Sectt. II-27—60,004—17-12-48

Education and Public Health **(194 9) Department.**

Ms. **SERIES.**

96/5.38

G.O. NO. 3883 Edn.,

Dated 19-12-1949.

[Despatch Abstract.]

Madras Educational Service-Post of Professor of Tele-Communications Engineeng Guindy College-Temporary arrangements for carrying on work-Approved.

Back Papers.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.
	1526 19. 11.	45					

Further Papers.

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

INDIAN INSTITUTE OF SCIENCE
BANGALORE, INDIA

POSTAL ADDRESS:
MALLESWARAM, BANGALORE
TELEGRAMS:
~~"SCIENCE"~~ BANGALORE-3.

Date 6th May 1948.

No.P.V.46(S)/48- 2185

From

A. G. PAI, Esq., M.A. (Cantab.)
Registrar

ASST. SECRETARY TO GOVERNMENT
8 - MAY 1948
EDUCATION AND PUBLIC HEALTH DEPT.

To

33997

The Secretary to the
Government of Madras,
Department of Education,
Fort St. George,
MADRAS.

Sir,

I have the honour to give below a copy of the Resolution passed by the Governing Council of the Institute at its meeting held on the 9th of February 1948 for your information and favour of necessary action for arranging releif of Prof. K. Sreenivasan, Department of Telecommunication, College of Engineering, Guindy, Madras, at an early date.

> RESOLUTION XLIV:- (i) Under By-law 47 of the Regulations and By-laws of the Institute a recommendation be made to H.E. the Visitor that Prof. K. Sreenivasan, B.Sc., A.I.I.Sc., M.I.E.E., Mem.A.I.E.E., S.I.R.E., F.A.Sc., be appointed as Professor and Head of the Department of Electrical Communication Engineering on a salary of Rs. 1,250/- per month in the grade Rs.1,000-50-1,250 in accordance with the Regulations and By-laws of the Institute for the time being in force; (ii) he be on probation for a period of two years, after which, if confirmed, he shall continue till the 30th June following the date of his attaining the age of 55; (iii) he join the Provident Fund Scheme of the Institute, the rate of subscription being 8⅓% of his salary, the Institute contributing an equivalent amount; (iv) in the event of the Institute providing him with a house in the grounds of the Institute, he be required to reside therein, the authorised rent therefor being charged;"........

I may be permitted to add in this connection that under Regulation 32 of the Regulations of the Institute, the Committee of Selection in India for the post selected Mr. K.Sreenivasan as the most suitable person to fill the chair though he had not applied for the same.

His excellency the Governor-General who is the Visitor of the Institute has approved the offer made to Prof. K.Sreenivasan.

I have the honour to be,
Sir
Your most obedient servant,
A.G.Pai
~~REGISTRAR.~~

Edn. & P.H. (A)

Endt. No. 33997-A-1, d/- 8.5.48

Refd. to the D.P.I. for very early remarks.

8/5/48

8/5/48

8/5/48

8/6/5

pnr

to the D.P.I.

Memo. No.

M.E.S. – Sri K. Srinivasan –
Offer of Professorship of Elec. Commn. Engg.

Ref: – ~~Memo~~ Endt. No. 33997-A-1, dt. 8.5.48

p. 1 ante

The D.P.I. is requested to expedite his remarks in the matter.

18.5.48

12/5/48

To the D.P.I.

21/5

Confidential.

SECRETARY, EDN. AND P.H. DEPT.
20 MAY 1948
GOVERNMENT OF MADRAS

From

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

To

The Secretary to Government,
Education and Public Health Department.

R.Cl. No.36/48 dated 19th May 1948.

3

37819

Sir,

Sub: MADRAS EDUCATIONAL SERVICE - Prof. K. Sreenivasan, Appointment in the Indian Institute of Science, Bangalore - Resignation of present appointment in the Madras Edl. Service - Acceptance of - Recommending.

Ref: Govt. Endt. No.33997 A.1 Edn., dated 8-5-1948.

p. 1 ante

p. 4 infra

With reference to the Government endorsement cited, I have the honour to submit herewith the letter of resignation dated 12/13th May 1948 received from Sri K. Sreenivasan, Professor of Tele-Communications Engineering, College of Engineering, Guindy and to state that I have no alternative but to recommend the acceptance of the resignation of Sri K. Sreenivasan, with effect from the date of relief.

2. As regards consequential arrangements, I suggest that the Madras Public Service Commission may be addressed immediately to advertise the vacancy and select a suitable candidate. I understand that advertisement alone will not suffice and that really suitable persons can be secured for appointment by invitation. If the Government are agreeable, I shall obtain full particulars about some suitable persons through Dr. J.J. Rudra and forward them for consideration along with other applications that may be received in response to the Commission's advertisement.

3. Till such time as a regular appointment is made to the post, Dr. K. Sukumaran, Officiating Professor of Electrical Engineering will be placed in additional charge of the Tele-Communications department.

(Separate file)

Copy of K.S.'s letter taken for separate action.

4. In my letter R.C.No.3344 C1/47 dated 7th May 1948, I have recommended the appointment of Mr. K.S. Hegde, the overseas returned scholar as Officiating Junior Instructor in Tele-Communications Engineering in the Madras Educational Service under General Rule 9(a)(i). In view of the urgent necessity to appoint suitable persons to the Tele-Communications Department, ~~I request~~ that the appointment already recommended in the above letter may be made immediately. It is also necessary to create the post of Instructor in the Tele-Communications Department and fill it as early as possible. I shall address Government in the matter separately, in due course.

for Director of Public Instruction.

R.C. 19/5.

K. SREENIVASAN,
B.Sc., A.I.I.Sc., M.I.E.E.,
MEM. A.I.E.E., S.M.I.R.E., F.A.Sc.,
PROFESSOR.

13.5

DEPARTMENT OF TELECOMMUNICATION,
COLLEGE OF ENGINEERING,
GUINDY,
MADRAS, S. INDIA.

~~12th~~ May 1948.
13.

4

The Director of Pnblic Instruction,
Madras.

Sir,

I have been offered the chair of Electrical Communication Engineering at the Indian Institute of Science,Bangalore and H.E.the Governor-General of India, in his capacity as Visitor has, I understand,approved of the offer.

I have been associated with the Institute for 25 years and owe much of my engineering education and career to it. I have also served there for 13 years. I therefore feel honoured by this offer from the Institute and would like to accept it. I respectfully request that I may please be permitted to do so and to relinquish my present post as Professor of Telecommunication Engineering at this College as from 1st June 1948 or near date conveneient to the College.

I shall be most grateful if I may please be favoured with an early decision on my request.

I beg to remain
Sir,
Your most obedient servant,

K. Sreenivasan.

K.SREENIVASAN.

Submitted to the Director of Public Instruction
with remarks in letter ~~RC~~ NO -14-2-A/48 d/13.5.48

13.5.48

Edn. and P.H. Dept.(A).

5/

I.

G.O.(MS.) No. 1396 Edn., dated 29/5/48

M.E.S. - Sri K.Srinivasan, Prof., Engg.College, Guindy - Resignation - Accepted.

Read:- From the D.P.I., No.36/48, d/- 19-5-48 (para 1).

CA3

portions D, pp 1 & 2 NF

The resignation tendered by Sri K.Srinivasan, of the post of Prof. , College of Engg., Guindy, in the M.E.S., held by him, is accepted, w.e.f. the date of his relief.

5

29/5/48

To the D.P.I. ✓
" A.G. ✓
" S.G.P ✓ (for pubn. in Gazette as notfn.).

29.5.48

29/5/48

II.

Confdl.

MEMO.No. 33997-A-2, dt-29.5.48

M.E.S. - Resignation of Sri K.Srinivasan, Prof., Engg.College, Guindy - Consequential arrangements.

Read:- From the DPI, No.36/48, d/- 19-5-48 (paras 2 & 3)

Cf.3

Orders accepting the resignation of Sri K.Srinivasan of the post of Prof., Engg.College, Guindy, ~~xx~~ are being issued separately.

2. The Govt. approve of the proposal of the D.P.I. to place Dr.K.Sukumaran, tempy. Prof. of Elec.Engg., College of Engg., Guindy, in addl. charge of the post of Prof. of Elec.Commns. Engg. in the college. The Dir. is requested to put that proposal into effect immediately and to arrange for ~~KKK~~ Sri K. Srinivasan's relief.

C', A, NF.

3. The rules do not permit of the adoption of the procedure suggested in the latter part of para 2 of the DPI's letter, ~~cited~~, for regularly filling the post of Prof. of Elec. Commns. Engg. The MPSC will proceed to advertise on the post and select a suitable candidate ~~xxxxx a~~

A, NF. 1

6

statutory refce. to it being issued by Govt. Along with the applns. to be recd. by the Commn. ~~that~~ in response to its notfn. ~~advtt.~~, ~~The~~ The names of persons to be informally recommended by the Dir., in consultation with Dr. K.J.Rudra, cannot be considered. The proper course to adopt is first to advertise the post and if, w.r.t. the advertisement, no candidate is available, then to explore the possibility of filling the post by other methods (including by an appt. on a contract basis if necy.). However, the Dir. may, without entering into ~~any~~ a commitment, advise any person to apply to the Commn. ~~for the post~~ if and when the post is advertised ~~the post,~~ and to take his chance. The Dir. is requested to offer his remarks on the suggestions contained in this para.

A at pp. 1-2 NF

E at p. 2 NF

4. The Dir. is further requested to consider and report whether, as a long-standing arrangement, Dr. K.Sukumaran is not competent to hold the post of Prof. of Elec.Commns. Engg. and whether he cannot be regularly transferred to it, esply. as in G.O.No. 192 - Edn., dated 19.11.45, no qualifications are prescribed for ~~app~~ transfer to the post - and whether Sri A. Srinivasan, offg. Instructor in Elec. Engg., cannot be promoted in Dr.K.Sukumaran's place under the emergency provns.

B at p. 3 NF

Cf. of 5

P.T.
29.5.48

29/5/48

OSM
29/5/48

To the D.P.I.

Edn. G.H.(A)

7

~~Confl.~~ Special

Memo. No. 33997-A-3, dt. 12.6.48

M.E.S. - Post of Prof. of Elec. Commns. Engg. - Filling.

Ref:- from the D.P.I., no. A.47/47, dt. 27.4.48.

Cf. 23 of this file.

6

The D.P.I. is requested ~~to send~~ at a very early date his reply to ~~paras 3 & 4~~ ~~of~~ Govt. Memo. No. 33997-A-2, dt. 29.5.48, particularly to para 4 thereof.

Cf. 5

P.T.
12.6.48

12/6/48

OSM
12/6/48

12/6/48

To the D.P.I.

12/6/48

8

2

44025

ASST. SECRETARY TO GOVERNMENT
14 JUN 1948
EDUCATION AND PUBLIC HEALTH

From

A. Sambasiva Rao, M.Sc., E.E.(Stanford),
Assistant Professor In-Charge of Wireless Section,
Department of Physics,
Benares Hindu University,
Benares.

To

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

Sir,

I beg to submit this application for the post of a Professor to be filled in the Department of Telecommunication, College of Engineering, Guindy, Madras.

I passed the M.Sc. Physics examination of the Benares Hindu University in 1939 with Wireless as the special subject, securing a First Class. Since then, I have been working, first as a Demonstrator, subsequently as a Lecturer and at present as an Assistant Professor in charge of the Wireless Section of the Physics Department at the Benares Hindu University, teaching and guiding research work to M.Sc. Wireless students. During this time, I have been doing research work, and have published four research papers on Barkhausen-Kurz Oscillators and Low Frequency Amplifiers, as per copies enclosed.

kept below

In December 1945, I was selected as a J.N.Tata scholar for advanced studies in Radio Engineering in the United States of America. I joined the Department of Electrical Engineering, Stanford University, California, U.S.A., as a graduate student. During my stay of nearly two years at this University, I did advanced studies and research work in Radio Engineering, Electronics and Microwaves. In recognition of my work at this University, I was awarded the degree of "Engineer" in Electrical Communications. The details of my advanced studies, P.36 infra

P.79 infra

laboratory and research experience are given in the following pages. Copies of degrees and testimonials are also attached herewith.

As for the terms of service, I prefer to enter on a contract basis for five years, on an initial salary of Rs 675/- in the grade 600--75/2--900.

I trust my qualifications will meet with your approval.

I remain,
Sir,
Yours obediently,

A. SambasivaRao.

A. Sambasiva Rao

Benares,
June 11, 1948.

References:-

(1) Mrs. Piroja J. Vesugar, M.A.,
Director, The J.N.Tata Endowment,
Bombay House, Fort, Bombay.

(2) Dr. F. E. Terman, Sc.D.,
Dean of the School of Engineering,
Stanford University,
California, U.S.A.

(3) Dr. Karl Spangenberg, Ph.D.,
Professor of Electrical Engineering,
Stanford University,
California, U.S.A.

Encl: i) Details of qualifications and research experience;
ii) Copies of four research papers published;
iii) Copy of the Degree from Stanford University;
and iv) Copies of two testimonials.

cc. The Director of Public Instruction,
Cathedral P.O.,
Madras 6.

B

A. Sambasiva Rao, M.Sc., E.E.(Stanford)
Assistant Professor In-Charge of the Wireless Section,
Department of Physics,
Benares Hindu University.

Date of birth: September 20, 1914.

Place: Mogallu, W. Godavary Dist., Madras Presidency.

BENARES HINDU UNIVERSITY.

1939 M.Sc. Physics, I Class (Special Subject Wireless).

1939-40 Research scholar in Wireless Section of Physics Department.

1940-42 Part-time Physics Demonstrator and Research Scholar.

Published the following papers:-

(1) Generation of Ultra-High Frequency Radio Waves by Electronic Oscillations. (Science & Culture 5, 64, 1939).
(2) Production of Ultra-High Frequency Radio Waves by Electronic Oscillations. (I.J.P. 14, 93, 1940).
(3) Voltage Gain of Low Frequency Amplifiers with Negative Resistance (Science & Culture VI, 670, 1941).
(4) Overall Voltage Gain of Low Frequency Amplifiers with Negative Resistance (I.J.P. 16, 111, 1942).

1942-45 Lecturer In-Charge of the Wireless Section of the Physics Department teaching and guiding Research work to M.Sc. Wireless students.

1945-Dec. Selected by the J.N.Tata Endowment for advanced studies in Radio Engineering in the United States of America.

STANFORD UNIVERSITY, CALIFORNIA, U.S.A.

1946-47 Graduate student in the Department of Electrical Engineering of Stanford University, California, doing advanced studies and research in Radio Engineering, Electronics and Micro Waves.

1947 The Degree of "Engineer" in Electrical Communications (E.E.)

Details of the courses taken and Research Work at the Stanford University.

CIRCUITS - TRANSIENTS:- Transient Electric currents in simple networks. An oscillographic study of transient phenomena in the laboratory accompanies a discussion of the classic mathematical development of circuit theory from the differential equations.

Name of Professor:- Dr. L. H. Brown, Ph.D.

CIRCUITS - TRANSMISSION LINES:- The differential equations of transmission lines and circuits with distributed constants; Travelling wave solutions; standing wave solution; trignometric and hyperbolic functions of complex arguments; typical characteristics of lines in Power, telephone and radio practice; impedance matching; approximations valid at high frequency; lines as circuit elements.

Name of Professor:- Dr. H. H. Skilling, Ph.D., Head of the Department.

PRINCIPLES OF WIRE COMMINICATION:- Applications of Communication engineering theory to telephone and telegraph practice, including the construction and operation of the more important component parts of Wire Communication systems.

Name of Professor:- Prof. H. Blanchard.

NETWORK THEORY:- Theory of two-terminal and Four-Terminal networks, impedance transformation, Foster's Theorem, Conventional and lattice filters, equalizers, network design.

Name of Professor:- Prof. H. Blanchard.

ELECTRICAL MACHINERY:- Theory and Operation of electrical Machines. Emphasis is on alternating-current machinery. Includes also direct current generators and motors. Laboratory work to give familiarity with the practical use of electrical machines, and particularly of the more common types of industrial motors and generators.

Names of Professors:- Dr. J. S. Carrol, Ph.D.
Dr. L. H. Brown, Ph.D.

ELECTRICAL DESIGN FUNDAMENTALS:- A study of certain relations basic to electrical design, including resistance and heat dissipation, magnetic calculations and field mapping, electric fields, and insulation design.

Name of Professor:- Dr. W. G. Hoover, Ph.D.

HIGH VOLTAGE LABORATORY:- A general introductory course which includes the characteristics of sphere-gaps, point-gaps, and transmission line insulators with the application of high-voltage at Power and high frequencies, and at impulse voltages; the fundamentals of corona formation about conductors and properties of insulating materials.

Name of Professor:- Dr. J. S. Carrol, Ph.D.

RADION ENGINEERING:- A comprehensive coverage of the circuits, vacuum tubes, amplifiers, and systems used in Radio Engineering. This includes Power amplifiers, modulation, detection and rectifier tubes and circuits, and also complete transmitting and receiving systems propagation and antenna systems.

Name of Professor:- Dr. F. E. Terman, Sc.D., Professor of
Electrical Engineering and Dean of the
School of Engineering.

ADVANCED RADIO ENGINEERING:- This course includes advanced subjects of Radio Engineering Developments of the past ten years are treated including feedback circuits, video and intermediate frequency amplifiers, trigger and pulse circuits and Noise in receivers and also the generation, transmission and radiation of power at the very-high, ultra-high and super-high frequency. Applications are made to television, frequency and phase modulation.

Names of Professors:- Dr. F. E. Terman, Sc.D.
Dr. Karl Spangenberg, Ph.D.
Dr. J. M. Pettit, Ph.D.

PRINCIPLES OF RADAR AND TELEVISION:- A theoretical and practical study of the components of Radar and Television transmitters and receivers.

Names of Professors:- Dr. Karl Spangenberg, Ph.D.
Dr. J. M. Pettit, Ph.D.

