing so if adequate help could be given, should also be investigated.

42. As a long-term measure to be initiated right now, we support the recommendations of the Bhore committee in the matter of improvement and expansion of the existing colleges. This would lead not only to an improvement of the standard of education but also to an increase in the output by about 53 per cent over the present level in the country as a whole. We recommend that the Central Government should make available to Provincial Governments a substantial proportion of the capital and recurring grants required.

	<u>Existing Colleges in</u>	
	<u>India</u>	<u>Pakistan.</u>
	(in lakhs of Rs.)	(in lakhs of Rs.)
Capital expenditure	432.0	54.0
Recurring expenditure	115.5	16.5

43. We also recommend that Departments of Preventive Medicine and Public Health should be opened in the Madras Medical Colleges, the Grant Medical College, Bombay, and the Calcutta Medical College. The total expenditure is likely to be -

Capital ... 6 lakhs
Recurring.. 6.75 lakhs.

44. The development of existing postgraduate training facilities in special branches of medicine in a manner designed to serve the needs of the whole of India, is an urgent need and we recommend the immediate formation of a small committee of experts to inspect centres and report on steps that should be taken to encourage post-graduate and research studies. Fifty scholarships of Rs. 100 per month should be provided each year with immediate effect to encourage such studies. The recurring cost involved is likely to be 0.825 lakhs.

45. We have considered certain proposals for further utilising the present facilities of the All-India Institute of Hygiene and Public Health. The details of this scheme will be found in Dr. Raja's note. Briefly, it involves maximum utilisation of the present facilities, the setting up of a Department of Food Technology and the training of certain types of public health personnel. The expenditure involved is, capital Rs. 2.80 lakhs and recurring Rs. 2.66 lakhs.

46. Facilities for dental education are utterly inadequate at present and we recommend a capital grant of recurring grant of Rs. 1.49 lakhs in each case for the Rs. 1.69 lakhs and a improvement and expansion of the Calcutta Dental College and of the Nair Dental College, Bombay.

47. The training of nurses should receive the highest priority. The Nursing College in New Delhi is the only one of its kind in India and is intended to train public health nurses, a type so far unknown in this country, as well as to provide administrators and teachers in the field

of nursing. Future expansion of training in this subject and the development of provincial nursing services will be greatly assisted by increasing the intake of the Nursing College. The details of the recommendations put forward in this connection will be found in Dr. Raja's note. We strongly recommend that the additional staff, equipment and accommodation which are required should be made available without delay. A capital grant of Rs. 1 lakh and a recurring grant of Rs. 1.5 lakhs will be required over and above the present expenditure.

48. The need for increasing the rate of production of health visitors is equally great. The proposal for expanding training facilities at the Lady Reading Health School in Dr. Raja's note has our full support. The proposed annual expenditure of Rs. 71,000 should, we recommend, be sanctioned and the additional accommodation and staff required should be provided.

49. We also warmly commend the training schemes for certain types of non-medical personnel such as health inspectors, health visitors, mid-wives and vaccinators which have been put forward by provincial authorities and suggest that expenditure to the extent of Rs. 11,000 (non-recurring) and of Rs. 2.05 lakhs (recurring) should be sanctioned for a period of three years, at the end of which the position should be reviewed.

50. We also recommend the institution of twelve scholarships for training in medical social work at the Tata Institute of Social Sciences at an annual recurring cost of 0.60 lakhs.

51. A start should also be made during the next six months, with the establishment of a college of pharmacy in Calcutta at an estimated cost of

Recurring	Rs. 132.8 lakhs
Capital	Rs. 446.3 lakhs

Section II.

Training of Personnel for Scientific and Industrial Research.

52. The highest type of scientific and technical personnel required falls into two distinct categories: (a) research workers of the highest type and (b) technical workers with a basic knowledge of the sciences and technology along with experience of industry. The former category of personnel is drawn from university post-graduates, who have shown a definite flair or disposition for research. The second category of men, who are responsible for the manning of industries is built of graduates and diploma holders in technological subjects and the question of "conditioning" them for employment will be dealt with in the next Section.

53. The inadequacy of facilities for research, higher study and training in our universities and research institutions has been chiefly responsible for the present rather unsatisfactory state of development of both research and industry. To aggravate matters, many of our universities have not yet established well-equipped (both by way of staff and equipment) post-graduate research departments in the several fundamental and applied sciences. The only way in which we may improve the situation immediately and give impetus to an increase in the outturn of trained scientific workers is to tap the existing universities and research institutions by enabling them to expand their training facilities. We are also of the opinion that the rigidity of the system of training prevalent in certain universities and institutions should be removed and the system made more flexible and diversified so that a wider sphere of activity might be covered. For instance, universities which are well-equipped for research in organic chemistry should expand their activity to include bio-chemistry, fermentation chemistry and other allied

subjects, and those having a well equipped research school in physics should also take up geophysics. Similarly, technical institutions which impart graduate and post-graduate training in mechanical and electrical engineering should be able to take up, for example, communication engineering, chemical engineering, and other allied branches also.

54. A good proportion of the available scientific man-power in the country has not been made use of in a fruitful way in as much as owing to the existing conditions of recruitment to services and other factors many qualified men have not had suitable opportunities of contributing all they could in the sphere of scientific and industrial activity. The prevention of this kind of wastage or drift of scientific talent should engage our immediate attention. As a quick and effective way of assessing the availability of such wasted talent and usefully employing it, we recommend that the necessary information about all trained men who are not profitably engaged at present be collected through advertisement and an attempt made to fit them into their proper places. This measure will help to a better utilisation of the existing resources and will also inspire confidence in the men undergoing training that the State will look after their interests.

55. We consider that the existing centres of research are capable of being better utilised than at present for the training of personnel for scientific and industrial research. Such training should be of two general types, viz. (a) higher research and to some extent advanced technological training in special institutions; and (b) post-graduate education with research also leading to a post-graduate degree in Indian universities.

To take the former into consideration first, there are 30 special institutions, as mentioned in appendix 'A' of Sir S.S. Bhatnagar's note (Part II, Chapter I) catering for

a wide range of subjects both in the fundamental and applied sciences. We find that a large number of these are fairly well-equipped and well-established research centres; and some like the Government Test House, Geological Survey of India, Ordnance Laboratories, etc., are scientific departments of the Government. Although these latter institutions carry out mostly routine scientific work, as distinct from research they could become no less important as training centres. For scientific workers trained in these places would be useful not only for certain types of research in specialised fields but also if needed in the manning of the departments concerned.