FUNDAMENTALS OF ELECTRIC WAVES:- Elementary electromagnetic field theory; introduction to vector analysis, Maxwell's equations, plane and spherical waves, electrodynamic potentials, Radiation, simple antennas and wave guides.

Name of Professor:- Dr. H. H. Skilling, Ph.D., Head of the Department.

APPLIED ELECTROMAGNETIC THEORY:- Equations of static fields. Elementary boundary value problems. Maxwell's equations, high frequency potential and circuit concepts, and skin-effect. Propagation and reflection of Electromagnetic waves. Wave guides and resonant cavities. Radiation and antennas.

Name of Professor:- Dr. L. M. Field, Ph.D.

MICRO WAVES:- A course which gives a basic understanding of the behaviour of electromagnetic waves at wave lengths shorter than one meter. The course includes generation, transmission and radiation at microwave frequencies. Specific topics include the development of transmission line theory from basic wave concepts with applications pointed to microwave frequencies, including transformers, joints, discontinuities, modes of propagation both in coaxial lines and wave guides. The topics include the Klystron, the magnetron and selected topics with assigned reading and problems in the use of microwaves for high frequency communication and application in research.

Name of Professor~~s~~:- Dr. W. W. Hansen, Sc.D., Professor of Physics and Director of Microwave Laboratory.

MICROWAVE MEASUREMENTS LABORATORY:- Study of the fundamental methods and instruments in the microwave region. Topics include the measurement of impedance, power, frequency, wave length; an experimental study of Klystron, magnetron and high frequency trodes and also microwave instruments and components including impedance transformers, impedance bridges, resonant cavities, directional couplers, microwave filters and alternators.

Name of Professor:- Dr. E. L. Ginzton, Ph.D.

VACUUM TUBE DESIGN:- Course intended to give an understanding of the internal behaviour of vacuum tube and the influence of electrode dimensions upon operating characteristics. Fundamental studies of electrostatic fields within tubes, electron dynamics, space charge effects, electron optics and also the behaviour and properties of Electron guns and cathode ray tubes are included.

Name of Professor:- Dr. Karl Spangenberg, Ph.D.

ACOUSTICAL ENGINEERING:- A general survey of the field of sound production, transmission and reception. Fundamental acoustical relationships, dynamic systems, microphones, loudspeakers, acoustic measurements, and architectural acoustics are covered.

Name of Professor:- Dr. S. W. Athey, Ph.D.

TRUE COPY.

The Leland Stanford Junior University

to all to whom these Letters shall come Greeting

The Trustees of the University on the recommendation of the University Faculty and by virtue of the Authority in Them vested have conferred on

AYYAGARI SAMBASIVA RAO, M.Sc.

who has satisfactorily pursued the Studies and passed the Examinations required therefor the Degree of

ENGINEER

with all the Rights Privileges and Honours thereunto appertaining.

Given at Stanford University in the State of California on the Fifteenth Day of June in the Year of our Lord One Thousand Nine Hundred and Forty-seven of of the Republic the One Hundred and Seventy-first and of the University the Fifty-sixth.

Sd/-. Donald B. Tresidder,
President of the University.

Seal.

Sd/-. W. P. Fuller, Jr.
President of the Board of Trustees.

Sd/-. Hugh Skilling,
Electrical Engineering.

15 16

COPY.

Head of the Department of Physic
College of Science
Benares Hindu University
Benares, India.

16th August 1944.

Mr. A. Sambasiva Rao has been a student of this University during the years 1935-39 when he studied for his B.Sc. & M.Sc. He secured a high second class in B.Sc., and a First Class in M.Sc. For B.Sc. he took up Physics, Chemistry and Mathematics and for M.Sc. he took up Physics with specialisation in Wireless.

After passing M.Sc. he has been doing Research work and has published the following papers of considerable merit:-

1. Generation of Ultra High Frequency Radio Waves by Electronic Oscillations. (Science & Culture Vol. V, July 1939).
2. Production of Ultra High Frequency Radio Waves by Electronic Oscillations. (Indian Journal of Physics Vol. 14, page 93, 1940).
3. Voltage Gain of Low Frequency Amplifiers with Negative Resistance. (Science & Culture Vol. VI, p.670, 1941).
4. Overall Voltage Gain of Low Frequency Amplifiers with Negative Resistance. (Indian Journal of Physics, Vol. 16, 1942).

He has been a Demonstrator off and on for the last four years and was made a permanent Demonstrator in November 1943. In April 1944, he has been made a Lecturer. He has been In-Charge of our Wireless Laboratory of the Department of Physics for the last two years. In this capacity he had to lecture on Wireless as a special subject and also guide research for M.Sc. in that subject. Mr. Rao has considerable teaching experience as he has been conducting Practicals for the B.Sc. Class. He has been doing his job with conspicuous success.

Mr. Rao is a perfect gentleman with excellent qualities of head and heart. He is most quiet and scholarly in disposition, minding his work and his studies and is very intelligent. He has good powers of expression. Given an opportunity he would do well in life and bring credit to any institution of learning to which he may belong.

Sd/-. B. Dasannacharya
16-8-44.
M.A.(Madras), Dr.Phil.(Munich),
F.Inst.P.(London), Prof. of
Physics and Head of the Deptt.
of Physics.

16 Edn. & S.H.(A)

17

Confdl.

pp. 5-6 cf.

Ref:- Govt. Memo. No. 33997-A-2, dt. 29.5.48

Memo. No. 33997-A-4, dt. 24.6.48

Post of Prof. of Elec. Communs. Engg., College of Engg., Guindy in the M.E.S.

Sri A. Sambasiva Rao, Asst. Prof., Wireless Secn. of the Deptt. of Physics, Benares Hindu Unty., has applied to Govt. for the post mentioned above. His applicn. (dt. 11.6.48) shows that he has sent a copy of it to the D.G.! The Dir. is requested to offer his remarks on the applicn.

cf. 8-9

B at cf. 9

P.G.

Dealt PB 26/6 [illegible] 23/6/48

D.M. 23/6/48

[illegible]

To See D.G.!

17

18

ASST. SECRETARY TO GOVERNMENT, EDUCATION & PUBLIC HEALTH DEPT.
[illegible] JUN 1948

CONFIDENTIAL.

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

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

R.Cl. No.36/48 dated 22nd June 1948.

Sir,

Sub: Resignation of Sri K. Sreenivasan - Consequential arrangements for filling the post of Professor of Electrical Communications Engineering.

Ref: Government Memos. No.33997 A.2 and 3 dated 29-5-48 and 12-6-1948. (pp.5-6 & 7a

----

p.6 ante

I agree with the course suggested in paragraph 3 of the Govt. Confidential Memo No.33997 A.2 dated 29-5-48 and accordingly request that the Public Service Commission may be requested to advertise the vacancy and select a suitable candidate, as early as possible.

-do-

2. With reference to paragraph 4 of the Government Memo. cited, I may state that Dr. K. Sukumaran, Temporary Professor of Electrical Engineering, cannot be considered quite suitable for the post of Professor of Electrical Communications Engineering and he cannot therefore be regularly transferred to the post, as a long-standing arrangement.

for Director of Public Instruction.

Confidential

EDUCATION DEPARTMENT.

From

D.S. REDDI, ESQ., M.A.(Oxon.),
Director of Public Instruction,
MADRAS.

ASST. SECRETARY TO GOVERNMENT
5 - JUL 1948
EDUCATION AND PUBLIC HEALTH DEPT.

To

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

R.CL. No. 36/48, Dated the 3rd of July, 1948.

49229

Sir,

Subject:- Madras Educational Service - Post of Professor of Electrical Communications Engineering - Vacancy - Filling of:

p.17 ante

Reference:- Government Memorandum No.33997 A.4, dated 24-6-48.

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p.21 within

pp. 10-13 ante

With reference to the Memorandum cited I enclose herewith a copy of the D.O. letter dated 4th June 1948 from Professor K.Sreenivasan, the former Professor of Tele-Communications Engineering, College of Engineering, Guindy, commending the case of Sri A. Sambasiva Rao for appointment to the post of Professor of Electrical Communications Engineering. From the details of the courses of studies undergone by Sri Sambasiva Rao and in the light of the recommendation of Professor K. Sreenivasan I consider that he may be suitable for the post of Professor of Electrical ~~Engi~~ Communications Engineering.

2. If the Government are not addressing the Commission to

20

2.

advertise and recruit a candidate for appointment to the post, I recommend that Sri A. Sambasiva Rao may be appointed to the post on a contract basis, on such suitable terms and conditions as may be agreed upon. In this connection I invite the attention of Government to G.O. Ms. No. 802 Edn., dated 6th April 1948 in which Sri R.C. Advani, a Sind Refugee, was appointed as Professor of Electrical Engineering, on a contract basis, for a period of 3 years, in the scale of pay of Rs.500--50--700.

3. If the Government are agreeable, I shall ascertain and let you know the final terms and conditions on which Sri A. Sambasiva Rao is willing to accept the appointment.

May put up in appropriate file

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

For DIRECTOR OF PUBLIC INSTRUCTION.

NB/2-7.

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19 21

Copy of D.O. letter from K. Sreenivasan, College of Engineering, Guindy, dated 4th June 1948 to Sri D.S. Reddi, Director of Public Instruction, Madras.

When I last called on you at your office, you asked me to suggest the names of a few suitable persons for the post of Professor of Tele-Communication at Guindy and I mentioned the name of Mr. A. Sambasiva Rao, M.Sc.(Benares), E.E.(Stanford). I understand that Mr. Rao has already submitted his application for the post and commend his case for your favourable consideration.

I have not met Mr. Rao, but Mrs. Vasugar, Director of the J.N. Tata Endowment, Bombay speaks highly of him and I value her opinion. I may explain that this scheme was founded by the great J.N. Tata for sending qualified young Indians to Universities and Research Institutions in Europe and America, and has been in existence for the last 30 or 40 years. Only the very best candidates in the country get selected every year as the selection is based solely on merit irrespective of the candidate's province, community or religion. Those who have benefitted by the Scheme are now occupying positions of high responsibility in the administrative, industrial and scientific fields in India.

Mr. Rao is a Tata Scholar; after taking a first Class M.Sc. Degree in Wirless of the Benares University, he secured in 1945 one of the J.N. Tata Scholarships and studied Radio Engineering at the Stanford University under Dr. F.E. Terman, one of the most well-known professors in the subject throughout the world. The fact that Mr. Rao was chosen for a Tata scholarship and the further fact that he studied at Stanford under Dr. Terman and his colleagues are in themselves a testimony to his worth.

He has, I learn, engaged himself in research both in India and at Stanford and has published several papers. He is now Assistant Professor in charge of the Wireless Section at the Benares University, and has several years of teaching experience. I gather from Mrs. Vesugar that Mr. Rao is a very estimable man of high character and pleasing personality.

It is in the light of the above that I have ventured to commend Mr. Rao's case for your consideration for the Tele-Communication Chair at Guindy.

With best regards,

RC.

B
2/7

Confdl.

T

V.URGENT.
***

Edn. and P.H. Dept.(A).

LETTER/Ref.No. 33997-A-6, dt. 20-7-[illegible] ---

22

20

G | cf. 5-6

To
The Secy., M.P.S.C.

Sir,

M.E.S. - Post of Prof. of Elec.Commns.Engg. - Direct recruitment.

The tempy. post of Professor of Elec.Commns. Engg., College of Engg., Guindy, in the M.E.S., which is governed by the rules issued ~~by~~ G.O. No. 1926-Edn., dt. 19.11.45, has been vacant since 10-6-48, consequent on the resignation thereof by Sri K.Srinivasan, its previous incumbent. As a tempy. arrangement, ~~Sri~~ Dr.K.Sukumaran, ~~tempy.~~ offg. Prof. of Elec.Engg. in the college, was placed in addl. charge of the post. ~~The ad hoc rules issued by G.O.No.1926-Edn., dated 19-11-45, govern the post.~~ The D.P.I. ~~has considers~~ has stated that Dr.Sukumaran cannot be considered quite suitable to hold the Professorship of Elec.Commns.Engg., and that he cannot therefore be transferred to the post. The Elec.Commns.Engg. dept. of the Guindy Engg. College is a new dept. and it is highly

G.O. at c.f.5

P.S.1. ? re [illegible] the date in another file

para 2 / c.f.5 (11 m. at)

para 2 p.18 c.f.

23

-2-

pp. 4-5
BK. 112

necessary that a Prof. is put in regular charge of it as early as possible. I am therefore directed to request, under Secn. 266(1) & 3(b) of the G. of I. Act, 1935, that ~~xx~~ the Commn. will, now, as a special case, be so good as to advertise the post for direct recruitment and to select a suitable candidate. The Commn.'s notfn. may kindly be pubd. in some newspapers of other provinces also.

Yrs.ffly.,

pf.
29.7.48

30/7/48

In view of the five yrs. exp. regs. of the [illegible] of the [illegible] qual. [illegible]

Despd
2/8

Copy to the DPI.
(w.r.t. his letter/s no. 36/48, dt. 22.6.48 & 3.7.48).
Cf. 18

MEMO.No. 33997-A-7, dt. 30.7.48
II

Appln. for appt. as Prof. of Tele-Commns. (Elec.Commns.) Engg.

Ref:- From Sri A. Sambasiva Rao, dated 11.6.48

Cf. 89

---

appt. by
For direct recruitment.

The post of Prof. of Elec.Commns. Engg. in the College of Engg., Guindy, in the M.E.S., will be advertised by the M.P.S.C. shortly for direct recruitment. Sri A. Sambasiva Rao ~~is informed that he~~ may ~~xx~~ apply for ~~appt. to~~ ~~the~~ post to the Commn. in response to ~~the~~ its advtt., after satisfying himself that he possesses the necy. qualfns., etc.

30/7/48

Despd
4/8

pf.
29.7.48

To Sri A. Sambasiva Rao, ~~Rao~~
Asst. Prof. in charge of Wireless Section, Dept. of Physics, Benares Hindu Univ., Benares

Copy to the DPI.

24

From
Sri C.Krishnaswami Chetty,
Secretary, Public Service
Commission, Madras-8.

To
The Secretary to the Government of Madras, Education and
Public Health Department,
Madras-9.

ASST. SECRETARY TO GOVERNMENT
27 OCT 1948
EDUCATION AND PUBLIC HEALTH DEPT.

79425

No.4282-B1/48-4, dated 22-10-48.

Recruitment - Madras Educational Service - Professor of Electrical Communications Engineering, College of Engineering, Guindy - Your letter Ref.No.33997-A-6 Edn., dated 30-7-48.

pp. 22-23 ante

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I am to say that in response to the Commission's advertisement inviting applications for appointment as Professor, Electrical Communications Engineering in the College of Engineering, Guindy only one candidate applied and he is found not to possess the prescribed practical training and experience for five years. The Commission's advertisement was published in the following North Indian papers besides the 'Hindu' and the 'Indian Express':

1. The Statesman, Calcutta
2. The Times of India, Bombay
3. The Pioneer, Lucknow.

Yours faithfully,

Secretary.

Encl: Nil.

pmr.22/10/48.

(Confl)

Edn and P.H. Dept

Memo No. 33997-A-9-Edn., d/- 9.11.48..

M.E.S. - Post of Prof: Elec. Communication Eng. - Recruitment

—

From the D.P.I. No: 36/48 d/ 3.7.48, and No. 2483-K2/46, d/- 4.10.48.

p.19 cf.

Cf. 12 7/f

p.24 cf.

—

Copy of letter from the Secy, M.P.S.C No: 4282-B1/48-4 d/ 22.10.48. is forwarded to D.P.I. The Director is requested to report to Govt. the further steps to be taken ~~in the matter~~.

continue to keep Dr. K. Sukumaran, Prof. of Elec. Engg., in addl. charge of the post of Prof. of Elec. Commns. Engg., and to consider afresh the matter of filling the post regularly and also the qn. of making alternative arrangements to carry on the duties of the post until a regular appt. is made, and to

2 The Director is requested to ascertain ~~[illegible]~~ whether the only candidate that applied to the M.P.S.C for the post was Mr. Sambasiva Rao. If this was the case, it will not be proper to take him into service. If somebody else had applied the Director may now write to Mr. Rao and ascertain his terms and conditions for a contract appointment.

29/10/48

3/10/48

1/11/48.

Desp 9/11

To the D.P.I (with enclosure)

A

Education Department.

From

The Director of Public Instruction,
Madras.

To

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

ASST. SECRETARY TO GOVERNMENT
29 DEC 1948
EDUCATION AND PUBLIC HEALTH DEPT.

97798 / 26 ante

Rc1.36/48 dated 27-12-1948.

Sir,

Sub: Madras Educational Service - Post of Professor of Electrical Communications Engineering - Recruitment.

Ref: Govt.Memorandum No.33997-A.9 Edn., dated 9-11-1948.

With reference to para 2 of the Memorandum cited above, I have the honour to state that the only candidate who applied to the Madras Public Service Commission for the post of Professor of Electrical Communications Engineering was Sri M.G.Samant, (Certificate of Proficiency in Electrical Communications Engineering, Indian Institute of Science).

2. Sri A.Sambasiva Rao who was addressed to state his terms and conditions for a contract appointment, is not available for appointment. A copy of his letter dated 20th December 1948 is submitted for information.

A

3. I am examining the qualifications and suitability of two other candidates who have applied to me for the post in question but do not possess the qualifications prescribed in the Rules and I shall submit a report to Government in the matter if either of them is found suitable for the post.

Yours faithfully,

for Director of Public Instruction.

KHR,28-12.

B/28/xii

Copy of letter dated 20th December 1948 from A.Sambasiva Rao, The Tata Institute of Fundamental Research, 53, Peddar Road, Bombay 26 to the Director of Public Instruction, Madras.

Your letter No.R.Cl.36/48 dated December 9, 1948, addressed to me, care of the Banares Hindu University, has been redirected to me here in Bombay.

Since making my application to the Government of Madras, I have been successful in getting myself suitably fixed up with the Tata Institute of Fundamental Research, and the emoluments and conditions of service here are such that I am not interested in making a change at present.

Thanking you for the interest you have shown in my case.

(True Copy)

for Director of Public Instruction.

B/28/xii

29

6/

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SECRETARY, EDN. AND P.H. DEPT.
29 DEC 1948
GOVERNMENT OF MADRAS

V.V.L. Rao, B.E.(Elec.) Madras,
D.I.C.(Lond.),S.M.I.R.E.(New York),
(Permanent Radio Engineer,
Government of Madras).
Now, General Manager,
Messrs. Radio & Electricals Ltd.,
[illegible] Mount Road, Madras.2.

6, Shafee Mohd. Road,
Cathedral P.O., Madras.6
Dated 28th December 1948.

--oOo--

ASST. SECRETARY TO GOVERNMENT, EDUCATION AND PUBLIC [illegible]
30 DEC 1948

MINISTER FOR EDUCATION
21 DEC 1948
GOVT. OF MADRAS

24

The Hon'ble Mr.T.S.Avanashilingam Chettiar,
Minister for Education,
Government of Madras,
Fort St.George, MADRAS.

Dear Sir,

98148

Sub: Professorship in Telecommunication Engineering at the college of Engineering Guindy, Madras.

As one, who has no vested interest in the above post, but ~~as one~~ who is deeply interested in the technical advancement of our country in this electronic age and as a primary requisite for such technical advancement, I believe in staffing our Engineering Colleges with eminent Engineers, who have had a good experience in (i) teaching to degree and post graduate standard, (ii) Research (iii) an intimate contact with the needs and problems of Industry. (In this instance Telecommunication Industry-in India, at the moment, it is radio and telephone industry).

The post of Telecommunication Engineering at the College of Engineering, Guindy, has been vacant since July 1948! At the beginning of the academic year, Lt.Col.Paul, the Principal of that college requested me to act as a visiting Professor till atleast a new professor was recruited through the M.P.S.C. Even though I had a responsible, full-time job in Industry on hand, consuming the better part of the day, still, as a purely part-time measure and as a duty to my old Alma Mater, I consented to give a few lectures and direct generally the laboratory work. After several months, the Government offered me certain terms, which I declined with thanks. The post was advertised in the press by the M.P.S.C. some months ago and I gather from the students of the Communication Engineering section that no one has been appointed yet as professor, even though two terms out of the three terms in an academic year are over!! One can well imagine the fate of final year B.E. Communication Engineering Students, who have to appear for the degree Examination in hardly 3 months more. I, as a potential employer (in our company) of several Telecommunication Engineers, preferably from the local Engineering College, am seriously concerned that under the above circumstances I will have to prefer communication students from other institutions.

I give at the end of this letter, my credentials in the Communication Engineering field which made me bold to make the following recommendations: otherwise, the prestige of the Guindy Engineering College will be seriously at stake and not only the B.E. (Tel.Comm.) examination results of March 1949 batch will be

p.t.

poor but no employer would like to employ men supposed to have studied their degree course in an institution without a proper professor, well-versed in their subject.

My suggestions are as follows:-

1) The qualifications prescribed in the M.P.S.C. notification should be modified suitably for, really speaking, it is very hard, if not totally impossible, to find an applicant answering all or even most of those qualifications and yet willing to come on that grade of Rs.600 to 900. I seriously doubt whether there is even one such candidate in whole of India!!!

2) Better, drop the over-worked idea of "Indianization", which sometimes may be suicidal to our technical progress, particularly in the field of "Electronics & Telecommunications" and therefore, appoint an outstanding, young, American as the Professor. I am personally aware of one such outstanding man, Prof.L.B. Arguimbau, who is at present Asst. Professor, Electronics Dept., Massachusetts Institute of Technology, Cambridge, Mass, U.S.A. who is willing to come over to India as a Professor. In fact, he did apply some months ago for the chair of Communication Engineering ~~and~~ at the Indian Institute of Science, Bangalore, on Rs.1000 or Rs.1250. Further, he was recommended by such eminent men like the Nobel Laureate: Edward Appleton, F.R.S., N.L., Sir Robert Watson Watt, Prof. Millikan etc., etc.

Owing to the zeal for Indianisation he was not appointed, though he was eminently fitted for the post and recommended by experts in England and U.S.A. He was also the real brain behind the "General Radio Co." of Schenectady, U.S.A., the producers of the world's best Radio measuring Instruments of the highest quality and precision.

3) Instead of the present scale of Rs.600-75/2-900, he may be offered a five year contract, to start with, in the scale Rs.1000-100-1500. Even though such a salary may not be commensurate with his merit or tempt him to come over to tropics, it will not be a waste to our Government, considering the advantages the Engineering College, Guindy, will derive from the point of view of (a) teaching (b) laboratory organisation (c) fillip to research (d) his advice as a consulting Engineer to the problems of the infant radio and telephone industries in Madras and Bangalore.

4) Some ~~other~~ interested Indians, some of whom are not even trained as "Engineers" in the real sense of the word or even entered the portals of any Engineering College or even studied the three subjects: Wireless, Telegraphy and Telephony even for a degree, let alone for a post graduate or research qualification, like D.Sc., Ph.D., D.I.C., M.Sc.(Engg.), have been actively trying for this post and have even asked me to recommend, their case, if consulted.

After several months without a professor, to appoint any physicist (not a properly trained Telecommunication Engineer) now would be ruinous to the College, Students, and the Industry. Hence I am giving this word of caution.

Lastly, I ~~xx~~ briefly state my credentials below so that you may act on my advice or descard them, after knowing my background.

(1) B.E.(Elec.) Madras - 1932.

-continued-

(2) Postgraduate & Research work at the Indian Institute of Science, Bangalore (1933 & 1934) as a Madras Govt.Scholar.

(3) D.I.C.(London) in Telecommunication Engineering 1937 by "Research and Advanced Study"

(4) Madras Govt. Scholar (1937 & 1938) } in (a) Philips Factories & Research Laboratories in Holland.
(b) B.B.C., London.
(c) Marconi College & Works, Chelmsford

(5) Visited leading Radio Factories and Communication Research Laboratories in the following countries of Europe:
(a) England (b) France (c) Germany (d) Holland (e) Belgium
(f) Austria (g) Czechoslovakia (h) Switzerland
(i) Hungary, in 1937 and 1938, as the Madras Government Foreign Scholar in Radio Engineering etc.

(6) Lecturer in Communication Engineering, Indian Institute of Science, Bangalore, 1939.

(7) (Permanent) Radio Engineer, Provincial Broadcasting Department Government of Madras (September 1939 - August 1946).

(8) Regional Inspector, Technical & Vocational Training, Govt. of India, Department of Labour (August 1946 to July 1947) on deputation.

(9) General Manager, Messrs.Radio & Electricals Ltd., Madras. (July 1947 to date).

(10) Examiner for the "Wireless" (Therory & Practical) M.Sc. degree (Applied Physics) of the Andhra University. (1946, 1947, 1948 and 1949.).

(11) Member, Board of Paper Setters (for Telecommunication Engineering) University of Travancore. (1948-49)

(12) Senior Member, ~~Indian~~ Institute of Radio Engineers, New York.

(13) Author of the following books:

(a) "Decibel Notation and Its applications to Radio Engineering and Acoustics", published by the leading New York Publisher: Chemical Publising Co., Brooklyn, New York.

(b) "You and Your Radio" in Madras.

(14) Member, Radio section, Indian Standards Institution, New Delhi.

As I am drawing gross amoluments at the moment substantially more than the highest in the existing Professor's scale advertised (Rs.900), I am sure no one would mistake my long letter as being written with an ulterior motive. As I had stated at the beginning of this letter, my only motive is that by appointing an outstanding American as Professor both your college in particular and our country and Indian Telecommunication Industries in general would be immensely benefited.

As an old boy of the Engineering college, Guindy, and a Senior member of the highest Professional Institute ~~of~~ in Radio (I.R.E. New York), I felt it my duty to bring the above facts to your kind notice for whatever they are worth, in the fond hope that you too would certainly aim at the highest ideals, and standards, transcending narrow and false sense of patriotism, nationalism and indianisation in such responsible posts, which vitally affect the future of our country both in peace and war. For, is it not "Radar" the child of Telecommunications, that won the Battle of Britain in the recent world war?

V.V.L. Rao 28.12.48

V.V.L. Rao.

36

Issue today
Ng
28/1/49

Edn & P.H. Dept

Very urgent

Memo No: 33997 A-10 d 28.1.49.

Eng: College, Guindy - Professor of Tele-communications Eng:

Ref letter from the D.P.I. No: 36/48 d 27-12.48.

LF

The further report promised by the D.P.I in para 3 of his letter is awaited.

2. A letter from Sri V.V.L. Rao, General Manager, Madras Radio and Electricals Ltd, d 28.12.48 containing some suggestions for filling the post of Professor of Tele-communications Eng. is commd to the D.P.I.

LF

3 A letter from the Govt of India Ministry of Edn. No: F.7-6/S-15/46-ST d 16.12.48 enquiring whether the services of one Mr. M.V. Joshi an overseas ~~scholarship~~ scholar in Radio Eng. will be required by this Govt is also commd to the Director for urgent remarks.

Desp
28.1.49

Ng
27/1/49.

27/1/49.

To the D.P.I.
(with encls).

copies of pp. 30-34 cf of current file in linked file

9
16/2

Memo. No. 33997-A-11-Edn., dt. 15.2.49

M.E.S. — Post of Prof. of Tele-Comm. Engg. — vacancy.

The D.P.I. is requested to expedite his reply to Govt.

p.36 c.f. Memo. No. 33997-A-10, dt. 28.1.49

P.G.
13.2.49

14/2/49

15/2/49

To The D.P.I.

18/2

26

Education Department.

From

The Director of Public Instruction,
Madras.

To

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

R.Cl. 36/48 dated the 17th March 1949.

Sir,

Sub: Madras Educational Service - Professor of Tele-Communication Engineering, College of Engineering, Guindy - Appointment of.

Ref: Govt.Memorandum No.33997 A.10 dt.28-1-1949.

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21 MAR 1949

36 ante

28 ante

21809

DF

The two candidates referred to in para 3 of my letter R.Cl.36/48 dated 27-12-1948 are Major V.A.Ponnaiya, Lecturer in Physics, Government Arts College, Rajahmundry and Sri J.K.Murthy, Assistant Radio Engineer, Rajahmundry. The Principal, College of Engineering, Guindy examined their qualifications and experience, and found both the candidates unsuitable for the post of Professor of Tele-Communication Engineering.

2. The services of Sri M.V.Joshi, an Overseas scholar in Radio Engineering, are not required by this department as no gazetted post is vacant in the Tele-Communication Engineering branch except that of Professor, for which the scholar is not suitable.

3. At my request the Registrar of the Indian Institute of Science, Bangalore has sent a list of six candidates who applied for the post of Professor of Tele-Communication Engineering, together with the remarks of Professor K.Srinivasan about the suitability of each candidate for appointment in the College of Engineering, Guindy. The names of the candidates are:-

1. Dr. N.B. Bhatt M.Sc., Sc.D.,S.M.I.R.E.,F.Inst.P,A.M.I.E.E.
2. Dr. S.Datta M.Sc., D.I.C., Ph.D., A.M.I.E.,
3. Dr. S.R.Khastgir F. R.S.E., M.R.I.E., F.N.I.,
4. Dr. H.Rakshit D.Sc., F.Inst.P., F.N.I.
5. Mr. V.V.L. Rao B.E., D.I.C., S.M.I.R.E.,
6. Mr. K.Venkataraman M.A., Diploma in Electrical Commun.Engineering.

Professor K.Srinivasan of the Indian Institute of Science has expressed the opinion that Sri V.V.L.Rao is the best of these candidates. Sri Rao is an officer of this Government and holds his substantive appointment as Radio Engineer in the Provincial Broadcasting Department. He is now on deputation as General Manager, Messrs. Radio and Electricals Ltd., Madras. As he is the best candidate available for the post of Professor of Tele-Communication Engineering and as he is an officer of this Government, I request that he be placed on deputation with this Department and appointed as Professor of Tele-Communication Engineering in the College of Engineering, Guindy, on the scale of pay in his parent department or on the scale of pay applicable to Professors of Engineering, whichever is advantageous to him plus deputation pay^x at the rate sanctioned for P.W.D. Officers appointed as Professors.

x Rs 100 p.m.

The two other candidates recommended by Prof.K.Srinivasan and who can be considered for the Professor's post are Sri K.Venkataraman and Dr. N.Bhatt. Sri K.Venkataraman has the prescribed qualification as he holds the Diploma in Electrical Communication Engineering of the Indian Institute of Science. Next to Sri V.V.L.Rao, he is the best candidate for the post. Dr. N.Bhatt has no basic Engineering qualification but has over six years' experience as Lecturer and Assistant Professor in this subject.

: 2 :

If Government do not approve the proposal to appoint Sri V.V.L.Rao as Professor of Tele-Communication Engineering in the College of Engineering, Guindy, then I request to be informed whether I may contact the other two candidates (viz. Sri K. Venkataraman and Dr. N.Bhatt) and ascertain the terms on which they will agree to take up the Professor's post on contract.

Yours faithfully,

for Director of Public Instruction.

KHR.18-3.

9/18/3.

28

E. & P. H. Dept. (A)

([illegible])

43

Memorandum No. 33997 A/48-13 Edn., dated 25th March 1949

Sub:- Professor of Tele-Communication Engineering, College of Engineering, Guindy - Recruitment.

Ref:- Letter from the Director of Public Instruction, No.36/48, dated 17th March 1949.

The Director of Public Instruction is informed that the Government do not approve the proposal to appoint Sri V.V.L. Rao as Professor of Tele-Communication Engineering in the College of Engineering, Guindy. The Director is requested to contact Sri K.Venkataraman and Dr.N.~~Dutt~~ Bhatt and ascertain the terms under which they will agree to take up the post on contract. This reference should be treated as very urgent.

To

The D.P.I.

25/3/49

25/3

E.Q.H.(A)

64

Memo. No. 33997/48-A-14 Edn., dt. 7.5.49

29

Confdl

M.E.S. – Prof. of Tele-Commns. Engg., College of Engg., Guindy – Recruitment.

Ref:– Govt. Memo. No. 33997-A/48-13. Edn., dt. 25.3.49

p. 43 C.F.

The D.P.I. is requested to report whether he has contacted Sri K. Venkataraman & Dr. N. Bhatt and, if so, under what terms they are prepared to take up the appt. in question.

p.g.
6.5.49

7/5/49

RS
ND
8/5

✓

To the D.P.I.

Special

45

Confidential:

R.Cl.36/48.

Office of the
Director of Public Instruction,
Madras, 10th May 1 9 4 9.

37046

30

From
The Director of Public Instruction,
Madras.

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

Sir,

Sub: Madras Educational Service - Professor of Telecommunications Engineering, College of Engineering, Guindy - Recruitment.

p.43 and p.44 and

Ref: Government Memorandum Nos.33997-A/48-13 and 14 Edn. dated 25th March 1949 and 9th May 1949.

*****

Both Sri K. Venkataraman and Dr. N. Bhatt were addressed in the matter through the Registrar, Indian Institute of Science, Bangalore. The former seems to be out of India at present as the letter addressed to him was returned undelivered. A copy of the letter dated 11-4-1949 from Dr.N.Bhatt stating the terms and conditions on which he is willing to take up the appointment is submitted herewith. below

I request the early orders of Government regarding the reply to be given to Dr.N.Bhatt.

Yours faithfully,

for Director of Public Instruction.

Ram.11/5.

Copy of letter dated 11-4-49 from Dr.N.B.Bhatt, Indian Institute of Science, Bangalore.

H

I thank you for your kind D.O.Rcl.36/48 dated 4th April 1949 and am appreciate~~x~~of its contents. I shall be glad to consider the kind offer of the post of Professor of Telecommunication Engineering at the College of Engineering, Guindy, on the following terms.

1. Period of Contract:	Five years.
2. Scale of pay.	Rs.1000-50-1250 p.m.
3. Initial pay:	Rs.1050 ~~pxm~~ p.m. plus the usual D.A. and Quarters.
4. Provident Fund.	at 8⅓% of the pay; Govt. to contribute an equal amount.
5. Leave Rules, Vacation etc.	As applicable to other staff members.

I shall appreciate the favour of a reply in due course and request that any further communication in this matter be addressed to me directly at the above address.

Thanking you,

Sd. N.B.Bhatt.

/True copy/

for Director of Public Instruction.

Ram.11/5.

Confdl.

Edn. and P.H. Dept.(A).

3/46

MEMO.No. 33997-A-14 Edn., dated 20.5.49

M.E.S. - Post of Prof. of Elec.Commns. Engg. - Vacancy.

cf. 45

Ref:- From the D I, No.36/48, d/- 10-5-49.

The D.P.I. is ~~xx~~ requested to write to Sri K.Srinivasan immediately and ascertain from him and report to Govt. (1) what pay Dr.Bhatt is now drawing in the Indian Institute of Science, Bangalore; ~~and~~ (2) what Sri Srinivasan considers about the terms mentioned by ~~him~~ Dr. Bhatt for accepting the post of Prof. of Elec.Commns.Engg. in the Guindy College; and (3) whether, for his qualfns. and experience, he deserves to be paid such a high starting pay as Rs.1,050 and ~~whxxx~~ whether he is likely to accept any lower offer.

Despd 23/5/49

To the
D.P.I.

PT 14.5

16/5/49

17/5/49

20/5

E. & H. (A)

Confdl.

D.O. No. 33997/48-A-15-Edn., dt 12/7/49.

32

47

Dear Lt. Col.,

M.E.S. – Post of Prof. of Elec. Communs. Engg. – Vacancy.

Cf. 46

Ref:- Govt. Memo. No. 33997-A 14-Edn., dt 20.5.49.