56. Almost all the special institutions mentioned in the appendix 'A' referred to above have training facilities which may be stretched to train more men than at present. Since the inadequacy of research scholarships has been mainly responsible for the limited use of this facility, the best way of attaining the objective in view is to provide research scholarships on a generous scale.

57. According to appendix 'A' mentioned above, altogether about 300 additional workers may be trained in these special institutions. Eighty of these could be placed for training in non-government organisations and the rest in the scientific departments of the government.

As an urgent measure we recommend that eighty research scholarships, each of the value of Rs. 100 per month, be instituted in the following non-government research institutions:

<u>Institution.</u>	<u>Number of scholarships.</u>
(1) Indian Institute of Science, Bangalore	28
(2) Bose Research Institute, Calcutta	11
(3) Tata Institute of Fundamental Research, Bombay	4
(4) Nutrition Research Institute, Coonoor	8
(5) Cotton Technological Laboratory, Bombay	5
(6) Indian Association for the Cultivation of Sciences, Calcutta	8

(7) Lac Research Institute, Ranchi	5
(8) Jute Research Institute, Calcutta	5
(9) Laboratory of the Indian Academy of Sciences, Bangalore	3 (for the present)
(10) Palaeo Botanical Research Institute, Lucknow University	3

The subject-wise distribution of scholarships proposed above may be decided in consultation with the institute concerned.

58. In addition to the institution of scholarships, we would also recommend that institutes 1, 2, 3, 6, and 9 be each given a capital grant of Rs. 2 lakhs for the immediate purchase of much needed equipment, books, journals etc., and Institutes 4, 5, 7 and 8 each a capital grant of Rs. 50,000 for the same purpose. We would also recommend that the above institutes be each given a recurring grant of Rs. 25,000 for their expanded activities.

59. We have already referred to the 20 scientific departments of the Government, which are in a position to provide training facilities for 200 additional workers. Generally due to various administrative reasons these departments are not at present admitting trainees, and have thereby shut off very useful training centres. We feel that the present situation calls for an early examination of the question so that facilities available in these places may be fully utilised to bring about a quick increase in the supply of trained scientific workers. We feel that the various departments should be able to train additional men as indicated below:

<u>Department.</u>	<u>No. of additional men.</u>
Forest Research Institute, Dehradun	12
Haffkine Institute, Bombay	10
Biochemical Standardisation Laboratory, Calcutta	5
Geological Survey of India	12
Ordnance Laboratories	20

<u>Department.</u>	<u>No. of additional men.</u>
Directorate General of Observatories	25
All-India Radio	10
Government Test House, Alipore, Calcutta	15
Metallurgical Inspectorate	5
Inspectorate of Military Explosives	4
Survey of India	10
Mathematical Instruments Office, Calcutta	5
Civil Aviation Directorate	10
Posts & Telegraphs Department Workshops and Laboratories	20
Zoological Survey of India	5
Botanical Survey of India	6
Central Waterways Irrigation & Navigation Commission & Waterways Experimental Stations	12
Central Public Works Department	15
Imperial Dairy Institute	8
Provincial Industrial Research Laboratories	5

We recommend that all the above institutions be asked to submit detailed proposals in respect of scientific training, preferably on the same lines proposed for non-government organisations, and the Government give immediate effect to such proposals.

60. We have examined with interest a scheme of Railway Scientific Research described on pp. 6 of Sir S.S. Bhatnagar's Note (Part II, Chapter I) and commend it to the Government. Our railways and their workshops and laboratories constitute ideal training centres for scientific and technical workers in all problems relating to railway and we should not fail to utilise these facilities. There are at present six laboratories and 10 workshops attached to the State Railways where facilities for research in chemical, metallurgical and other allied fields exist. The scheme put forth proposes to mobilise these facilities for the organisation of an efficient Railway Scientific Research Section, where about 200 research workers

may be trained. We recommend that the scheme be approved, a recurring grant of Rs. 3.42 lacs made and a Director of Railway Scientific Research be appointed to work out the details of the scheme.

61. We have also noted that the existing laboratories of the Council of Scientific and Industrial Research can provide for the training of about 20 additional research workers in various branches of Chemistry, Physics, Glass and Ceramics and Fuel, and recommend that the Council be asked to organise immediately such training. We further recommend that the Council be given such grants as are necessary for the purpose. It is likely that this training programme would entail a recurring grant of Rs. 35,000 for 20 research scholarships each of Rs. 100 p.m. and Rs. 10,000 towards miscellaneous or contingent expenses.

62. Next to special institutions, the universities and other educational institutions constitute the most important centres for the training of personnel in scientific and industrial research. In appendix B of Sir S.S. Bhatnagar's note is given a comprehensive statement of the facilities available in various Indian Universities, and the urgent measures which should be given effect to, in order to increase the outturn of research workers and also the probable number of additional men each University will be in a position to admit in the immediate future. From these data we find that only the universities of Calcutta, Bombay, Andhra, Benares, Lucknow, Allahabad, Aligarh, Dacca and Punjab have fairly well-equipped post-graduate research departments and the universities of Madras, Nagpur, Delhi, Patna, Annamalai and Agra are not so good in this respect. The Sind University has just been established and it will be some time before this university could come into its own. From the information presented, it is obvious that our approach to the problem of research training in universities should be two-fold viz. an immediate all-round strengthening of the existing post-graduate departments in all Indian Universities both by way of equipment and research scholarships and the

creation of post-graduate research departments for certain important subjects in such of the universities as do not have them at present. We would, therefore, recommend to the Government that: (a) the post-graduate research departments of the following universities be given the grant noted against them:

<u>University.</u>	<u>G r a n t s.</u>	
	<u>Capital.</u>	<u>Recurring.</u>
(1) Calcutta	Rs. 2 lakhs	25 scholarships each of the value of Rs. 100 p.m. and Rs. 50,000 as contingencies.
(2) Bombay	Rs. 2 lakhs	15 scholarships of the value of Rs. 100 p.m. and Rs. 50,000 as contingencies.
(3) Andhra	Rs. 2 lakhs	10 scholarships each of the value of Rs. 100 p.m. and Rs. 30,000 as contingencies.
(4) Benares	Rs. 2 lakhs	20 scholarships each of the value of Rs. 100 p.m. and Rs. 40,000 as contingencies.
(5) Lucknow	Rs. 2 lakhs	6 scholarships each of the value of Rs. 100 p.m. and Rs. 20,000 for contingencies.
(6) Allahabad	Rs. 2 lakhs	6 scholarships each of the value of Rs. 100 p.m. and Rs. 20,000 for contingencies.
(7) Aligarh	Rs. 2 lakhs	10 scholarships each of the value of Rs. 100 p.m. and Rs. 40,000 for contingencies.
(8) Punjab	Rs. 2 lakhs	10 scholarships each of the value of Rs. 100 p.m. and Rs. 30,000 for contingencies.
(9) Dacca	Rs. 2 lakhs	8 scholarships each of the value of Rs. 100 p.m. and Rs. 20,000 for contingencies.

and (b) the following universities be given the grants noted against them for expanding their post-graduate departments and also to start new post-graduate research departments in the subjects in which they can do so immediately, (the grants recommended include expenditure for the creation of professorships, readerships and other tutorial staff).

<u>University.</u>	<u>G r a n t s.</u>	
	<u>Capital</u>	<u>Recurring.</u>
(1) Madras	Rs. 5 lakhs	8 scholarships each of Rs. 100 p.m. and Rs. 1.75 lakhs towards teaching staff and contingencies.
(2) Nagpur	Rs. 5 lakhs	5 scholarships each of Rs. 100 p.m. and Rs. 1.05 lakhs towards teaching staff and contingencies.
(3) Delhi	Rs. 5 lakhs	4 scholarships each of Rs. 100 p.m. and Rs. 1.05 lakhs towards teaching staff and contingencies.
(4) Agra	Rs. 5 lakhs	2 scholarships each of Rs. 100 p.m. and Rs. 1.05 lakhs towards teaching staff and contingencies.
(5) Patna	Rs. 5 lakhs	5 scholarships each of Rs. 100 p.m. and Rs. 1.05 lakhs towards teaching staff and contingencies.
(6) Annamalai	Rs. 5 lakhs	4 scholarships each of Rs. 100 p.m. and Rs. 1.05 lakhs towards teaching staff and contingencies.

(c) In addition to the above we would also recommend that the following educational institutions not attached to any university also be given the grants noted against them for the general expansion of research facilities:

<u>Institutions.</u>	<u>Grants - Recurring</u>
(1) Bengal Tanning Institute	.. 5 scholarships each of Rs. 100 p.m. and Rs. 15,000 for contingencies.

Institutions.

Grants - Recurring.

(2) Leather Trades Institute, Madras	5 scholarships each of Rs. 100 p.m. and Rs.12,000 for contingencies.
(3) Harcourt Butler Technological Institute	4 scholarships each of Rs. 100 p.m. and Rs.12,000 for contingencies.
(4) Kerala Soap Institute Calicut	3 scholarships each of Rs. 100 p.m. and Rs.12,000 for contingencies.
(5) Imperial Institute of Sugar Technology, Cawnpore	4 scholarships each of Rs. 100 p.m. and Rs.12,000 for contingencies.
(6) Indian School of Mines, Dhanbad.	5 scholarships each of Rs. 100 p.m. and Rs. 12,000 for contingencies.

The total grant, which we have recommended above for the expansion of research facilities in special institutions and universities will be:

Capital	... Rs. 60 lakhs
Recurring	... Rs. 19.74 lakhs

Special Measures to be initiated within the next six months.

63. The question of providing expanded facilities for the training of personnel in scientific and industrial research is closely linked up with the general question of organisation and development of scientific research in the country. The recommendations which we have made in the preceding sections are merely in the nature of interim measures for bringing about an immediate increase in the out-turn of scientific manpower in the country, and do not fulfil all our requirements in respect of development of scientific research. Long term measures will, therefore, have to be formulated. Since these are equally urgent and important, we have examined the general question in the light of recommendations, made at various times, especially the recommendations of the Industrial Research Planning Committee. Of the various recommendations of the Research Planning Committee the following are of farreaching importance not merely for research development but also in the present context

of research training: (i) Levy of a statutory cess (1/16 of 1%) on industry on the basis of industrial production or as a small surcharge on income-tax so as to realise at least Rs. 1 crore for supplementing the grant from the Govt. for research; (ii) Block grant of Rs. 6 crores from the Government (spread over a period of 5 years) for the establishment of various National Laboratories and for providing funds to universities and special institutions for research in all the sciences and technologies; (iii) Annual recurring grant of Rs. 1 crore from the Government for ensuring the continuity of research activities on a progressive scale.

We are of the opinion that in as much as the above recommendations relate not only to the organisation and development of scientific research in the country but also to the outturn of scientific manpower, they should be given effect to immediately. The principle of levying cess on industry has been accepted by the Government in the late Planning and Development Department but has not yet been translated into action. We, therefore, strongly urge that immediate action on the recommendations of the Industrial Research Planning Committee, especially in regard to the levy of cess on industry for research purposes be initiated.

Section III - Industrial Training.

64. In this Section we propose to deal with advanced and foremanship training in industrial concerns. Many major industrial concerns in the country, especially those in the fields of iron and steel metallurgy, engineering, heavy chemicals, pharmaceuticals and drugs, soaps, oils and fats, paints and varnishes, cement, ~~sugar~~ and alcohol, mineral oils and mining have good facilities for both advanced and foremanship training of technical personnel. But a majority of these firms are at present rather luke warm in the matter of admitting trainees in numbers larger than required for their own purpose. This situation has contributed in no small measure to a denial of opportunities to suitably qualified students, seeking necessary training in industry. We sincerely hope that industry will come to appreciate that it would be in their own interest to take a more enlightened view in the matter. As we have stated earlier in this Chapter, it may perhaps become necessary for the Government to introduce suitable legislative measures so that it becomes incumbent on every established industrial concern to provide facilities for technical training to qualified young men in all the grades notwithstanding whether the personnel thus trained would be required by the concern or not. We also recommend that in every contract entered into by the Government for the purchase of industrial machinery, plant and equipment from foreign and Indian firms there should be provision in the terms of purchase for the training of a suitable number of Indians in the workshops of the firms.