I am to enquire whether anything has been heard from Sri K. Srinivasan and when reply to the Memo. cited will be sent. It is necessary to take a quick decision in the matter as the Engg college has re-opened and students will suffer if a ~~[illegible]~~ Professor is not appointed immediately.

Yours sincerely

Despd. 12/7

Lt. Col. M.A. Hamid,
Jt. D.G.!

D.G. 11.7.49

11/7/49.

11/7/49

D.O.(Rcl.No.36/48).

Bre
14/7/49

Lt. Col. M.A.Hamid,
Joint Director of Public Instruction,

Office of the Director of
Public Instruction,Madras.
Dated 13th July 1949.

Dear Mr. Menon,

p. 47 ante

53712

Sub:- M.E.S.-Post of Professor of Electrical Communications Engineering - Vacancy.
Ref:- Your D.O.33997/48-A.15-Edn., dated 12-7-1949.

With the appointment of Sri Ganti Subramanyam as Junior Instructor, the department of Electrical Communications Engineering of the Engineering College, Guindy, has two Instructors (the other is Sri Hegde) who have had advanced studies in the subject in U.S.A. Neither of them, though they have the prescribed academic qualification, has the practical experience prescribed for the post of Professor and could ~~not~~, therefore, be considered for appointment to the post. As the qualifications of Dr. Bhatt of the Indian Institute of Science are not superior to those of the two Overseas scholars and as he does not possess the qualifications prescribed for the Professor's post, it is not necessary to consider him for appointment to the post on the terms stipulated by him.

In view of there being two highly qualified Instructors and of the non-availability of a fully qualified and experienced person for the post of Professor, it is felt that that post may be left unfilled for the time being and that a Visiting Professor may be appointed for this branch. Sri

49

(Rc1.No.36/48).

X\ Sri K.Srinivasan of the Indian Institute of Science, Bangalore has been addressed in the matter and on receiving his reply a full report will be sent to Government.

Yours sincerely,

To

Sri I.B. Menon,
Assistant Secretary to Government,
Education & Public Health Department,
Fort St. George, MADRAS.

E.P.H.(A)

Report promised at x above may be awaited till ~~21~~ 25.7.49.

P.g.
15.7.49

15/7/49

16/7/49

Very Urgent ~~Immediate~~:

E.P.H.(A)

50

D.O. No. 33997 A/48-16, d/- 26.7.49

34

Dear Lt. Col.,

M.E.S. - Post of Prof. of Elec. Comms. Engg. - vacancy.

pp.48-49 ante

Ref:- Your D.O. R.Cl. no. 36/48, d/- 13/7/49.

I am to ~~request~~ ask that the report promised in ~~the~~ your D.O. be sent at a very early date. A satisfactory arrangement for carrying on the duties of the post has to be made urgently.

Yrs. sincerely,

26/7

To
Lt. Col. M.A. Hamid
D.P.I.,

P.g.
26.7.49

26/7/49.

26/7/49

51

E.S.H. (A)

D.O. No. 33997-A/48-17-Edn., d/- 6.8.49.

~~My~~ Dear ~~[illegible]~~, Lt. Col. Hamid,

M.E.S. – Post of Prof. of Elec. Commns. Engg. – vacancy.

Ref:– Your D.O. No. 36/48, d/- 13.7.49. p. 48-49 ante

I am to request that action in the matter may be expedited.

Yrs. sincerely,

BM 6/8/49

P.9.4 6.8.

✓ Issued 10/8

Lt. Col. M.A. Hamid
~~MA~~ Jt. D.P.I.

52

Asst. Secretary to Government, Education and Public Health Dept. 24 AUG 1949

35

Lt.Col.M.A.Hamid,
Joint Director of Public
Instruction.

Office of the Director of
Public Instruction,
Madras-6, Dated 20 August '49.

D.O.Rcl.No.36/48.

Dear Mr. Balakrishna Menon,

64304

Sub: Madras Educational Service - Post of Professor of Electrical Communications Engineering - Vacancy.

p.51 ante

Please see your D.O. No.33997-A/48-17Edn. dated 6 August 1949. The reply of the Director, Indian Institute of Science, Bangalore in the matter is awaited. The report promised in my D.O. dated 13--7--1949 will be submitted to Government immediately on receipt of his reply.

Yours sincerely,

To

Sri I.B.Menon,
Assistant Secretary to Government,
Education & Public Health Department,
Madras.

E.S.H. (A)

D.O. No. 33997-A-18-Edn., d/- 7.9.49.

Dear Lt. Col. Hamid,

Sub:– M.E.S. – Professorship of Elec. Commns. Engg.
Ref:– Yr. D.O. No. 36/48, d/- 20.8.49.

I am to request ~~that the Dir. of the~~ Indian Institute of Science may be reminded for an urgent reply.

Y.S.,

BM 7/9/49

To
Lt. Col. M.A. Hamid
Jt. D.P.I.

✓ 6/9/49.

Desp. 9/9

54

Confidential.

R.Cl. No. 36/48 dated 13-10-49.

14 OCT 1949

From
The Director of Public Instruction,
Madras.

36

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

Sir,

Sub:- Madras Educational Service - Post of Professor of Electrical Communications Engineering, College of Engineering, Guindy - Filling of - Proposal to appoint Sri K.Srinivasan to supervise the work of the Department.

79695

Ref:- Correspondence resting with the Government D.O. No. 33997-A-18-Edn. dated 7-9-49.

---

p.52 ante

A

p.24 ante

pp.26-45 ante

p.45 ante

p.48 ante

The post of Professor of Electrical Communications Engineering, College of Engineering, Guindy has been vacant since June '48. The post was advertised by the Public Service Commission for direct recruitment but there was no response from any fully qualified candidate. The efforts made to secure the services of suitable candidates on contract basis have also not succeeded. Dr. N.B. Bhatt referred to in my letter R.Cl. 36/48 dated 10-5-49 is not suitable for the post as he does not possess the necessary basic qualification, viz. a degree in Engineering. In the circumstances I submit the following proposal for the approval of Government.

2. The Principal, College of Engineering, Guindy has proposed that the post of Professor of Tele-Communication Engine- ing be left unfilled until a fully qualified candidate is availa for appointment, and that a Visiting Professor be appointed to come and deliver a few important lectures for the Department and generally to guide the Instructors and direct and control the development and expansion of the Tele-Communication Engineering branch. The proposal to leave the post of Professor unfilled would not affect the standard of instruction in the Department in any way. At present there are two foreign-trained candidates on the staff of this Department, Sri K.S.Hegde and Sri G.Subramniam who are working as Instructor and Junior Instructor respecti ly. In my letter R.C.2372-C.1/49 dated 3-10-49 I have recommended the appointment of another foreign-trained scholar Sri N.V.Kudva

(Separate file)

for this Department. With three well-qualified foreign-trained scholars on the teaching staff of this Department it would be possible to carry on its work satisfactorily until such time as a Professor is appointed. I may also add that the present Instructor Sri Hegde has managed the Department satisfactorily for the past one year and more in the absence of a Professor.

As the Instructors are, however, inexperienced I consider that the services of an expert should be secured to review ~~the~~ periodically the instruction and programme of work in the Tele-Communication Engineering branch in order to ensure that the work is carried on satisfactorily. The appointment of a Visiting Professor would be of much help for this purpose. The Director of the Indian Institute of Science, Bangalore was addressed to find out whether the services of Sri K.Srinivasan, who has organised the Department at Guindy, would be available for the purpose. A copy of the Registrar's letter dated 21-9-49 is enclosed. The Council of the Institute has not agreed to Sri Srinivasan's appointment as the Visiting Professor but it has resolved to permit him to visit the College of Engineering, Guindy once or twice a term, review the instruction and programme of work in the Tele-Communication Engineering department and give his advice. I am of opinion that this would be enough to ensure the proper working of the Department. With the periodical guidance, advice and supervision of Sri K.Srinivasan, the three foreign-trained Instructors could carry on the work efficiently. This is about the best possible arrangement in the present circumstances.

p.56 infra

3. In conclusion I request that Government may kindly approve the proposals to leave the post of Professor of Electrical Communications Engineering unfilled for the present and to secure the services of Sri K.Srinivasan for the purpose indicated in para 2 above. On receipt of the orders of Government I shall ascertain and report the terms on which Sri K.Srinivasan would take up the work.

A

For Director of Public Instruction.

Confidential

Copy of/letter No.R.400-136/49-9115 dated 21st September,1949 from the Registrar, Indian Institute of Science, Bangalore 3, addressed to the Director of Public Instruction, Madras-6.

-ooo-

Sub: Engineering College, Guindy--Appointment of a Visiting P rofessor of Tele-Communication Engineering.

-ooo-

With reference to your letter No.RCL.36/48 dated 10th August,1949, I write to inform you that the letter was placed before the Council of the Institute at its meeting held on the 19th of August,1949 when it passed the following Resolution:-

21. A request from the Director of Public Instruction, Madras that the services of Prof.K.Sreenivasan might be made available to the Madras Engineering College, Guindy, for occasional duty as Visiting Professor in Tele-communication till the appointment of a permanent Professor, was considered.

RESOLUTION: XX:-(a) That the appointment as the Visiting Professor of the College be not agreed to; (b) that ~~the~~ Prof.K.Sreenivasan be however permitted to visit the College of Engineering, Guindy, Madras, once or twice each term with a view to reviewing the instruction and programme of work in the Telecommunication Department in the College and giving his personal advice, the duration of the visit being limited to three or four days at a time.

P

-ooo-

Gsk:14.10.49.

FOR DIRECTOR OF PUBLIC INSTRUCTIO

38

Edn. J.O. 4 (A)

Memo. No. 33997-A/48-19 Edn., dt – 5.11.49. 5

~~Most~~ Confdl.

M.E.S. – Post of Prof. of Elec. Communs. Engg. – Arrangements for filling vacancy.

Ref: – From the D.P.I., No. 36/48, dt – 13-10. 49.

The Govt. provisionally approve of the proposal of the D.P.I. contained in the letter cited. The ~~D.P.I.~~ Dir. is requested to ascertain the terms on which Sri K. Srinivasan will take up the work of supervising periodically the instrn. imparted in the Tele-Communs. branch of the Engg. College, Guindy, and send a further report.

B.M.
5/11/49

P.J.
4.11.49
4/11/49

Apd
7-11-49

To
The D.P.I.

58

CONFIDENTIAL:

R.Cl.36/48.

7 NOV 1949

Office of the Director of
Public Instruction,
Madras-6, Dated 4-11-1949.

From
The Director of Public Instruction,
Madras.

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

39

Sir,

Sub: Engineering College, Guindy - Reviewing the work of the Tele-Communication Engineering Department - Visit of Sri K.Srinivasan of the Indian Institute of Science.

In continuation of my letter R.Cl/36/48 dated 13-10-1949, I submit herewith a copy of the letter dated 27-10-1949 from Sri K. Srinivasan, Professor of Electrical Communication -- Engineering, Indian Institute of Science, Bangalore. The question of paying him any remuneration for the work need not be considered for the present as he does not expect more than the actual expenses of travel, hotel, transport and other incidental items involved in his visit. As these terms appear to be reasonable, I request the early orders of Government approving the proposal made in my letter R.Cl.36/48 dated 13-10-1949, pending the issue of orders on the rates of travelling allowances to be allowed for Sri K. Srinivasan.

below

pp. 54 55 a/c

2. As Sri K. Srinivasan is drawing a pay of Rs.1,250/-, it is necessary to allow him one and half first class fare for his rail journeys from Bangalore to Madras and back. For the period of his stay in the City in connection with his work in the Engineering College, Guindy he may be allowed to claim the actual expenses on hotel, transport etc. subject to a maximum of Rs.35/- a day.

3. In anticipation of the approval of Government I am instructing the Principal, College of Engineering, Guindy to contact Sri K. Srinivasan and fix his first visit to the College in the course of this month.

Yours faithfully,

for Director of Public Instruction.

Ram.5/11.

Copy of letter dated 27th October 1949 from Sri K.Srinivasan, Indian Institute of Science, Bangalore to the Director of Public Instruction, Madras.

Sub: Visit to the College of Engineering, Guindy.
REF: Your letter R.Cl.No.36/48 dated 23-10-1949.

I thank you for your letter referred to above; in accordance with the resolution of the Council, I shall be glad to visit the College and assist in whatever way I can.

p.56 w/p

2. LECTURES: I shall also be glad, if desired, to deliver two lectures a day during my stay at Madras and shall be grateful if you will please advise me early on which of the following subjects, if any, you wish me to lecture.

(a) Electronic Engineering.
(b) Transmission, Networks,
(c) Transmission Lines and Feeders.

P.T.O.

57

(d) Antenna Systems.
(e) Modulation.

3. DATE OF VISIT: Will you please give me one or two alternative dates during November, (preferably during the second half of the week) that may suit the students and members of staff of the Telecommunication Department of the College. I shall try to adjust my work here accordingly.

4. TERMS AND CONDITIONS: Considering my association of 3 years with the College and considering the help and kindness which were extended to me during my stay there, I shall be glad to visit Guindy if the actual expenses of travel, hotel, transport and other incidental expenses are met.

/True copy/

for Director of Public Instfuction.

C.38897 A

I. Edn. and P.H. Dept.(A)

M.E.S. - Post of Prof. of Tele-Commns.Engg., Guindy College - Tempy. arrangements for carrying on work - Approved.
Read:- From the DPI, No.36/48, d/-4-11-49.

G.O.(MS.) No. 3883 Edn., d/- 19-12-49

15816
15.12

cf 58

p.55 cf

The Govt. approve of the proposal of the DPI that the post of Prof. of ~~Elec.~~ Tele-Commns.Engg. in the College of Engg., Guindy, be left unfilled for the time being and that for the period for which the post ~~is kept~~ remains unfilled Sri K.Srinivasan, Prof., Indian Institute of Science, Bangalore, be invited to visit the college once or twice each term for supervising the work done in the Tele-Commns. dept. of the college and for giving necy. guidance to the staff, etc., the duration of a visit being three to four days.

2. The Govt. sanction the payment to Sri K.Srinivasan, in connection with his visit to the college, ~~the~~ of (1) one and a half first-class fare for his railway journeys from Bangalore to Madras and back and (2) the ~~xp~~ amount spent by him on hotel, transport and other similar items during the period of his stay in Madras, subject to a maximum of Rs.35 a day.

To the DPI.
" A.G.(thro' Fin.).

P.J. 18.11.49

19/11/49

21/11/49

22/11

21/12

II.

D.O.No. 33997 A.21 - Edn., d/- 17.12.49.

16/15.12

My dear Reddy,

Engg.College, Guindy - Tele-Commns. dept. - Visit of Sri K.Srinivasan for supervision of work.

Ref:-Your letter No.36/48, d/-4-11-49.

cf 58

Orders approving your suggestions are being issued separately. I am to request that the Govt.'s thanks to Sri Srinivasan for his ~~offer~~ willing offer of assistance may be conveyed to him.

Yours sincerely,

21/12

P.J. 18.11.49.

18/11/49.

21/11/49

22/11

Sri D.S.Reddi, M.A.(Oxon),
D.P.I.

Edn. and P.H. Dept.(A).

From the Regr., Indian Institute of Science, Bangalore, letter d/- 6-5-48. c.f. 1

(Ednt.No.33997-A-1, d/- 8-5-48 to the D.P.I.).

From the D.P.I., No.36/48, d/- 19-5-48. c.f. 3

A1

M.E S. - Sri K.Srinivasan, Prof., Engg.College - Resignation - Acceptance - Filling of vacancy.

---

1 (1) Sri K.Srinivasan is the permanent Professor of Elec. Engg., and offg. Prof.of Elec. Commns. Engg., in the College of Engg., Guindy. He was recruited direct as Professor only in 1945 against a 'war-reserved' vacancy. He had therefore no probationary rights. But, in order to give him an attraction to remain in the service of this Govt., he was allowed probationary rights, as a special case, and he was confirmed.

(2) Now, Sri Srinivasan has been offered the post of Prof. and Head of the Dept. of Elec. Commns. Engg. in the Indian Institute of Science, Bangalore. W.r.t. that offer, he has resigned his post under this Govt. The letter of ~~xxx~~ resignation is at p.4 C.F. The D.P.I. says that he has ~~xxx~~ no alternative but to recommend the acceptance of the resignation from the date of ~~his~~ the officer's relief. The Dir.'s recommendation may be accepted.

c.f. — c.f. 4 — para 1, p.3 c.f.

D

2. (1) As regards the vacancy that will occur in the post of Prof. of Elec.Commns. Engg. at Guindy, the Dir. proposes, as a tempy. measure, to place Dr.K.Sukumaran, Prof. of Elec. Engg. in that college, in addl. charge thereof. That may be agreed to. As for a long-standing arrangement, he suggests that the M.P.S.C. may be asked to advertise the vacancy and select a suitable candidate. He adds, at the same time, that, as advtt. alone will not secure a candidate, he will gather from Dr.J.J. Rudra particulars about some suitable persons and forward them for consideration ~~xxx~~ along with the applns. to be recd. in response ~~of~~ to the advtt. of the Commission. A procedure as at "K" above is not permissible. The proper thing to ~~xxxx~~ do is first to advertise the post and, ~~then,~~ if w.r.t. the advtt. no candidate is available, then to explore

C This may be approved. As para 3, p.3 Sri Srinivasan has asked for early relief this may be put into effect immediately & Sri Srinivasan relieved.

para 2, p.3 c.f.

K

A

other sources to find a suitable person - and to appt. him on contract if necy.

A

(2) The Dir. has not also stated ~~that~~ whether Dr.Sukumaran himself is not competent to hold the Elec.Commns. Engg. post and cannot be regularly transferred ⓧ to it, his post (Elec.Engg.) being occupied by Sri A.Srinivasan (Instructor) who has recently retd. from U.S.A. and who has separately urged his claims for a Professorship.

B

Transfer of Prof. of Elec. Engg. is admissible & no qualfns. for such transferee are prescribed — (5)/CF.5-6.

(3) A and B above may be put to the Dir. and he be asked to report further.

3. May be ord to H.M.(Edu.) & H.Pr. w.r.t. 'D' a para 1(2), p.1 ante & 'C' a p.1 ante.

P.G. 25.5.48

25/5/48.

26/5/48 S

26/5/48

H.(Edu.)
H.Pr.

Before going in for advertisement, the suggestion at B may be examined. Mr. A.Srinivasan has returned from further studies in England and if the adjustment can be made between him and Sukumaran, it may be considered.

B

With regard to A and K, if the Director contacts anybody without any commitment and asks them to apply to the Commission, I do not think we need object to it.

E

I suppose we have no other alternative than to accept the resignation of Sri K. Srinivasan.

D

G.P.R. 27/5

TSA 26-5-48

SECRETARIAT, EDN. AND P.H. DEPT.
28 MAY 1948
GOVERNMENT OF MADRAS

A draft order & a draft Memo. are subd.

P.G. 29.5.48

28/5/48.

27/5/48

(Issued as — G.O. No. 1396-Edu., dt. 29.5.48; and Memo. No. 33997-A-2, dt. 29.5.48.)

CF.5
CF.5-6

From Sri A. Sambasiva Rao, Asst. Prof., Benares Univy., dt. 16.6.48

A2

pp.8-9 CF.

An Asst. Prof. of the Benares Hindu Univy, Sri A. Sambasiva Rao, has applied for the post of Prof. of Elec. Commns. Engg. at the Guindy College. He has sent a copy of the appln. also to the D.P.I. The Dir. may be asked to offer his remarks on it. A draft Memo. is subd.

CF.8-9

Portion B at CF.9

P.G. 23.6.48

28/6/48

23/6/48 S

CF 17 (Issued as Memo.No.33997-A-4, dated 24-6-48.)

CF.18 & 19.20 From the D.P.I., No.36/48, dated 22-6-48 and 3-7-48.

====

Portions B at p.2 ante: The D.P.I. has replied that Dr.K.Sukumaran, Prof. of Elec.Engg., cannot be considered quite suitable for the post of Professor of Elec. Commns. Engg. and that he cannot therefore be regularly transferred to that post.

Para 2, CF.18

Para 1, CF.18

2. The Dir. first recommended that the vacancy in the post of Prof. of Elec.Commns. may be advertised thro the M.P.S.C. But, when the refce. at p.17 CF. about Sri A.Sambasiva Rao's application went to him, he considers that that candidate may be suitable for the post. He has formed that view on the basis of the details of the candidate's qualfns., CF-10-13 (papers forwd. by him [illegible]) etc. and of a recommendation made by Prof. K.Srinivasan (who vacated the post). The Dir. has said that if the Govt. are not advertising the ~~post,~~ vacancy, Sri Sambasiva Rao may be apptd. on a contract basis on terms and conditions to be decided after corresponding with him. Even if the post is advertised, it is not quite certain that a qualified and suitable candidate will become available. In view of that and of the very good remarks made by Prof.Srinivasan at p.21 C.F. about Sri Rao, Sri Rao's contract appointment may be thought of. The M.P.S.C. need not be consulted for making a contract appt. if the period of contract will not exceed 5 years. For extending the period beyond 5 years, however, its concurrence has to be applied for in due course. Mr.Rao has stated that he prefers to be

CF.1 (para 1)

CF.21

M.P.S.C. Regn. 18(d)(iii) read with the Proviso thereunder — p.9, Bk. II

apptd. on contract: apparently, if the post is advertised and
f he is simultaneously advised to apply to the Commission for
he appt., he cannot do so without the permission of his present
mployers, which permission it may be difficult for him to get. For
rders whether, therefore, the D.P.I. may be asked to ascertain
from Mr.Rao and report what the terms and conditions on which he
is willing to accept the post on a contract basis; or whether the M.P.S.C. may be asked to advertise
the post ~~may be advertised~~ for direct recruitment now, as a spl. case.

This may be done. A

i.e. in advance of the usual programme.

(As contract appt. is being considered)

Pub. (Ser.) & Fin. may see before on.

P.J.
7.48

8/7/48 S

8/7/48 Pub. (Ser.)
Fin.

C. NO 2424
10/7/48

E & H W.O.
33997-A-5
9.7.48

Public (Ser) Dept.

The E & P. H. Department notes from p.1 ante. may be perused.

It is Submitted that in view of H.E.'s minutes in the U.O. Note. at Ⓔ, this department may suggest that instead of the course proposed at 'A' above, the D.P.I. may be asked to ascertain from Mr. Rao and report whether Mr. Rao is willing to apply to the Commission if the post is advertised by it and if not what exactly is his objection to such an application.

Strictly speaking, that U.O. note will not apply to this case.
U.O. No. 1612/48-1 Pub (Ser) Ⓔ
29-5-1948

The file may be passed on to Fin.

5.7.48.

25/7/48

In connection with the Govt.'s proposal to appoint a candidate as Principal, Teachers' college, on contract, the Commission has taken strong objection to the procedure ~~proposal~~ on the ground that the person to be appointed is most likely to be continued beyond 5 years and that as such it might as well be consulted [illegible] before making the appt. E & P.H. are inclined to accept the Commission's view. The same argument of the Commission applies to this case also. E & P.H. may therefore consider the desirability of making the appointment thro' the Commission.

Separate file 4.7

18.7.48

19 C.S. I E & P.H. (A)

A3

Pub (Ser. A) no.
NO 2424/48-1
19/7/48

54005

Considering Public's note, the M.P.S.C. may be asked to advertise the post for direct recruitment. Sri A. Sambasiva Rao may be advised at the same time to apply in response to the Commn.'s notfn. The point whether it wd. be possible for him to follow that advice need not be gone into now. If a suitable candidate does not become available for direct recruitment thro' the M.P.S.C. then there wd. be ample justification to appt. Sri Rao on contract & the qn. of that appt. may be taken up. May be sd. to H.M. Edn. for orders.

P.J.
26.7.48

27/7/48 S

27/7/48 H.M. (Edn.)

TSA
27.7.48

A draft letter to the Commn. & a draft Memo to Sri Sambasiva Rao are subd.

P.J.
29.7.48

30/7/48 S

Issued as —
(22-23) Letter. No. 33997-A-6, dt. 30.7.48, &
(23) Memo. No. 33997-A-7, dt. 30.7.48.

A reminder (draft) to the Commn. is subd.

P.J.
22.10.48

22/10/48

From the Secy., M.P.S.C., No. 4282-B1/48-4, dt. 22.10.48. Cf. [illegible]

The post of Prof. of Elec. Commns. Engg. in the College of Engg., Guindy, fell vacant from June last when Sri K. Srinivasan, its former incumbent, resigned it and went to the service of the Bangalore Indian Institute. The vacancy was advertised by the M.P.S.C. recently. The Commission has now reported that only one candidate applied in response to its advt. & ~~that~~ that candidate was found not fully qualified – i.e., he did not possess the prac. trg. and expce. for 5 years ~~which is~~ prescribed(A). The qn. of making other arrangement for filling the vacancy has to be considered. This dept.'s notes at pp. 3-5 ante may be read in this connection. A copy of the Commn.'s letter may be sent to the D.P.I. and he may be asked to ~~write to Sri A. Sambasiva Rao (mentioned in those notes) to ascertain his terms and conditions for a contract appt. A draft memo is subd. H.M.(Edn.) may see.~~] report the further steps to be taken in the matter.

29.10.48

Pub. I find. ~~Couldn't~~ see file now. may be sent to them before contract appt. is made.

The Commission has stated that only one candidate applied. It is not known whether ~~this candidate was~~ it was Mr. Sambasiva Rao that applied. If he was the candidate it will not be proper, as the Commission has ~~decided~~ that he is not qualified, to take him on contract. If another person has applied ~~to the candidate~~ the D.P.I. can now write to Mr. Sambasiva Rao and ascertain the terms and conditions ~~under which~~ for a contract appointment. A draft memo is subd.

29/10/48

30/10/48 S

1/11/48

H.(Ch.)

TSA
6.11-48

NOV

Necessary addition has been made to the draft memo with reference to H.M.'s orders in the top file.x The draft memo may issue.

5/11/48 S 5/11/48

x C.No. 53201/[illegible]

(J) G.O.No. 2285 Edn. 16.11.48

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p 26 cf. [Memo to the D.P.I. No: 33997 A-9 Edn. dt. 9.11.48]

p 28 cf. C. No. 97798 A. from the D.P.I. No: 36/48 dt. 27.12.48.

pp 30-34 cf. C. No. 98148 A. from Sri V.V.L. Rao dt. 28.12.48.

A

p 28 cf. Please see the D.P.I.'s reply on page 28 cf. The further report promised at A in the letter may be awaited.

pp 30-34 cf. Mr. V.V.L. Rao, General Manager, Madras Radio and Electricals Ltd, who first agreed to accept the post of part-time Professor and who subsequently backed out, has written a letter ~~off~~ making some suggestions for filling the post of Professor. For orders whether a copy of the letter may be commd. to the D.P.I.

LF

In the linked file the Govt of India have asked whether this Govt would like to utilise the services of one Mr. M.V. Joshi, an Overseas Scholar in Radio Engg. H.M. (Edn) has minuted that it may be examined whether the candidate will suit us. The candidate passed out of the Poona Eng College only in 1946 and he is only about 23 years of age. It does not seem that he will be fit for a Professor's post in spite of his overseas qualifications. At best he ~~[illegible]~~ is fit only for an Instructor's post. Recently the only post of Instructor in the ~~[illegible]~~ Tele-communications Dept was filled by the appointment of another overseas ~~[illegible]~~ trained scholar, Mr. Hegde. Anyhow the letter from the Govt of India may be referred to the D.P.I. for remarks.

p 3 cf LF.

pp 5-11 of LF

A draft memo is subd.

21.1.49

27/1/49 S

27/1/49

27/1/49

H.(Ch.)

TSA
2.2.49

x [illegible] 4 FEB 1949

[Memo to the D.P.I. No: 33997-A10 d/ 28.1.49] p.36 cf.

G. No: 21809 A. From the D.P.I. No: 36/48 d/ 17.3.49. pp 40-42 cf

Please see the D.P.I.'s letter on pp 40-42 cf. It does not seem that his proposal to secure the services of Mr. V.V.L. Rao will be practicable. The scale of pay of Professors in the Eng. colleges is Rs 600-900. Mr. Rao is getting more than Rs 1000 in his present job. It is not likely that he will agree to take up the Professor's post on his substantive pay ~~[illegible]~~ as Radio Engineer plus Rs 100 deputation pay. Attention is particularly invited to the remarks D.S. (Fin) ~~on~~ at the bottom of page 4 nf of G.O. No: 2885 Edn d/ 16.11.48. ~~For orders~~ whether his case may be ruled out. If this is to be examined further P.W.D. will have to be consulted.

M p 2 nf of G.O. No 2885 Edn 16.11.48 (J)

(J) In view of 'M' above he may be ruled out ?

The next candidate suggested by the Director is one Mr. K. Venkataraman and the third ~~one~~ one Dr. N. Bhatt. The Director may perhaps be asked to ascertain the terms under which they will agree to take up the post on contract. For orders.

p 42 cf.

The Director also is of the view that Mr Joshi referred to in the linked file is not required here. For orders whether the draft letter put up in that file may now issue.

May issue.

E2

22/3/49.

22/3/49

S

Issue Memo below

TSA 25-3-49

25/3/49

SECRETARIAT, EDN. AND P.H. 25 MAR 1949 GOVERNMENT OF MADRAS

(Issued as Memo No. 33997-A [illegible] Edn., d/ 25.3.49) p.43 cf.

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cf.45 From the D.P.I., No.36/48, dated 10-5-49.

Notes from p.6 ante may be perused.

Dr.N.B.Bhatt is willing to take up the post of Prof. of Tele.Communications Engg. in the Guindy college. The post has been vacant since ~~July~~ June last. Much difficulty ~~has been~~ is being experienced in finding a suitable ~~for~~ person for it. Advtt. of the appt. for direct recruitment did not produce any result. The services of Sri A.Sambasiva Rao, recommended previously by Sri K.Srinivasan, the former Professor (now at the Bangalore Institute), could not be had, either. It will therefore be necessary to offer a fairly high pay for any candidate willing to take up the job. But the pay demanded by Dr.Bhatt, Rs.1,050 in the scale of Rs.1,000-1,250, seems rather very high. Perhaps, the DPI may be aksed to contact Sri Srinivasan immediately and get his remarks about the terms stipulated by Dr.Bhatt. Subject to orders, a draft Memo. is subd.

cf. 22-24

p.28 cf

p.65 cf.

16/5/49

17/5/49 S

20/5

cf.46 - (Issued as Memo. No. 33997-A-14 - Edn., d/ 20.5.49)

cf.54-55 From the D.P.I., No.36/48, dated 13-10-49.

The D.P.I. since reports that Dr.Bhatt is not suitable for appt. as Prof. of Tele-Commns.Engg.

para 1, p.54 cf.

There are now 3 Instructors in the Tele-Commns. Engg. dept. of the Guindy College. All of them are overseas-educated. They can manage the dept. well. Yet, as they do not have enough experience, the D.P.I. considers that they require periodical expert guidance and supervision. For this purpose, he suggests, after consulting the Indian Institute of Science, Bangalore, that Sri K.Srinivasan (who was the previous Prof. at Guindy and whom this Govt. permitted to resign his appt. with a view to his taking up appt. in the Bangalore Institute) may be invited to visit the college once or

p.55 cf

p.56 cf.

E III

twice a term, the duration of a visit being 3 or 4 days, and that the Professorship may be kept unfilled until a suitable candidate is available. The proposal seems acceptable. There is no ~~other~~ alternative. The Dir. may be asked to ascertain Sri Srinivasan's terms. For orders. May be circd. to H.M.(P.&.W.).

P.J. 27.10.49

28/10/49.

31/10/49 S

31/X (P.W)

4 NOV 1949

H. M. (P.W)

3.4

A draft Memo. is subd.

P.J. 4.11.49

4/11/49

5/11/49

(Issued as Memo. no. 33997 A/48-19-Edn., d/- 5.11.49)

from the D.P.I., no. 36/48, d/- 4.11.49

cf. 57

cf. 58

Sri Srinivasan does not ask for any remuneration. He says it ~~xxxxx~~ will be enough if he is paid the actual expenses on travel, etc., he has to incur. A draft order is subd. It seems necy. to thank Sri Srinivasan for his assistance. A draft D.O. to the D.P.I. is also subd., subject to orders. Fin. may see before circn.

cf. 59

P.J. 18.11.49 19/11/49

21/11/49 S

22/XI

Fin

33997 A.20

79156 23 NOV 1949

A on p. 54

Finance (E.III)

Notes on pages 6-10 above may be perused.

The post of Professor of Electrical Communications Engineering, College of Engineering, Guindy, has been vacant since June 1948. It has not been possible to fill up the post so far, for want of suitable candidates. It is now proposed to keep the post unfilled for the time being, and to invite

A on p 55 of

Sri.K.Srinivasan, Professor, Indian Institute of Science Bangalore, to visit the college once or twice each ~~tour~~ term, for supervising the work done in the Tele-Communications Department of the College, and for giving necessary guidance to the staff etc., the duration of a visit being three to four days. Sri Srinivasan has not asked for any remuneration for his visits but has expressed the view that it is enough if the actual expenses of travel, hotel, transport and other incidental expenses are met.

E & P.H. have proposed the payment to Sri Srinivasan of

X6

(1) One and a half First Class fares for his Journeys from Bangalore to Madras and back, and

(2) the amount spent by him ~~as~~ on hotel, transport and other similar items during the period of his stay in Madras, subject to a maximum of Rs. 35/- a day

~~2.~~ Train fare:- Sri Srinivasan is drawing a pay of Rs. 1250/- in the Indian Institute of Science, Bangalore.

According to the M.T.A. Rules, Gazetted Government servants on grade II (those drawing over Rs.1000) are eligible for 1½ First Class fares by railway journey. Though Sri Srinivasan is not a Government servant, it seems he may be allowed 1½ First Class fare by railway journey, as ~~the~~ his pay exceeds Rs. 1000/- per mensem.

Daily allowance:- The daily allowance admissible to grade II officers under this Government is Rs.13-8-0. The maximum rate of Rs. 35/- proposed by E & P.H. seems ---- excessive. However, in view of the fact that Sri Srinivasan has not asked for any remuneration for his lectures and as he has offered his ~~reduces~~ services willingly, it seems this Government may reciprocate the free offer of his services by agreeing to the grant of a daily allowance upto a maximum of Rs. 35/- as a special case.

Subject to orders, the draft order below may be accepted.

HM (Fin) should see.

25.XI.49

DS

25/11/49

24.11.49

24.11.49

P on p 56 of

x on p 59 of

x on p 58 of

Annexure I on p 57 of Bk. no. 116

x on p 58 of

Annexure I on p 57 of Bk. no. 116

para 2 of the draft

x on p 59 of

May be agreed to. The rate of Rs 35/- is the maximum. He will only claim actual expenses limited to Rs 35 a day. 25.XI.49

25/11/49

Thro' C.S.R.

23 NOV 1949

Fin. U.O. 9300

79156/E.III

25.11.49

12

Edn. & P.H. Dept. (A)

Fin.'s note at pp. 10-11 ante summarises the case. The file may be Od to H.M. (P.W.) and H.M. (Fin.) for approval of the drafts below.

7/12/49

NM
7/12/49

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H.M. (P.W.) 8/12
~~H.M. (Fin.)~~

H.M. (P.W.)
H.M. (Fin.)

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SECRETARY, EDN. AND P.H. DEPT.
17 DEC 1949
GOVERNMENT OF MADRAS

19/8

Confidential.

10350
6.5.50.

1

From
The Director of Public Instruction, Madras.

To
The Secretary to Government,
Education Department.