65. Training in industrial concerns may be brought under two general categories: (i) advanced practical training of graduates and to some extent research; (ii) semi-advanced or foremanship training. At present we

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have not been able to obtain correct information regarding the various industrial concerns in the country which are willing to admit additional men for training in the immediate future and the number of men who could be thus admitted into the various categories of training. In appendix 'C' of Sir S.S. Bhatnagar's note, however, is presented whatever information is available in this respect. A summary of these particulars is given below to indicate the total number of major concerns in the country in each important industry and the probable number of additional men who may be trained.

<u>Industry.</u>	<u>Additional Number of workers to be trained.</u>
(1) Iron & Steel - 12 concerns	20
(2) Refractories 6 concerns	5
(3) Associated Industries - 4 firms	Not definitely known
(4) Non-ferrous metallurgical industries - 10 firms	5
(5) Engineering Industries - 24 firms	50
(6) Electrical Industries - 23 firms	50
(7) Ship-building & Marine Engineering - 8 firms	15
(8) Air-craft (Assembly & maintenance) - 1 firm	20
(9) Scientific stores - 11 firms	8
(10) Coking & Carbonisation Industries - 6 firms	5
(11) Heavy Chemicals and Chemical Industries - 29 firms	15
(12) Soaps & Cosmetics - 10 firms	15
(13) Textiles (over 50 groups of Mills)	100
(14) Tanning, Leather & Leather Products (over 10 firms)	25
(15) Paints, Varnishes & Associated Industries (16 firms)	35
(16) Paper (over 7 firms)	10
(17) Sugar and alcohol (over 25 firms)	50

<u>Industry.</u>	<u>Additional Number of workers to be trained.</u>
(18) Glass & Ceramics (22 firms)	20 (not definite)
(19) Cement (over 15 firms)	20
(20) Rubber (7 firms)	5
(21) Oil Companies and Petroleum Refineries (2 firms)	Not definitely known
(22) Manganese Mining (3 firms)	-do-
(23) Copper Mining (1 firm)	-do-

In addition to above firms there is a large number of industrial concerns as for example, the Ordnance factories, Explosive factories, the Mint, Printing presses, Railway workshops, etc. under the direct administration and control of the Government. These have good training facilities.

66. From the foregoing it is obvious that an immediate increase in the outturn of trained technical personnel may be brought about if the facilities available in all industrial concerns including Government establishments in the country are fully mobilised. We attach considerable importance to this and recommend that arrangements be made for the practical training of 300 graduates and for the foremanship training of about 500 men in the immediate future. We also recommend the following tentative distribution of the trainees among the various industries:

	<u>Advanced</u>	<u>Foreman.</u>
Iron and Steel Metallurgy	20	45
Refractories	5	8
Associated Industries	3	5
Non-ferrous Industries	5	8
Engineering Industries	30	50
Electrical Industries	20	35
Ship-building and Marine Eng.	10	15
Air-craft	5	8

	<u>Advanced</u>	<u>Foreman.</u>
Scientific stores	5	8
Coking and Carbonisation	5	8
Heavy Chemicals and Pharmaceuticals and Drugs	30	50
Soaps and fats and oils	10	15
Textiles	25	40
Leather	10	15
Paints and varnishes	10	15
Paper	10	15
Sugar and alcohol	20	35
Glass and Ceramics	15	24
Rubber	5	8
Cement	10	15
Defence Industries	20	35
Railway Engineering	12	20
Mint	5	8
Printing	10	15

We should, however, like to see a larger proportion of foremen trained.

Training in industrial concerns may be best provided by selecting suitably qualified men and assigning them to various factories. The selected men should be given attractive stipends - at least Rs. 100 per month for advanced training and Rs. 75 per month for foremanship training; and should be placed under the top technical executives of the concerns so that they may receive the best of attention. Advanced industrial training should as far as practicable include training in design and research also. Provision should also be made for the proper supervision of the trainees. We recommend that a total recurring grant of Rs. 8.2 lakhs be sanctioned by the Government for this industrial training scheme. Further we also recommend that the Government may provide whatever additional facilities

the factories concerned might require by way of housing accommodation for the trainees, additional laboratory equipment for research, etc.

67. 'A' grade technicians are experts and specialists in the subject and in most cases it is difficult to provide for their satisfactory training in India. The Overseas Scholarships Scheme was, therefore, introduced by the Government to meet this situation. But at present great difficulties are being experienced in finding admission for these students in institutions abroad. We, therefore, suggest as an urgent measure that a certain number of 'A' grade technicians be trained in India. A tentative priority list of subjects in which training can be imparted in India has been indicated in Dr. Ray's note. (Part II, Chapter V). We hope to be in a position to formulate detailed proposals in this matter later.

68. We have already referred to in brief to the question of training of 'C' grade technicians, although this matter does not come strictly within our purview. We, however, recommend further that a fund of Rs. 5 lakhs should be provided for instituting a system of scholarships to make it possible for 'C' grade technicians already engaged in industry to undergo a short refresher and supplementary course in suitable institutions or industrial concerns. This refresher course should be arranged in co-operation with the Railway workshops, ordnance factories and the various engineering firms.

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Section IV.- Technical training for Defence Services:

69. Owing to various reasons Defence Services have so far remained an excluded field and consequently, we are unable to assess the requirements of scientific and technical personnel for the various branches of the services. Working as we are under these handicaps, we are unable to formulate any specific proposals for the immediate filling in of the existing lacunae if any. However, in view of the imminent constitutional changes in the country with the consequent changes in the organisational set up of the services both on the operational side and on the technical side, we have felt it necessary to examine at this stage the subject of Defence in its general technical aspects, so as to be able to suggest certain essential and immediate measures that might be a sort of 'path-finder' for a future comprehensive plan. For this purpose we have had the note prepared by Wing Commander Singh (Part II, Chapter VI) as a basis although it refers chiefly to the Air Forces.

70. It has been brought to our notice that certain recommendations of the Pay Commission are likely to affect adversely the efficiency of the Technical Arms of the Defence Services. We wish to bring it to the notice of the Government that unless the status of technical and scientific men in the Services as in other services is improved the efficiency of Defence Services will greatly suffer. Since, however, this question is closely linked up with the larger general question of status of scientists and technical men we defer making any definite recommendations in the matter here.