4.2

R.Cl. No.38/50-2 dated 3rd May 1950.

Sir,

Sub: Madras Educational Service - Professor of Tele-Communications Engineering - College of Engineering, Guindy - Appointment of - Securing the services of a foreign expert.

Ref: Correspondence resting with G.O.Ms.No. 2883 Edn., dated 19-12-1949.

(put up in Sri Kudra's file)

&&&&

pp. 1-2 infra

I submit herewith a copy of the D.O. letter dated 11-4-1950 from Lt. Col. S. Paul, Principal, College of Engineering, Guindy, in regard to the availability of the services of Dr. Raphael Feinberg, a German-born naturalized British subject, for appointment to a suitable post in India. In this connection I may state that the post of Professor of Tele-Communications Engineering, in the college of Engineering, Guindy, is remaining vacant ever since Prof. K. Sreenivasan was relieved from the college on 10th June 1948. It is essential that the post should be filled up at least from the ensuing academic year. In view of the Principal's statement that, if the services of Dr. Raphael Feinberg are obtained, the difficulties of getting a Professor for Tele-Communications Department would be solved, it is worthwhile considering the question of securing the services of Dr. Feinberg who appears to possess the requisite qualifications and experience. I, therefore, request that the Government may kindly take the necessary steps to get the srvices of Dr. Feinberg for appointment as Professor on a short-term contract.

for Director of Public Instruction.

D.O.
Copy of/letter dated 11-4-50 from the Principal, College of Engineering, Guindy to Sri D.S. Reddi, Director of Public Instruction, Madras.

----

pp. 2-3 infra

I am enclosing herewith the details of academical qualificati and experience of Dr. Raphael Feinberg as well as a letter from Mr. A.B. Chandramani of the Ministry of Education, Government of India. Mr. Chandramani states in his letter that Mr. Raphael Feinberg has approached the High Commissioner for India in London for a teaching appointment in India.

2. For some time past I have been in correspondence with Mr. Chandramani of the Ministry of Education about the availability of top ranking Professors who can be engaged on a short term contract for this institution. The idea originated from the deliberations of the Stading Advisory Board for Technical Education, who have reco mended to the Govt. the desirability of the opening of Post-gradua courses in the various Engineering colleges. Recently the Combi Sub-Committee of the Inter-Universities Board and the All-India Council of Technical Education, when they met in Febry. 1950 have recommended to the Inter-University Board that post-graduate cour should be started as quickly as possible and have even urged that they should be started in the next academical year provided the tution has the necessary facilities - staff and equipment. This institution has great potentialities as far as the equipment is concerned and has also a few Professors who can direct Research. For certain departments, it is necessary to get Professors of approved merit and capabilities who can start the post-graduate courses.

p.t.o.

3. For the last two years, the department of Tele-Communications has also been without a Professor and evey effort has been made in several directions to get a suitable person. Although there have been applications from various candidates who had special training and attainments in Tele-Communication Engineering, yet none of them have had a basic Engineering degree. On a consultation with the Professor of Elec Engineering and Telecommunication Engineering about Dr. Raphael Feinberg I find that it will be desirable to get his services for this institution and every effort may therefore be made to get him. If his services are obtained, the difficulty of getting a Professor ~~x~~for Telecommunication Department would be solved and it will also enable this institution to start a post-graduate course for this branch.

N.K.

4. For the reasons stated above, I request that the Director may be pleased to take up this matter and arrange to get the services of Dr. Raphael Feinberg on a short-term contract. It is suggested that a three years contract would be enough for a start. It may be necessary to contact Dr. Raphael Feinberg about terms and conditions and salary.

Copy of D.O. letter No.F.23-79/49 T 2 from Sri A.B. Chandramani, Ministry of Edn., Govt. of India, New Delhi to Lt. Col. S. Paul, Principal, College of Engineering, Guindy.

&&&&

Dr. Raphael Feinberg at present Lecturer in Electrical Engineering in the University of Manchester has approached the High Commissioner for India in London for a teaching appointment in India. I am enclosing Dr. Feinberg's particulars for your consideration and request you to kindly let me know as soon as possible whether you wish to utilize him in your institution. Highly qualified Electrical Engineers with teaching experience are in short supply in this country and it is, therefore, possible that ou might ~~xxx~~ need the services of this German who is a naturalized ritisher.

below

===

ame: Raphael Feinberg.

ddress: 72, Shakespeare Drive, Cheadle, Cheshire.

ge: 43.

ationality: British.

chools: Primary and Secondary schools in Germany.

ngineering Apprenticeships: 2 years workshop and testrooms and one year design office with a telephone manufacturing firm in ~~Gxxx~~ Germany.

niversity: 4 years full-time course in Electrical Engineering at the ~~Technical~~ Treanical University of Karlsruhe, Germany, graduated with distinction.

octor's degree: Dr. Igg.(Karlsruhe) First Class with Honours.

rofessional experience: 5 years as a research engineer with the research laboratories of the A.E.G. a large firm of Electrical Engineering in Berlin, Germany.

4 years as a consultant in industrial research.

10 years as a Lecturer in the Electrical Engineering Dept. of the University of Manchester.

esearch experience: Experimental investigations and mathematical theories in electronics, on electrical circuit theories, on high vacuum technique and on magnetic amplifiers.

18

Teaching experience: Theory and Laboratory work in electronics and on radio communications.

Advanced theory of electricity and magnetism.

Theory and Laboratory on high-vacuum techniqu

Initiation and control of post-graduate resea

Organizing experience: During the war organization of a large number of classes in the University of Manchester to train radio personnel for active service on radar equipment or for ~~xxxxx~~ industrial or Govt. Research laboratories.

Organization of novel laboratories in the University of Manchester for instruction in Electronics and high vacuum technique at under-graduate and post-graduate level.

Organization of a post-graduate course in the University of Manchester on high-vacuum technique and advanced electronics, involving the call on a large number of specialists in industry to assist with specialized lectures.

Publications: Textbooks: involving the call on a large number of specialists in industry to assist with specialized lectures.

Papers: 18 papers in scientific and leading electrical engineering periodicals in Great Britain, Germany, Austria and Switzerland.

Inventions: 28.

=====

for Director of Public Instruction.

Edn. dept. (A)

The papers in which the question of filling the post of Professor of Tele-Communs. Engg. in the Guindy College was considered, are put up in the file* about the release from ~~Ed~~ the Edn. dept. of Sri N.V. Kudva an overseas scholar working in that branch in the College. May l.o. till 20.5.50.

* Od to HMOR HM.(P.W.), HMRi, + HEM. on 12.5.50

pj 13.5.50.

15/5/50

Confdl.
**

Edn. Dept.(A).

MEMO.No. 10350-A-1, d/- 31/5/50

A94

M.E.S. - Filling of post of Prof. of Tele-Commns. Engg.,Guindy Engg.College.

cf. 1 Ref:- From the DPI, No.38/50-2/1, d/- 3-5-50.

From the particulars forwarded to Govt. by the D.P.I., it does not seem that Dr. Raphael Feinberg possesses the prescribed practical Engg. & experience for the post of Prof. of Tele.Commns. Engg. in the College of Engg., Guindy. Dr. Feinberg has been employed as Prof. of Elec.Engg. at Manchester and his attainments seem to be XX more in Elec. Engg. than in Elec.Commns. Engg. The D.P.I. is requested to consult Prof. K. Srinivasan of the Indian Institute of Science, Bangalore, about the suitability of Dr. Feinberg for the post in question and send his remarks to Govt.

Despatched 2/6

To the DPI:

P.J. 30.5.50 KB 30 5 50

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JUL 1950

"Confidential"

EDUCATION. DEPARTMENT.

From
The Director of Public Instruction,
Madras.

To
The Secretary to Government,
Education Department,
Madras.

R.CL. No. 38/50, Dated 3rd July 1950.

Sir,

Subject:- Madras Educational Service - Filling of the post of Professor of Tele-Communications Engineering, Guindy Engineering College.

Reference: Government Memorandum No.10350 A.1 Edn., dated 31-5-1950.

Y. Gange

With reference to the Memorandum quoted above Professor K. Srinivasan of the Indian Institute of Science, Bangalore, was consulted about the suitability of Dr. Feinberg for the post ~~in~~ of Professor of Tele-Communications Engineering in the College of Engineering, Guindy, and ~~his~~ a copy of his reply dated 21-6-1950 is enclosed. In view of what Professor Srinivasan says in the concluding paragraph of his letter I am requesting him to ascertain ~~and~~ confidentially and without entering into any commitment, the views of one or two Engineers in Manchester about Dr. Feinberg's suitability for the post in question.

below

J.6 infra

B

2. I request that my action may be kindly approved by Government.

Yours faithfully,

DIRECTOR OF PUBLIC INSTRUCTION.

NB/30-6.

Enclosure:

Copy of D.O. dated 21-6-1950 from Prof. K. Sreenivasan, Department of Electrical Communication Engineering, Indian Institute of Science, Bangalore, dated 21-6-1950.

Dear Mr. Reddi,

I thank you for your letter D.O.No.38/50, dated 11-6-1950 and regret this delay in writing to you due to my absence in Delhi last week.

A

I have carefully looked through the details of the career of Dr. R. Feinberg that you have kindly sent with your letter. I get the impression that his field of specialisation is heavy current electrical engineering rather than tele-communication engineering. I cannot therefore say

P.T.O.

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definitely if he is suited or not for the chair in telecommunication engineering at the Guindy College.

I happen to know one or two engineers in Manchester who may perhaps know Dr. Feinberg. If you so wish, I shall gladly write to them and ascertain what their views may be regarding his suitability for the Guindy post. I shall be grateful if you will please let me know.

With best regards:

Yours sincerely,
K.SREENIVASAN.

30/6.

4/7
for D.P.I.

Confdl. Edn.Dept.(A).

Memo.No. 1035-A.2 d/- 12/7/50.
16.8

51

7

M.E.S. - Post of Prof. of Tele-Commns.Engg. - Appt.

Ref:- From the DPI, No.38/50, d/-3-7-50.

cf.5

—

The Govt. approve of the action of the DPI in having asked Prof. K.Srinivasan of the Indian Institute of Science, Bangalore, to ~~get from~~ ascertain the views of the engineers in Manchester known to him, ~~(Prof. Srinivasan) their views~~ on the suitablity of Dr. Raphael Feinberg for the post of Prof. of Tele-Commns.Engg. in the College of Engg., Guindy.

B at cf.5

Apd Aug 16.8.50

To the DPI.

8.7.50

11.7.50

12/7/50

B
12.7.50

K
8
52

EDUCATION DEPARTMENT

From
The Director of Public Instruction,
MADRAS.

To
The Secretary to Government,
Education Department,
MADRAS.

-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-

[illegible]c.977K1/50 dated 12th September 1950.

ASSISTANT SECRETARY
14 SEP 1950
27953
EDUCATION DEPARTMENT

Sir,

Sub:--MADRAS EDUCATIONAL SERVICE--College of Engineering Guindy--Post of Professor of Tele-communications Engineering--appointment of--

Ref:--Memorandum No.10350 A2 Education dated 16-8-50 and reminder dated 31-8-50.

* * * * *

I have the honour to state that the views of the engineers in Manchestor known to him, on the suitability of Dr. Raphael Feinberg for the post of Professor of Tele-communications Engineering in the College of Engineering, Guindy have been ascertained by Professor K. Sreenivasan of the Indian Institute of Science, Bangalore and his final opinion in the matter is awaited. A report will be submitted to Government in due course.

Yours faithfully,

FOR DIRECTOR OF PUBLIC INSTRUCTION

Edn (A)

CLb.12-9-50.

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12/9

N.R., if necy; on 5.10.50

18.9.50

19-9-50

21/9/50

A. As I

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Confidential.

From

The Director of Public Instruction, Madras.

To

The Secretary to Government,
Education Department.

R.Cl. No.38/50 dated 16th Octr. 1950.

ASSISTANT SECRETARY
21 OCT 1950
3262
EDUCATION DEPARTMENT

p.7 ante

Sir,

Sub: Madras Educational Service - College of Engineering, Guindy - Post of Professor of Telecommunications Engineering - Appointment of.

Ref: Memo No.10350 A.2 Edn., dated 16-8-50 and reminders dated 31-8-50 and 9-10-50. — Exchange [illegible]

2. My letter R.C.977 K1/50 dated 12-9-1950. p.8 ante

&c&c&c.

p.8 ante

In continuation of my letter cited above, I submit that Prof. K. Sreenivasan of the Indian Institute of Science, Bangalore in his letter dated 13-9-50 (copy enclosed) to Sri D.S. Reddi has stated that Dr. Feinberg would be suitable for the post of Professor of Tele-communications Engineering at the College of Engineering, Guindy. His opinion is based entirely on the details of Feinberg's career available in this office and on what Professors Williams and Jackson have written. He has requested Sri D.S. Reddi to arrange to meet Dr. Feinberg, Prof. Williams at Manchester, Prof. Willis Jackson in London and also certain others suggested by him. Copies of the letters received by Sri K. Sreenivasan from the two Professors referred to above are enclosed herewith for information of the Government.

pp. 10-11 infra

below

below

2. Copies of the above references have also been forwarded to Sri D.S. Reddi, to his London address for information and such action as he may deem ~~it~~ necessary. Further report in this regard will be submitted to Government on Sri D.S. Reddi's return to India.

May lie over till 15.12.50 Edn. dept. (A)

A. Govindarajulu

Director of Public Instruction.

P.J.
30.10.50

2/11/50

1.11.50

Imperial College of Science and Technology.

Dept. of Electrical Engineering
Prof. Willis Jackson, D.Sc., D.Phil., M.I.E.E., F.Inst.P.

City and Guilds College
Exhibition Road,
South Kensington,
London, S.W.7.

WJ/KML.

17th August 1950.

Prof. K. Sreenivasan, B.Sc., A.I.I.Sc., M.I.E.E.,
Electrical Communication Engineering Department,
Indian Institute of Science,
Bangalore, 3.
INDIA.

Dear Prof. Sreenivasan,

In reply to your letter of the 9th instant, I am pleased to have the opportunity of writing in support of Dr. Feinberg's application for the post of Prof. of Telecommunication Engineering at Madras. Dr. Feinberg was a member of my staff at Manchester throughout the war period and was largely responsible for the Electronics and Telecommunications section of the under-graduate work. He also helped me to organize the post-graduate course in high vacuum technique and electronics which was provided at the special request of the Wireless Personnel Committee under the Chairmanship of Lord Hankey. Feinberg proved a very competent organizer and teacher, and I think there is no doubt that he possesses an adequate knowledge of telecommunications to meet the

p.t.o

requirements of the post in question. It is true that the greater part of his research work has been more closely allied to the power side of engineering than to the communications one, but this applied to the pre-war period in the main. The only marked weakness of his case is that he has not found much opportunity since the beginning of the war to carry out further research work, but I feel that he is competent enough to do this under the appropriate circumstances which, I presume, the Madras post would afford.

He is a likeable person and I think he is well worth a consideration for appointment.

Yours sincerely,

Sd/- Willis Jackson.

(True copy)

Prof. of Electrical Engineering.
F.C. Williams, O.B.E., D.Sc.,
D.Phil. A.M.I.E.E.

Electrical Engineering Laboratories,
The University,
Manchester, 13.

31st August 1950.

Dr. R. Feinberg.

Dr. R. Feinberg has been a member of the staff in the Electrical Engineering Department at Manchester University for the last ten years. He was present when I succeeded Prof. Willis Jackson in January 1947. During that time he has been concerned mainly with teaching and laboratory work in the field of communications and electronics, but his background and early training have given him knowledge of the wider field of Electrical Engineering as a whole. He has shown his ability to equip, organize and run teaching laboratories,/has continued his own researches, which recently have been in the field of transductor design. and

He is patient and hard working, he is interested in, and gets on well with students.

Since electronics is the main direction of specialization in the present honours school at Manchester, a very high standard is aimed at, and against this background Dr. Feinberg's qualities are average rather than outstanding. In view of these facts there is no future for him here, but having read your description of the kind of man you seek and having had experience of the kind of response advertisements bring, I think it likely that Dr. Feinberg will be among the stronger candidates.

Sd/- F.C. Williams,
professor of Electrical Engineering.

(True copy).

Copy of letter dated 13-9-50 from Sri K. Sreenivasan, Indian Institute of Science, Bangalore-3 to Sri D.S. Reddi, Director of Public Instruction, Madras.

I am much obliged to you for your D.O.No.977 K1/50 dated 9th Septr. 1950 and for kindly returning the letters from Professors Hollingworth and Aston that I had sent you.

I have again gone through the letters of Professors F.C. Williams and Jackson carefully, and I am of the opinion that Dr. Feinberg would be suitable for the post of Professor of Telecommunication Engineering at the College of Engineering, Guindy.

As you are aware I have never met Dr. Feinberg nor do I possess any personal knowledge of his personality and abilities. The opinion that I have expressed above is therefore based entirely on the details that you kindly sent me of his career and on what Professors Williams and Jackson have written.

I read in the newspapers that you are going to England very soon. If so you may perhaps arrange to meet Dr. Feinberg and Prof. Williams at Manchester and Prof. Willis Jackson in London I give their address below. They may be able to suggest the name of other suitable men for the post.

In this connection, would you like to consider the following persons. I do not know any of them personally but have heard very good reports about them from their Indian students. I have he some correspondence with Messrs. Cherry and Stamford. Whether they will be willing to come out to India or not is more than I can say.

With best regards.

SA

----

1. Prof. Willis Jackson,
   Prof. of Electrical Engineering,
   City and Guilds Engineering College,
   South Kensington,
   London, S.W.
2. Prof. F.C. Williams,
   Prof. of Electrical Engineering,
   The University,
   Manchester.