71. Although during the war, a certain amount of co-operative research was carried out between the Defence Department and certain civilian research organisations, we regret to have to say that the Defence Organisation of the country has not become research conscious and consequently

there has been poor development of defence research. The chief contributory factor to this state of affairs has been that the Defence Forces in India have so far been staffed and manned by British Officers, who depended on British resources for scientific developments. Now that the power of administration and defence of the country is going to pass into our hands it is imperative that we should build up a strong defence organisation on up-to-date and scientific lines. For this, we need to organised defence research on an extensive scale with strong scientific sections to deal with the training and utilisation of resources available in the country for forward advance in the manufacture of defence materials. Our considered recommendation in this respect, therefore, is that the Defence Department should be asked to formulate a project which should include research, design and engineering construction for the several branches of the Defence Forces viz. Army, Navy and Air Forces; and the project should be examined by a commission of experts.

Since Defence research cannot make any progress without the co-operation of civil research, we also recommend that effective liaison between the Civil and the Defence Organisations be established immediately. We understand that a scientific adviser appointed by the Government has made certain recommendations for the development of the scientific and technical side of the Defence Services. We urge that the report of this expert be made available to Scientific Man-power Committee.

72. In the matter of technical training for Defence Services we have already referred to the inadequacy of information. It is, therefore, essential that the necessary information should be collected by the Defence Department and examined immediately. Meanwhile,

on the basis of information presented in Wing Commander Singh's note relating to Air Force requirements we propose the following urgent measures for adoption:

(a) The existing scheme of technical training in Civil Aviation be correlated with that in the Royal Indian Air Force. This measure will not only quicken the pace in the training of mechanics but will also enable us to create a common pool of trained men for sharing it between the two organisations.

(b) The Civil Aviation Training Centre at Saharanpur should be utilised for the training of both the Air Force and the Civil Aviation personnel.

(c) Ground engineers in Civil Aviation with A, B, C, D & X licenses should be employed by the Air Force; and the Air Force should be fully represented on the examination boards and the certificates endorsed as 'Acceptable to the Defence Services.'

(d) For the development of radio research the Indian Institute of Science, Bangalore, the Universities of Calcutta and Allahabad and the National Physical Laboratory should be enabled to expand their facilities so that a large number of research workers may be admitted.

Section V. Shortage of Equipment and other related questions.

73. Elsewhere we had occasion to refer to the shortage of essential laboratory equipment in our educational research institutions. We feel, however, that the matter is so important that it deserves special consideration. During the war years most of our educational and research institutions have greatly suffered in the matter of scientific instruments and apparatus, due to various disabilities as for instance lack of funds, import control restrictions etc. These handicaps continue in a large measure even now; and unless they are removed immediately,

it will be almost impossible for the institutions to expand their training facilities and increase the output of scientific manpower in the country. The situation calls for quick action and we strongly urge the Government to give top priority to the import of scientific equipment for educational and research institutions. We also urge that the Government should remove all restrictions on import of scientific equipment and endeavour to secure from abroad through the supply missions or other official channels whatever equipment the institutions concerned fail to obtain themselves. The Government should also encourage Indian concerns to manufacture scientific and technical equipment. If the government allows a rebate on the import duty of scientific equipment it would be giving considerable help to the institutions. We commend this for the earnest consideration of the government.

74. On the cessation of the war a considerable amount of scientific stores and equipment of educational value was rendered surplus and these are now being released for civilian use. But due to the existing disposals policy of the Government a large part of the valuable materials of educational value is passing into the hands of private dealers and the hard-pressed educational institutions are being deprived of much needed equipment. We take a serious view of the matter and desire that the present disposals policy should be reviewed. We have projected in this report a plan of scientific and technical training in various institutions in the immediate future which entails a supply of a fair amount of scientific apparatus and equipment to the institutions. Unless the necessary equipment is provided to the institutions we are afraid the plan may very well fail to produce the desired result. Under the existing circumstances, it is difficult to obtain

all the needed equipment from abroad even if there is enough money for it. Recourse will, therefore, have to be had to our own resources in the country of which the surplus war goods form a valuable part. We strongly urge the government to reconsider its disposal policy in the light of these circumstances and take such measures as are necessary to ensure that surplus war goods of scientific value are made easily available to educational and research institutions and as far as possible without cost.

Housing.

75. The next important question is the housing accommodation for additional men who will have to undergo the proposed training in universities, special institutions and industry. There is already acute shortage of hostel or suitable housing accommodation in every educational institution in the country. Industrial concerns are also hard pressed in this respect and many of them, although willing to take in apprentices in large numbers have been compelled to greatly restrict admissions on this ground. This is a serious situation and needs looking into soon. For otherwise, it will become worse and no institution or factory will be able to take in additional men under our proposed training programme. The government should immediately evolve a suitable machinery for expediting building construction especially at various training centres and also provide necessary funds for the purpose. We suggest the following concrete steps:-

- (a) construction of additional wings to the existing hostels in universities, research and technical institutions where the additional men are intended to be trained and the cost of such construction to be borne partially or entirely by the Government.

- (b) construction of residential buildings in factories, where training is to be provided on the basis of 50% of the cost as interest free loan to the industrial concerns, the loan to be repaid to the government in instalments and the buildings constructed to become the property of the concerns after a certain period when the loan has been repaid. It is hoped that the concerns will welcome this proposal.

Section VI. Steps to expedite Government projects.

76. Before we close this chapter, we feel it necessary to mention that we have been told that great difficulties are being experienced in implementing most of the Governmental schemes for the improvement and expansion of research and training facilities. Even though the subject does not come strictly within our terms of reference, we feel it incumbent on us to make a reference to some of the difficulties which have been brought to our notice, and to suggest steps that the Government may take to overcome them.

We are informed that:

- (1) It is difficult to secure suitably trained men, especially in the higher cadres owing to
- (a) the lack of proper appreciation of the services which scientists can render and consequent relegation of scientists to a status subordinate to administrators;
 - (b) the prevailing system of recruitment through the Federal Public Service Commission; (scientists of good standing do not normally respond to advertisements and can be secured only through negotiation);
 - (c) the generally low salaries attached to scientific posts;

- (d) the lack of funds and the machinery whereby teaching and research institutions can benefit by sending their experienced men to visit the well-known world centres of training and research;
- (e) the inadequacy of the number of scholarships available for research and post-graduate training.

(II) Most of the institutions are hopelessly out of date in the matter of equipment and what they possess require complete overhauling.

(III) A great deal of time is wasted in getting buildings planned and executed through the Government agencies.

(IV) A great deal of time is wasted owing to the necessity of getting the administrative department's sanction on major as well as minor issues relating to staff, equipment, etc.

77. In our opinion the above difficulties can be overcome if the Government agree to

(1) Leave it to the administrative department to decide as to how any particular scientific or technical post should be filled. The normal procedure of recruitment through the Federal Public Service Commission may be followed generally but in special cases at the discretion of the administrative department, posts may be filled by negotiation with prospective candidates through the medium of a selection committee, with which, if necessary, it may be possible to associate the Federal Public Service Commission.

(II) Create a Scientific Service equal in status and emoluments to administrative services, similar to that created in Great Britain.

(III) Improve the salary scales of teachers especially those engaged in technical education.

(IV) Provide funds to enable the institution to send their experienced staff overseas to visit important centres of scientific and technical education and research.

(V) Institute a large number of scholarships for post-graduate and research training in institutions in India.

(VI) Assist institutions to bring their equipment up-to-date.

(VII) Afford the fullest scope to Indian agencies to manufacture and wherever necessary import scientific and technical equipment.

(VIII) Authorise the administrative department to set up a Building Committee on which representatives of the Central Public Works Department and the Finance Department may sit together with departmental representatives and wherever necessary, to entrust the department at its discretion to have their buildings planned and executed through private agencies.

(IX) Delegate a greater amount of power than at present to heads of educational and research institutions.

(X) Place at the disposal of institutions funds in the form of block grants to implement programmes approved by the Government. The procedure for expending these grants should be simplified so as to give the greatest amount of freedom to the head of the institution, consistent with due safeguards, to enable the programme to be put into execution speedily and effectively.

(XI) Decisions on technical matters should be arrived at in full consultation with scientific and technical men of the department concerned at all stages. Any change, in technical proposals including policy should be effected only after giving technical men the fullest opportunity to represent their view point.

78. The Sub-committee desires to place on record its high appreciation of the valuable services rendered by Dr. S.R. Sen Gupta and Mr. L.S. Chandra Kant in the preparation of this report.

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New Delhi,
August 3, 1947.

CHAPTER II.

Summary of Recommendations.

...

The Sub-committee of the Scientific Manpower Committee makes the following recommendations to the Government of India for immediate implementation:

I. For an immediate improvement in the outturn of scientific man-power the Government should utilise the existing sources, viz., universities, special institutions and the industrial concerns by helping to create in these places adequate facilities for higher education, research and practical training. Such help as is to be given should largely be in the form of grants for^(a) the creation of scholarships on a generous scale (b) the purchase of equipment, (c) the opening of post-graduate research departments in the universities, which do not have any at the moment. In addition to above, the several educational development plans, which have been prepared by the Departments of Education etc., should be pushed through, immediately.

For the objectives generally set forth above the Sub-committee makes the following detailed recommendations under various heads.

II. Education:

(a) Basic Scientific Education

- (i) A substantial increase in the facilities for education in general science up to the Intermediate Science and B.Sc. standards should be aimed at so that the output from these courses may be adequate to feed the post-graduate institutions. (Para 3, Chapter I).
- (ii) As an interim measure to meet the present emergency double shifts should be introduced in such institutions where there is some spare teaching accommodation and equipment but a

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completely new set of staff should be engaged for the second shift. The Government should, wherever the introduction of double shift is concerned feasible, come to the aid of the institution by bearing a share of the expenses on staff salary and contingencies; and by assisting the institution in securing a certain amount of equipment and building materials.

(Para 4, Chapter I)

- (iii) The Provincial Governments should be requested to convert without delay some of their existing ordinary High Schools into Technical High Schools.

(Para 5, Chapter I)

(b) Higher Scientific Education:

- (i) The Government of India should come to the aid of all universities by giving them suitable financial assistance to expand their post-graduate departments so that the output of post-graduate science students may be increased (para 6, Chapter I)
- (ii) The recommendations of the Geological Education Committee should be acted on immediately so that trained geologists adequate in number may be available for the survey and development of India's mineral resources. The Geological Survey of India should increase the number of their present training camps so as to be able to train annually at least 50 geologists in field work. (Para 7 & 8, Chapter I)

(c) Engineering and Technological Education:

In the matter of education in engineering and technology a short term and a long term programme should be initiated within the next six months:

Short-term programme:

- (i) Introduction of an intensive 12 month training programme of M.Sc's and graduates in Chemical Technology to be run on a co-operative basis

between (14 different technical institutions and corresponding industries) at a cost of Rs. 34 lakhs in capital and Rs. 13.3 lakhs in recurring (Para 15, Chapter I).

- (ii) The universities should introduce 3-year degree courses in engineering as proposed by the All-India Council for Technical Education. (Para 16, Chapter I).
- (iii) Double shift system should be introduced in engineering colleges, if conditions justify (Para 17, Chapter I)
- (iv) Wherever possible use should be made of the teaching facilities of the science departments of general colleges to assist in the education in basic sciences for engineering students. (Para 18, Chap. I)
- (v) As an interim measure, engineers in Government service should be encouraged to assist in the instruction in engineering colleges. (Para 19, Chapter I).