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1. E.C. Cherry, Esq., M.Sc., A.M.I.E.E.,
   Dept. of Electrical Engineering,
   City and Guilds Engineering College,
   South Kensington, London, S.W.
2. N.C. Stamford Esq., M.Sc., M.I.E.E.,
   Superintendent, Marconi College,
   Arbour Lane, Chelmsford, Essex.
3. Dr. K.R. Sturley, B.Sc., Ph.D., M.I.E.E.,
   B.B.C. Engineering Training Department,
   Wood Norton, Evesham, Worces.

====

A Soundarajulu
Director of Public Instruction.

12

13

55

Confidential.

From
The Director of Public Instruction, Madras.

To
The Secretary to Government,
Education Department.

R.Dl. No.38/50 dated 31-1-1951.

459

ASSISTANT SECRETARY
3 FEB 1951
EDUCATION DEPARTMENT

SECRETARY
3 FEB 1951
EDUCATION DEPARTMENT

Sub: Madras Educational Service - Professor of Telecommunications Engineering - Engineering College, Guindy - Appointment of Dr. R. Feinberg.

Ref: Memo No.10350/A.3 Edn., dated 13-12-50 and [illegible] January, 1951.

&&&

Remarks

With reference to the above, I have the honour to submit the following remarks:-

2. From the enquiries made by me during my recent stay in the United Kingdom, I understand that Dr. R. Feinberg is suitable for appointment to the post of Professor of Telecommunications Engineering, College of Engineering, Guindy. However, I find that he expects a salary equivalent to £.3000/- per annum and it is not also definite that he would be available for appointment. I, therefore, submit that the question of his appointment as Professor may be dropped. I enclose in this connection copies of the D.O. letter No.3.255 A/49 dated 1-12-50 from the Principal, College of Engineering, Guindy and letter No.F.18-13/50-T.1 dated 26th Decr. 1950 from the Secretary to the Government of India, Ministry of Education and request that the Government may be pleased to send a suitable reply to the Government of India to their letter cited above.

i.e., more than Rs.3000 p.m.

below

p.17 infra

for Director of Public Instruction.

Copy of D.O.No.3.255 A/49 dated 1-12-1950 of the Principal, College of Engineering, Guindy, to Sri V. K. Krishna Menon, Deputy Director of Public Instruction, Madras.

&&&

Ref: My D.O. letter dated 11-4-50 about the offer of services in India by Dr. Raphael Feinberg.

pp.1-2 ante

I enclose herewith a copy of the Memo No.D.13204/50-T-1 dated 23-11-50 received from the Government of India, Ministry of Education, New Delhi along with its enclosures. It may kindly be seen therefrom that Dr. R. Feinberg wishes to postpone his offer of his services to the Govt. of India till his salary comes to £3000/- but the Indian Embassy in London has not been able to find out the pay the Doctor is receiving at present in spite of numerous enquiries. So it is not clear when he would reach the maximum pay of £3000/- in London. It is presumed the pay of £3000/- is for the year. It is not also known under what conditions of pay and services he would be willing to work in India, even after reaching £3000/- pay. I am of opinion that payment of salary exceeding Rs.2000/- per mensem will be too much for any officer to be employed on contract under the Madras Government. If this Dr. is not willing to accept a salary of Rs.2,000/- per mensem, his services may not, I submit, be necessary in the present state of affairs. I have intimated the Ministry of Education, Government of India that a copy of their Memo. and the correspondence sent along with it is being submitted to you and that they may correspond with you direct for any further particulars on the subject.

p.14 infra

p.16 infra

p.17 infra

D. 132004/50-T.1.
Government of India,
Ministry of Education.

New Delhi, the 23rd Novr. 1950.

Memorandum.

Sub: Offer of services in India by Dr. Raphael Feinberg.

SECRETARY 3 FEB 1951 EDUCATION DEPARTMENT
3 FEB 1951

With reference to D.O. letter No.3.255 A/49 dated the 12th April, 1950, from the Principal, College of Engineering, Guindy, the undersigned is directed to forward copies of the marginally noted correspondence.

1. Copy of External Affairs Ministry Memo. No.F.9-5/50-U.K. dated the 5th July together with enclosures.
2. Copy of External Affairs Ministry Memo. No.F.9-5/50-U.K. dated the 17th Octr. 1950.

p.16

Sd. G. K. Chandramani,
for Secretary.

below

(True copy).

No. F. 9-5/50 UK
Government of India
Ministry of External Affairs.
New Delhi, the 5th July 1950.

Memorandum.

Sub: Application for employment in India - Mr. R. Feinberg.

---

below

With reference to the Ministry of Education office Memo No. F.23-79/49.T.2 dated the 6th June 1950 on the above subject, the undersiged is directed to forward herewith copies of letters dated the 1st and the 9th May 1950 by the High Commissioner for India from Mr. Feinberg. It will be noted that he wishes to postpone his offer of services to the Governmentof India, for the present.

not recd.

p.16

(Sd.) Prithi Singh,
Under Secretary.

below

The Ministry of Education,
New Delhi.

C.322927/225.4.4/118
75 Shakespeare Drive,
Cheadle, Cheshire,
1st May 1950.

Reference: G.225.4.4/118/50.

Dear Sirs,

Thank you for your letter of the 14th April 1950, asking me to furnish references of my publications in Scientific and leading Electrical Engineering Journals, and to state the minimum salary that I would be prepared to accept if offered an appointment in India.

Please find herewith enclosed a list of my original papers and notes and the title of my book.

I am further enclosing a copy of a testimonial by Professor Willis Jackson of the Imperial College of Science and Technology, London. I am anticipating a salary commensurate with responsibilities and duties based on my experience and qualifications.

Yours faithfully,
Sd. R. Feinberg.

The High Commissioner of India,
General Department, India House,
Aldwych, London, W.C.2.

List of original papers and notes:

"Review of Transductor Principles and Appliances"

Proceedings of the Institution of Electrical Engineers in Publication:-

56

"The Magnetic Amplifier" - Transductor Theory"
Wireless Engineer, April 1950 Vol.27 p.118.

"Der Magnetische Verstarker"
Bulletin des S.E.V.(Journal of the Swiss Institution of Elec. Engineers) in publication.

"Asymmetrical Multivibrations"
Wireless engineer October 1949 Vol: 26, p.325.

"Symmetrical Multivibrators" Wireless Engineer May 1949, Vol.26, p. 153.

"On the Performance of the Push-Pull Relaxation Oscillator". Philosophical Magazine, April 1949, Vol.39, p.268.

"Static conversion of direct current to alternating current with Grid-controlled mercury arc/Mutators."
Journal of Applied Physics, 1939, Vol.10, p.140.

"Frequency-changing with mercury arch mutators."
Journal of the Institution of Electrical Engineers, 1939, Vol.85, page 531.

"Die Blindleistung von Stromwishtern"
Elektrotechnic and Maschinenbau (Journal of the Austrian Institution of Electrical Engineers), 1937, Vol.55, page 137.

"Eine neue Graphische Ermittlung der symmetrischen Komponenten eines. Unsymmetrischen Dtrehstromsystems."
Ibid, 1936, Vol.54, page 35.

"Die Gittersteurung bein ummittelbaren Drehstrom Einphasenstrommutator."

Bulletin des S.E.V.(Journal of the Swiss Institution of Electrical Engineers) 1936, Vol.27. page 566.

"Die Primarblindleistung bei der Frequenzwandlung eines Wechelstromes durch einen Umrichter."
Elektrische Sahnen, 1935, Vol.II., page 151.

"Fourier Analyse von Kurvenzuegen, die Struckweise aus Ausschinitten von sinuslienen Zusammengestzr/Sind."
Zeitkschrift fur Angewandte Mathematic and Mechanic,1934, Vol. 14, page 3.

Das Verhaltnis Von Primar - Zu - Sekundarblindleistung bei. Hullkurven-Umrichtern."
Elektrotechnik and Maschinenbau, (Journal of the Austrian Institution of Electrical Engineers) 1939, Vol.27, page 539.

"Uver die Fouriersche Analyse von Funktionen mit Sprungen, Ecken und Ahnlichen Besonderheiten" Ibid, 1933, Vol.27, page 11.

Zur Teorie der Drehstrom-Sinphasenstrom-Umformung mut Gleich-und Wechselrichtern". Ibid 1932, Vol.26, page 200.

~~Block:~~ Book "Introduction to Electronics."
Publishers: Longmans Green and Co., Ltd., London (in publication).

Imperial College of Science and Technology - Department of Electrical Engineering, London, S.W.7. 24th April 1950.

To whom it may concern:-

Dr. R. Feinberg was a member of the staff of the Electronics Department of Manchester University during almost the whole period of my occupancy of the chair of Electrotechnics. He was primarily responsible for organizing and supervising the special courses which were provided during the war years for Radio Bursars and also played a very considerable part in the post-graduate course in High Vacuum Technique and Electronics which was sponsored towards the end of the war by the Hankey Committee. In addition he made a valuable contribution to the normal undergraduate work of the department.

His work was characterized by an enthusiasm and conscientiousness which was much appreciated by the students and for which I was much appreciated by the students and for which I was immensely grateful.

He showed considerable initiative and resource in dealing with the many difficulties which were associated with the large number of students to be provided for, and was always prepared to take trouble in the interests of the students. I found him a very pleasant colleague.

(Sd.) Willis Jackson.

(True copy).

G.323251/225.4.4/118

76, Shakespeare Drive,
Cheadle, Cheshire,
9th May 1950.

Your Ref. G.225.4.4/118/50

Dear Sirs,

Thank you for your letter dated the 6th May, asking me to furnish information regarding the present salary I am receiving.

Kindly note that I wish to postpone my offer of service until my salary is £3,000/-.

Yours faithfully,
Sd. R. Feinberg.

The High Commissioner for India,
General Department,
India House, Aldwych,
London, W.C.2.

(True copy).

No.F.9-5/50-UK
Government of India,
Ministry of External Affairs,

New Delhi, the 17th October 1950.

Office Memorandum.

Subject:- Application for employment in India - Mr. R. Feinberg.

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p.14 ante

In continuation of this Ministry's memorandum No.F.9-5/50-U.K. dated the 5th July 1950 on the above subject, the undersigned is directed to say that the Indian High Commissioner in London have intimated that Mr. Feinberg has now confirmed his desire to obtain a suitable post in India, but it has not been possible for them to find out the rate of pay he is, at present, receiving in the U.K. although numerous enquiries were addressed to him.

(Sd.) Prithi Singh,
Under Secretary.

Copy of letter No.F.18-13/50.T.1 dated 26th Decr. 1950 from the Secretary, Ministry of Education, New Delhi to the Director of Public Instruction, Madras.

Sub: Offer of Services in India by Dr. R. Feinberg.

&&&

below

I am directed to refer to letter No. Rc.3.255 A/49 dated the 1st Decr. 1950 (copy enclosed) from the Principal, College of Engineering, Guindy and to request that this Ministry may please be intimated immediately whether the Government of Madras is interested in the employment of Dr. Feinberg.

Copy of letter No.3.255 A/49 dated 1-12-50 from the Principal, College of Engineering, Guindy to the Secretary, Government of India, Ministry of Education, New Delhi.

Ref: Your Memo No.D.13204/50-T-1 dated 23-11-50 regarding offer of services in India by Dr. Raphael Feinberg.

I am sending a copy of your Memorandum under reference and the enclosures to the Director of Public Instruction, Madras, who is competent authority to take action on behalf of the Madras Government. You may kindly correspond with him for any further particulars that may be necessary in this matter.

---

for Director of Public Instruction.

Edn. Dept.(A).

Letter/Ref.No. 10350-A.5. d/- ~~16.1.51~~ 22/2/51

To
The Secy. to the G. of I., Ministry of Edn.,
New Delhi 3.

Sir,

Dr. R.Feinberg of Manchester Unty. - Offer of services.

Ref:- Your letter to the D.P.I., Madras, No.F.18-13/50-T1, d/- 26-12-50.

Cf. 17

I am to state that, considering particularly the high rate of salary Dr. Feinberg seems to expect (£3,000), this Govt. have decided to drop the question of his employment as Prof. of Elec.-Commns. Engg. in the College of Engg., Guindy.

Yrs.ffly.,

16/2

Copy to the D.P.I.
(Ref:- His letter no. 38/50, d/- 31.1.51).

15.2.51

16/2/51

Edn. Dept.(A).

Cf.1 From the D.P.I., No.38/50-2, d/- 3-5-50.

Post of Prof. of Elec. Commns. Engg., College of Engg., Guindy - Vacancy - Filling.

59 58

The G.O. connected with this is put up in Sri N.V. Kudva's file with Dn.

June 1948.

Ⓑ | Cf. 12

G.O. 2885 Edn.
16.11.48

The post of Professor of Tele-Commns. Engg., College of Engg., Guindy, has been vacant since 1948. It was advertised for direct recruitment but no qualified candidate became available. Efforts made to appoint a Professor ~~by~~ on contract did not also succeed. Finally, last year, the D.P.I. said that the work of the dept. could be carried on with the help of the three Instructors in the subject who had overseas education, that the post of Prof. might be held in abeyance temporarily and that, however, in order that there might be proper supervision over the working of the dept. and guidance to the Instructors, Sri K.Srinivasan who had formerly held the post but who went out to the Indian Institute of Science, Bangalore, as Head of the Tele-Commns.Engg.Dept. there, might be requested to visit the college once or twice a term and direct the work of the dept. Sri Srinivasan did not demand any remuneration and agreed and the Govt. accepted the Dir.'s proposal.

2. Dr. Raphael Feinberg, a German and naturalized Britisher, who is a Lecturer in the Manchester Unty., seems to desire to come to India and take up a teaching job here. The Principal, Engg.College, Guindy, has obtained particulars about him from the Govt. of India, Ministry of Edn. and has suggested his name for appointment as Prof. of Tele-Commns. in the College. The D.P.I. says that the Govt. may take necy. steps to get the services of Dr. Feinberg who appears to possess the requisite qualfns. and expce. for the post. One of the heads of the qualfn. prescribed for the post in question is practical trg. and experience in Tele-Commns. Engg. for not less than five years. Particulars about Dr. Feinberg are at pp.2-3 C.F. From these, it does not seem that he fulfils the requirement about practical experience. He has been employed as Prof. of Elec. Engg. at Manchester and his attainments seem to be more in Elec.

Cf 1-2

Cf 1

G.O. 1926 Edn.
19.11.45

Ⓖ | Cf 6

Engg. than in Elec.(Tele) Commns. Engg. In the case of the candidates whose names were considered for the Professorship previously, the D.P.I. consulted Prof. K.Srinivasan. It seems most desirable to get Sri Srinivasan's opinion about Dr. Feinberg also before the matter is proceeded with further. (Col. Paul, the Guindy College Principal, is a Mechanical Engr. & he cannot specifically advise the Govt. on the points about Dr. Feinberg's suitability. If Dr. Feinberg) ~~If he xx~~ is suitable for appt. only in the Elec. Engg. Dept., it will not be necy. to secure his services as there are already some officers in the dept. qualified in Elec. Engg. and the employment, in addition, of a foreigner who will in all probability demand higher pay will be a luxury. For orders whether the D.P.I. may be asked to contact Prof. Srinivasan.

P.J. 17.5.50 18.5.50

27/5/50.

It might be well to get Prof. Srinivasan's opinion.

25/5/50.

(Box)

H.M.(P.W.)

26.5

SECRETARY 29 MAY 1950 EDUCATION DEPARTMENT

3 25/5

A draft Memo. is subd

P.J. 30.5.50 30.5.50

31/5/50.

Issued as Memo. No.10350-A-~~1~~-Edn., d/- 31-5-50. cf. 4
From the DP^I, No.38/50, dated 3-7-50. cf. 5

—

Prof.Srinivasan too has got the impression that Dr.Feinberg's field of specialisation is not ~~exactly~~ Tele-Commns. Engg. and he is not able to say anything definite about the candidate's fitness for the Professorship. But he has offered to consult one or two engineers in Manchester who are known to him and who might perhaps know Dr. Feinberg. The D.P.I. has permitted ~~xx~~ him to do so. The D.P.I.'s action may be approved. A draft Memo. is subd.

A at cf. 5

cf. 6

cf. 5

(Box)

P.J. 11.7.50

12/7/50

12.7.50

Issued as Memo.No.10350-A-2, d/- 12-7-50. cf 7
From the D.P.I., No.38/50, d/- 16-10-50 and 31-1-51. cf 7 & 13

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The notes at pp.1-2 above may be seen. Dr. K.

C.10350-A/50

60

bottom of p.10 cf.

cf. 13

p.16 cf.

p.13 cf.

Srinivasan of the Indian Institute of Science, Bangalore, considers that Dr. Feinberg would be suitable for the post of Prof. of Elec.-Commns. Engg. at Guindy. The Dir. also, from the enquiries made by him in the U.K. during his visit to that country, understands that the candidate would be suitable for the post. But Dr. Feinberg demands a salary of £3000. ~~This means xx more than Rs.3,000 p.m.~~ The empt. of an officer on such a high salary is out of the question. The Dir. recommends that the question (of Dr. Feinberg's appt.) may be dropped. His recommendation may be accepted. A reply may be sent to the G. of I. from whom the Principal of the Guindy College got details about Dr.Feinberg. A draft letter is subd. H.M.(P.W.) may see.

P.J. 15.2.51

PER 15.2.51

16/2/51

H.M.(P.W.)

16.2

H.M.(P.W.)

21.2

(Box) 62C

SECRETARY 21 FEB 1951 EDUCATION DEPARTMENT

(Issued as Letter No.10350-A.5, d/- 22.2.51)

May be filed with G.O. 3883-Edn., d/- 19-12-49

(C)

P.J. 25.2.51 26.2.51

27/2/51.