Long-term Programme:

- (i) For ensuring co-ordinated development of technical education and generally to raise its standard, the Regional Committees, recommended by the All-India Council for Technical Education be established immediately. (Para 22, Chapter I)
- (ii) For the improvement of the standard of education as well as the expansion of some of the institutions of engineering and technology, so that the present facilities may be fully utilised the Government of India should immediately make grants to such institutions as are recommended by the All-India Council for Technical Education. The grants required will be about Rs. 2 crores capital spread

over 5 years and Rs. 31 lakhs recurring (Para 23, Chapter I)

- (iii) Building construction at present contemplated to increase the annual intake of architecture and engineering classes of the Delhi Polytechnic should be expedited. The existing unsatisfactory conditions in the Delhi Polytechnic, especially in the matter of salaries to teachers, accommodation etc. should be removed and certain departments of the institution should be affiliated to the Delhi University. The government should also consider the desirability of setting up a small technical committee to advise the governing body of the Polytechnic (Para 24, 25 - Chapter I)
- (iv) The Indian Institute of Science should be urged to expedite the opening of the Power Engineering Department so that the outturn of engineers, adequately qualified to handle hydroelectric power development projects etc. may be available soon (Para 27, Chapter I)
- (v) Within the next six months the Government should complete the purchase of the sites and appoint the planning staff and if possible arrange to hire temporary buildings for starting work on the Eastern and the Western Higher Technical Institutions. (Para 29, Chapter I).
- (vi) The Government should give immediate effect to the recommendations of the Indian School of Mines Re-organisation Committee for the improvement and expansion of facilities for mining and applied geological education. Para 30, Chapter I)
- (vii) The scheme of training of 'C' grade technicians prepared by the Department of Labour should be put into operation as far as possible within the next six months.

For this purpose and for the training of ~~craftsmen or over-seers~~ ^{over} the Government should take ~~some~~ of the private engineering schools and develop them. (Para 31, 32, Chapter I).

(viii) For the special needs of leather and foot-wear industries leather chemistry should be introduced as one of the subjects in the M.Sc. Industrial Chemistry course and the existing training institutions in leather technology should be made more efficient and useful by adding to their equipment and by enabling them to have better paid staff. (Para 33, Chapter I).

(d) Agricultural Education:

(i) For the co-ordinated development of agricultural education, the Government should constitute on an all-India basis an Advisory Council for Agricultural Education. (Para 35, Chapter I).

(ii) In order to bring about an improvement in the flow of trained personnel the system of double shift should be introduced wherever possible, as an interim measure. (Para 36, Chapter I).

(iii) The programme of development of training and research facilities of the Indian Agricultural Research Institute, Central Agricultural College and other Central Research Institutes dealing with different aspects of agriculture with forestry; and fisheries should be implemented and all facilities given to increase the scope of the training programme so as to be able to train double the present number.

(iv) The Indian universities should be encouraged by financial grants and otherwise to establish and/or develop their facilities of agriculture and diversify the scope of their training.

(e) Medical Education:

(i) For an immediate increase in the outturn of medical personnel, the double shift system should be tried as an interim experimental measure, in the Calcutta Medical College and a grant of Rs. 1.3 lakhs in recurring and Rs. 0.10 lakhs in Capital be made for the purpose. The possibility of introducing this system in the G.S. Medical College, Bombay, should also be investigated. (Para 41, Chapter I).

(ii) As a long term measure the following grants should be sanctioned for the general improvement and expansion of training facilities in the existing medical colleges and certain other purposes.

(a) Existing Colleges in.

	<u>India</u>	<u>Pakistan</u>
	(in lakhs of rupees)	(in lakhs of rupees.)
Capital		
Expenditure	432.0	54.0
Recurring		
expenditure	115.5	16.5

(b) Rs. 6 lakhs capital and Rs. 6.75 lakhs recurring for starting departments of Preventive Medicine and Public Health in the Medical Colleges of Bombay and Calcutta.

(c) Rs. 0.825 lakhs for instituting 50 medical research scholarships at various centres in India.

(d) Rs. 2.8 lakhs capital and Rs. 2.66 lakhs recurring for expanding the existing training facilities of the All-India Institute of Public Health and Hygiene.

(e) Rs. 3.38 lakhs capital and Rs. 2.98 lakhs recurring for the improvement and expansion of the Calcutta Dental College and the Dental College in Bombay.

(f) A capital grant of Rs. 1 lakh and a recurring grant of Rs. 1.5 lakhs to the Nursing College over and above present expenditure.

(g) A recurring grant of Rs. 71,000 to the Lady Reading Health School, Delhi, for the next three years.

(h) Rs. 2.05 lakhs recurring and Rs. 11,000 capital for schemes for training of certain types of non-medical personnel such as midwives, health inspectors, health visitors and vaccinators in the provinces.

(i) Rs. 0.60 lakhs recurring for instituting 12 research scholarships in medical and social welfare work at the Tata Institute of Social Sciences, Bombay.

(j) Rs. 446.3 lakhs capital and Rs. 132.8 lakhs recurring for a college of Pharmacy in Calcutta, a start being made within the next six months. (Paras 42 to 51, Chapter I)

III. Scientific Research Training:

(i) The rigidity of the system of training obtaining in certain universities, and research institutions should be removed and the system made more flexible and diversified so that a wider field of activity could be covered. (Para 53, Chapter I)

(ii) The drift or wastage of scientific talent now going on should be prevented; and such available talent should be assessed and properly made use of. (Para 54, Chapter I)

(iii) For an immediate improvement in the research training facilities in universities and special institutions the following measures should be given effect to:

(a) the institution of 250 scholarships in Indian universities and non-government research institutions at an estimated expenditure of Rs. 3 lakhs in recurring.

(b) Creation of 20 professorships, 20 readerships and 40 lectureships in certain universities.

(c) The Universities of Madras, Nagpur, Delhi, Agra Patna and Annamalai be asked to start post-graduate research departments in certain important subjects and a total grant of Rs. 30 lakhs in capital and Rs. 7.0 lakhs in recurring (which includes (b) above) be sanctioned.

(d) The Universities of Calcutta, Bombay, Andhra, Benares, Lucknow, Allahabad, Aligarh, Punjab and Dacca be asked to expand their research training facilities by way of equipment,

library etc. to take in additional workers and that a total grant of Rs. 18 lakhs in capital and Rs. 3 lakhs in recurring be sanctioned.

(e) The Indian Institute of Science, Bose Research institute, Tata Institute of Fundamental Research, Nutrition Research Laboratory, Cotton Technological Laboratory, Indian Association for the Cultivation of Science, Lac Research Institute, Jute Research Institute and the Laboratories of the Indian Academy of Sciences be asked to expand their research facilities to accommodate more workers and that a grant of Rs. 14 lakhs in capital and Rs. 2.50 lakhs in recurring be sanctioned for the purpose.

(f) The Council of Scientific and Industrial Research be asked to admit at least 20 research workers for training in their present laboratories and that a grant of Rs. 35,000 in recurring be sanctioned for the purpose.

(g) The Bengal Tanning Institute, Leather Trades Institute, Madras, Harcourt Butler Technological Institute, Kerala Soap Institute, Imperial Institute of Sugar Technology and the Indian School of Mines, be asked to expand their research facilities to take in more men and that a grant of Rs. 0.75 lakhs in recurring be sanctioned for the purpose.

(h) The various scientific departments of the Government which are about 20 in number be asked to formulate immediately proposals for the training of as many men as possible, not less than 200 in any case for all the departments and the Government take appropriate action on the proposals.

(i) A scheme of Railway Scientific Research for the training of about 200 workers be instituted immediately, and a grant of Rs. 3.42 lakhs in recurring be sanctioned for the purpose.

- (j) For the organisation and development of scientific and industrial research in the country the government should implement the recommendations of the Industrial Research Planning Committee especially in regard to the levy of statutory cess on industry for research purposes. (Paras 55 to 63, Chapter I)

IV. Industrial Training.

- (i) All the established industrial concerns in the country should be approached to provide facilities for advanced and lower grades of training in their factories for more men. In case the response from the concerns is poor the government should introduce suitable legislative measure whereby it should become incumbent on industrial concerns to provide technical training for qualified students notwithstanding whether the personnel thus trained would be required by the particular concerns or not. (Para 64, Chapter I)
- (ii) In all contracts entered into by the Government for the purchase of industrial machinery, plant and equipment from foreign and Indian firms there should be a provision in the terms of purchase for the training of a suitable number of Indians in the workshops of the firms. (Para 64, Chapter I)
- (iii) The following immediate programme of training of men in industry should be implemented:-
- (1) Advanced training of 300 men in 24 major industries at an estimated cost of Rs. 3.6 lakhs recurring.
 - (2) Foremanship Training of 500 men in 24 major industries at an estimated cost of Rs. 4.6 lakhs recurring. (Paras 65 & 66, Chapter I)

V. Technical Training in Institutions:

- (i) A certain number of 'A' grade technicians (experts) should be trained in India possibly in accordance

with the tentative list of priority subjects drawn up by the Sub-committee. (Para 67, Chapter I)

- (ii) A scheme of imparting an immediate intensive short-course training to 'B' grade technicians as mentioned at II(C) (i) should be implemented forthwith.
- (iii) A grant of Rs. 5 lakhs be made for instituting a system of scholarships to make it possible for 'C' grade technicians already engaged in industry to undergo a short refresher and supplementary course in suitable institutions or industrial concerns (Para 68, Chapter I)

VI. Defence.

- (i) The Defence Organisation of the country should be developed on up-to-date scientific lines partly by organising defence research on an extensive scale, through a strong scientific section dealing with the training and utilisation of resources available in the country for forward advance in the manufacture of defence materials. For this purpose the Defence Department should be asked to formulate a scientific project which should include research, design and engineering construction for the several branches of the Defence Forces viz. Army, Navy and Air Forces and the project examined by a Commission of Experts. (Chapter I, para 71)
- (ii) Since Defence Research cannot progress without the co-operation of 'Civil' research effective liaison should be established immediately between the 'Civil' and 'Defence' organisations. (Para 71, Chapter I)
- (iii) Adequate information relating to the requirements of the Defence Organisation in respect of scientific and technical man-power being not available at this stage, the necessary details should be collected from the Defence Department immediately and examined. (Para 72, Chapter I)

(iv) With reference to the Air Forces the following measures should be adopted as far as practicable.

- (a) The existing scheme of technical training in civil aviation be correlated with that in the R.I.A.F. This measure will not only quicken the pace in the training of mechanics but will also enable us to create a common pool of trained personnel between the two organisations.
- (b) The Civil Aviation Training Centre at Saharanpur should be utilised for the training of both the Air Force and the Civil Aviation personnel.
- (c) Ground Engineers in Civil Aviation with A, B, C, D & X licences should be employed by the Air Forces; and the Air Force should be fully represented on the examination boards and the certificates endorsed as "Acceptable to the Defence Services". (Para 72, Chapter I)

VII. General recommendations:-

- (i) For the successful expansion of research and training facilities in universities and special institutions, especially in regard to the various programmes recommended above the Government should immediately adopt the following special measures :-
 - (a) The existing handicaps in the matter of import of scientific equipment and apparatus for educational institutions should be removed and top priority given for such imports. The Government should also endeavour to secure from abroad through the official trade agencies whatever equipment the institutions concerned fail to obtain themselves. The Government should as far as possible also allow rebate on the import duty on scientific equipment.

(b) In order to augment the existing equipment resources for scientific institutions the Government should reconsider its present policy of disposal of surplus war materials of scientific value and adopt necessary measures to prevent the passing of such materials into the hands of private dealers and ensure that the materials are made available to educational and research institutions easily and as far as possible free of cost.

(c) In order to facilitate the training of additional workers in institutions and industrial concerns the Government should immediately evolve a suitable machinery for expediting building construction, especially at various training centres, and also provide necessary funds for the purpose. The following concrete steps may be favourably considered by the Government:-

- (i) Construction of additional wings to the existing hostels in universities, research and technical institutions where the additional men are intended to be trained and the cost of such construction to be entirely borne by the Government.
- (ii) Construction of residential buildings in factories where training is to be provided on the basis of 50% of the cost as interest free loan to the industrial concerns, the loan to be repaid to the Government in instalments and the buildings constructed to become the property of the concerns after a certain period. (Paras 73 to 75, Chapter I)

(2) In order to overcome the great difficulties experienced by the Government in implementing most of their schemes for the improvement and expansion of research and training facilities, the Government should:-

- (a) Leave it to the administrative department to decide as to how any particular scientific or technical post should be filled. The normal procedure of recruitment through the Federal Public Service Commission can be followed generally but in special cases at the discretion of the Administrative department, posts may be filled through negotiations with prospective candidates through the medium of a selection committee, with which it may be possible to associate the Federal Public Service Commission.
- (b) Create a Scientific Service at par in status and emoluments with administrative services, similar to that created in Great Britain.
- (c) Improve the salary scales of teachers especially those engaged in technical education.