PRODUCTION OF ULTRA-HIGH FREQUENCY RADIO WAVES BY ELECTRONIC OSCILLATIONS

61

By
S. S. BANERJEE AND A. S. RAO

Reprinted for Private Circulation from the Indian Journal of Physics,
Vol. XIV, Part II, April, 1940

CALCUTTA UNIVERSITY PRESS

11

PRODUCTION OF ULTRA-HIGH FREQUENCY RADIO WAVES BY ELECTRONIC OSCILLATIONS*

By S. S. BANERJEE, D.Sc.,

AND

A. S. RAO, M.Sc.

Benares Hindu University

(Received for publication, February 7, 1940)

ABSTRACT. Detailed investigation has been made of the mode of production of ultra-high frequency radio waves by electronic oscillations in a triode valve. The effect of emission current and grid potential on the lengths and intensity of the generated waves has been critically examined and a new relation between them has been derived, *viz.*, $\lambda E_g^{\frac{1}{2}} I_e^{\frac{1}{3}} = \text{constant}$, where λ is the wavelength generated, E_g is the grid potential, and I_e is the emission current This relation has been experimentally verified by means of Barkhausen and Kurz oscillator with modification of Gill and Morrell. It is concluded that the emission current plays an important part in predicting the lengths of the generated waves. It has been observed that, for the same grid potential, the intensity of the generated waves increased with the increase of emission current. The lengths of such waves, however, decreased when the emission current was increased. The waves generated in the present investigations were of Gill and Morrell type as has been shown by the method of Cockburn from the variation of anode current with grid potential. It has also been shown that for such oscillations the lengths of the generated waves were altered with the variation of length of external circuit associated with the valve.

INTRODUCTION

With the advent of television and aircraft communications attention has been greatly centred in the study of generation of continuous radio waves of ultra-high frequencies. It has now become customary to call the radio waves below 10 metres as 'ultra-short waves' and those below 1 metre as 'micro waves.'

The only satisfactory method till now known for powerful production of these ultra-high frequency waves is based on the use of electronic oscillations in a triode and in magnetron valves. In 1919, Whiddington [1] generated radio waves of about 500 metres by the electronic oscillations in a soft triode with high positive grid. Near about the same time Barkhausen and Kurz[2] succeeded in producing radio waves of about 1 metre length by using hard triode valves with high positive grid compared to the anode and put forward the theory of the same. According to their theory the wavelength produced should depend only on the dimensions of the electrodes and the working conditions of the tube.

---

* Communicated by the Indian Physical Society.

Since the time of Barkhausen and Kurz various investigators [3-11] have tried to verify the laws established by them, and in many instances results have been obtained which do not completely agree with the original theory of Barkhausen and Kurz. Gill and Morrell,[3] for instance, reported in 1922 that the external circuit connected with the valve plays an important part in prediction of the wavelength produced. The results of Gill and Morrell were confirmed by other workers in this field. It is, however, now admitted that there are two types of oscillations produced inside a vacuum tube. One is the Barkhausen and Kurz oscillation which is independent of the external circuit and the other is the Gill and Morrell type which is dependent on the external circuit. Cockburn [11] has, however, shown that there is no fundamental difference between these two types of oscillations and he has pointed out that the Gill and Morrell oscillations occur when the external circuit associated with the valve happens to be in resonance with Barkhausen and Kurz oscillations.

In the present investigations the study has been made of the mode of production of ultra-high frequency waves by electronic oscillations in a triode valve with high positive potential being applied to the grid. A preliminary note [12] on this work has already been published recently. The relations existing between the grid potential applied, emission current and the wavelengths produced have been critically examined and it has been observed that the consideration of emission current is not less important than the grid potential in establishing such relation. Thus a new equation indicating the connection between the wavelengths produced and both the grid potential and emission current has been derived from the equations of Barkhausen and Kurz [2] and Tank.[5] This equation has been found to agree very closely with the observed results for a considerable range of grid potentials. It was also observed that the intensity of the generated waves was increased as the emission current was increased for the same grid potential. The wavelengths, however, decreased with the increase of the emission current, as has also been observed by other investigators mentioned in the following section. In the present investigation all the observations were taken in the region of Gill and Morrell as the wavelengths were found to vary with the external circuit. This has also been substantiated by the curves showing the variation of anode current with increasing grid potential.

THEORY

For plane electrodes, Barkhausen and Kurz worked out a formula showing the relation between the wavelength produced, distances between the filament and anode, and filament and grid and the potentials applied to the anode and grid compared to the filament. Subsequently Scheibe [4] gave more rigorous

formula for cylindrical electrodes. Tank,[5] Gill [13] and various other workers pointed out later on that the relations given by Barkhausen and Kurz and Scheibe were not adequate to establish the wavelength generated, as they found that the wave-length decreased when the emission current was increased. Gill worked out a theoretical formula which included the emission current also. Potapenko,[14] however, investigated experimentally the formula of Gill in details. The results of Potapenko showed considerable discrepancies between calculated and observed values. Very recently Gill [15] has produced ultra-short waves of length 1 to 3 metres by split anode valve and has suggested the explanation of the reduction of wavelength with increase in emission for a fixed grid voltage. Tonks[7] gave a physical explanation of the possibility of decrease of the wavelength produced as the emission current is increased, a brief description of which will be given below for reference.

When the emission currents are small, the electrons which leave the filament are accelerated by the positive grid till they pass through it and are acted by retarding field when they enter the grid-anode space. Since the anode is originally at the same potential as the filament, the retarding electrons will have zero velocity when they reach the anode and may be collected on it or reflected. In this case the space charge in the grid anode space depends on the total electron current and accordingly the potential distribution between the grid and anode is the same as in the case when the plate itself becomes the emitter of electrons. But as the emission from the filament is increased the space-charge in the grid-anode space also increases and makes the field zero even at a space nearer to the grid than the plate itself. Consequently the electrons turn back from the plane without reaching the plate. This plane of zero potential, which is called 'virtual cathode,' will move away from the anode towards the grid as the emission current is increased. This will decrease the transit time of the electrons in grid-anode space and consequently the wavelength will be decreased.

The various relations with the wavelengths produced, grid potential applied and the emission current as mentioned previously, have beeen critically studied by us and it has been observed that the consideration of the emission current is as important as the grid potential in predicting the lengths of the waves produced by electronic oscillations. A new relation connecting the wavelength produced and both the grid potential and emission current has been derived by the combination of the equations of Barkhausen and Kurz and Tank.

The relation of Barkhausen and Kurz for the wavelength genarated in a triode valve with cylindrical grid and anode is given by

$$\lambda = \frac{10^3}{E_g^{\frac{1}{2}}} \left[\frac{d_a\, E_g - d_g\, E_a}{E_g - E_a} \right]$$

where E_g and E_a are grid and anode potentials in volts, d_g and d_a are the diameters of the grid and anode in cms. respectively and λ is the wavelength generated in cms.

For a simplified case as employed in the present investigations, when the anode is maintained at the same potential as the negative end of the filament, we get

$$\lambda^2 E_g = \text{constant} \qquad \dots \quad (1)$$

The relation of Tank for the wavelength generated and the emission current is given by

$$\lambda^3 I_e = \text{constant} \qquad \dots \quad (2)$$

From equations (1) and (2) we get

$$\lambda E_g^{\frac{1}{2}} I_e^{\frac{1}{3}} = \text{constant}. \qquad \dots \quad (3)$$

The above equation has been experimentally verified as described in later section.

EXPERIMENTAL ARRANGEMENT AND OBSERVATIONS

The apparatus used for the present investigations was almost similar to that used by Barkhausen and Kurz after the modification of Gill and Morreil. A pair of Lecher wires LL (Fig. 1), each 130 cm. long and spaced 5·5 cm. apart, was connected to the grid and anode of a triode valve. The anode and grid were concentric cylinders encircling the straight filament at the common central axis. The desired effective length of the external circuit was obtained by altering the position of a sliding bridge consisting of a fixed condenser C of 0·002 micro-farad capacity. A high variable positive potential was applied to the grid through a filter F, which was connected to 440-volts D C. mains. The anode was connected to the negative end of the filament through a sensitive calibrated galvanometer CG. The grid and anode potential leads were connected to the two ends of the bridge condenser C as shown in the figure. The filament current was measured with an ammeter A in Fig. 1. A milli-ammeter MA in the grid circuit and the galvanometer CG in the anode circuit together measured the total emission current. After the filament was heated to the desired temperature, the potential applied to the grid was measured by means of an electrostatic voltmeter to avoid any leakage of current through the instrument.

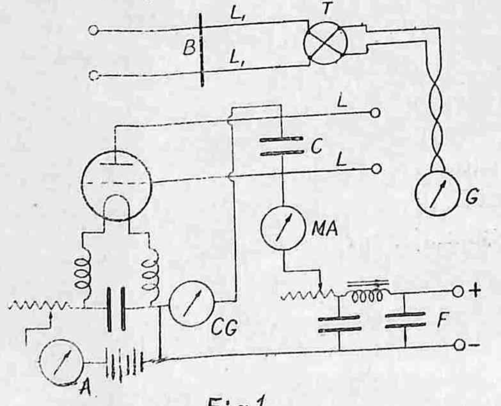

Fig 1.

6A

The lengths of the ultra-high frequency waves generated were measured by an auxiliary Lecher wire system L_1L_1, loosely coupled to the oscillator. Two ends of the auxiliary Lecher wires were joined to the heater terminals of the vacuo thermo-junction T which was connected to a sensitive galvanometer G. A metal sliding-bridge B was moved on the auxiliary Lecher wire system in order to get the position of maximum current in the glavanometer from which the wavelength could be determined. Equation (3) of the last section was verified with various lengths of the external circuit. The wavelengths produced have been noted with different grid potentials and different emission currents obtained by changing the filament heating current. Total emission current was obtained from the sum of grid and anode currents. Two typical sets of observations verifying equation (3) are given below in Tables I and II for two fixed lengths of the external circuit. The second column of these tables show the values of total emission current. For observations in Table I the bridging condenser was placed at 50 cms. away from the grid terminal and for those in Table II it was placed 100 cms. away

TABLE I

Grid potential (E_g) in volts.	Emission current (I_e) in milli-amperes.	Wavelength generated (λ) in cms.	$\lambda E_g^{\frac{1}{2}} I_e^{\frac{1}{3}}$.
80	50	174	573·3
80	68	156	569·5
80	76	152	590·2
100	52	152	582·2
100	70	144	593·4
100	98	128	589·6
120	52	144	588·0
120	115	100	586·1
120	160	94	576·5
140	65	120	570·9
140	110	106	587·2
160	80	106	577·9

TABLE II

Grid potential (E_g) in volts.	Emission current (I_e) in milli-amperes.	Wavelength generated (λ) in cms.	$\lambda E_g^{\frac{1}{2}} I_e^{\frac{1}{3}}$.
80	60	194	679·4
80	68	186	679·0
80	70	184	677·0
100	68	168	687·7
100	95	150	684·4
100	95	144	675·4
120	72	148	671·6
120	120	126	681·0
120	145	118	679·2
140	80	132	673·2
140	140	110	675·9

It will be noted from the above tables that the values in the last column are nearly constant. The numerical value of this constant, however, changes by a small amount with the variation of the external circuit associated with the valve. This is due to the change in wavelength produced by altering the length of the external circuit as the observations were taken in the region of Gill and Morrell. It will be further observed from each of the above tables that, for the same value of the grid potential, the length of the emitted wave was reduced as the emission current was increased. The intensity of the oscillations, however, increased with the increase of the emission current.

Table III shows below how the wavelength varies with the gradual change of length of the associated external circuit.

Grid Potential = 80 Volts.
Emission Current = 55 Milli-amperes.

TABLE III

Length of the external circuit in cms.	Wavelength generated (λ) in cms.
0	144·0
25	148·6
50	150·4
75	156·0
100	158·8
125	162·6

That the waves generated for the experimental observations were of the Gill and Morrell type was further tested by the method of Cockburn by drawing the curves showing the variation of anode current with grid potential. The portions of such curves within which the anode current remains constant, indicate the region of grid potentials for the production of Barkhausen and Kurz oscillations. The other parts of the curve in which the anode current is constantly varying, correspond to Gill and Morrell oscillations. The variations of anode current with grid potential have been shown in Fig. 2. Curves A and B have been drawn for two values of filament-heating currents used in the above experiments. It will be observed from these curves that, within the limits of grid potentials (80 to 140 volts) used in the above experiments, there is no part of the curves for which the anode current remained constant for a considerable range of grid potential.

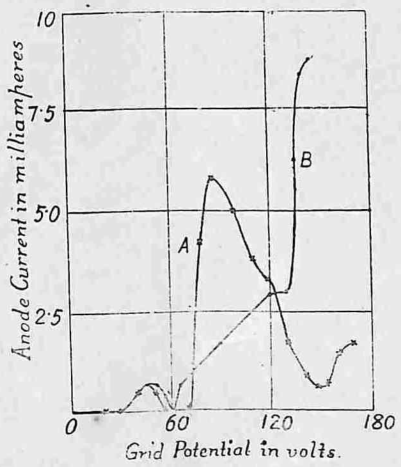

Fig. 2.

SUMMARY AND CONCLUSION

A detailed study of the generation of ultra-high frequency radio waves by electronic oscillations in a triode valve has been made in the present investigation. The effect of the emission current on the lengths and intensity of the waves generated has been critically examined and a relation concerning the emission current, grid potential and the wavelength generated has been derived. This has been experimentally verified and typical observations have been recorded. It has been concluded that the consideration of emission current is of considerable importance in predicting the wavelengths generated by these oscillations. It has been found that the lengths of the generated waves decreased as the emission current was increased at the same value of grid voltage. The intensity of the waves, however, increased under the same condition. The oscillations generated in the present investigations belonged to Gill and Morrell type. This has been shown by the method of Cockburn by drawing curves indicating the variation of of anode current with grid potentials. It has been further shown that, for such oscillations, the lengths of waves generated altered with the change of length of the external circuit associated with the valve.

The authors desire to express their thanks to Dr. B. Dasannacharya, Head of the Department of Physics, for giving all facilities during the course of the above investigations.

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Voltage gain of Low Frequency Amplifiers with Negative Resistance

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Voltage Gain of Low Frequency Amplifiers with Negative Resistance

The total voltage gain of low frequency valve amplifiers is often found to be sensibly less[1,2,3] than the value calculated from the associated circuit and tube constants. A close analysis of the circuit of a resistance-capacity coupled amplifier has shown that the attenuation of the voltage transferred from one stage to the other is mainly due to the various inter-valve coupling components. It has been found that out of these components the grid resistance only can be varied at will in order to partly compensate the loss of voltage incurred without causing any serious effect on the working conditions of the apparatus. It has been further shown that the minimum loss of voltage can be obtained with negative resistance in the grid circuit.

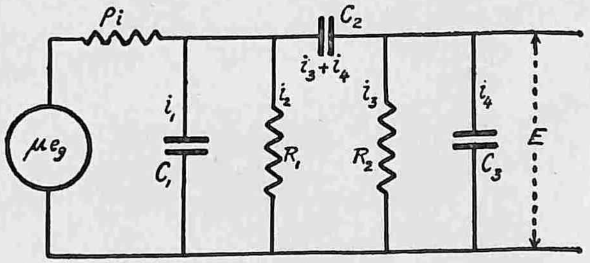

Fig. 1.

Fig. 1 represents the equivalent circuit of a low frequency resistance-capacity coupled amplifier consisting of two valves. e_g is the input potential applied to the grid of the first valve of internal resistance ρ and μ is the amplification factor of the valve. E is the amplified voltage delivered to the grid of the second valve. C_1 and C_3 represent the inter-electrode capacities of the first and second valve respectively. R_1 indicates the plate load resistance and R_2 represents the combination of the grid-leak and input resistance of the second valve.

If ω be the angular frequency of the input e.m.f. we can write the circuit equations with the notations of currents in different branches shown in fig. 1 as the following.

$$i = i_1 + i_2 + i_3 + i_4 \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (1)$$

$$\mu e_g = \rho i + i_1/j\omega c_1 \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (2)$$

$$R_1 i_2 = i_1/j\omega c_1 \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (3)$$

$$R_1 i_2 = (i_3 + i_4)\left(\frac{1}{j\omega c_2}\right) R_2 i_3 \quad . \quad . \quad . \quad . \quad (4)$$

$$R_2 i_3 = i_4/j\omega c_3 \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (5)$$

From the above equations it can be shown that the absolute value of voltage output will be given by,

$$|E| = \frac{\mu e_g}{\sqrt{\left(A + \frac{B}{R_2}\right)^2 + \left(C - \frac{D}{R_2}\right)^2}} \quad . \quad (6)$$

where $A = 1 + \frac{c_3}{c_2} + \frac{\rho}{R_1} + \frac{\rho c_3}{R_1 c_2}$,

$$B = \frac{\rho c_1}{c_2} + \rho,$$

$$C = \frac{\omega \rho c_1 c_3}{c_2} + \omega c_1 \rho + \omega c_3 \rho,$$

and $D = \frac{\rho}{\omega R_1 c_2} + \frac{1}{\omega c_2}$.

From equation (6) we get the condition for maximum transfer of energy from plate of the first valve to the grid of the second, as

$$R_2 = \frac{B^2 + D^2}{DC - AB} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (7)$$

Equation (7) shows that the value of R_2 is negative as DC is always less than AB.

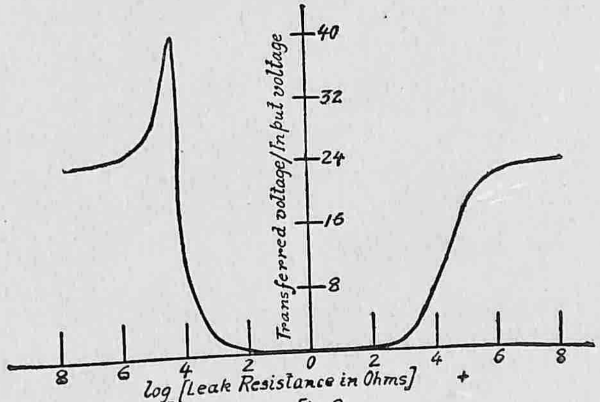

Fig 2.

Fig. 2 shows a typical curve depicting the mode of variation of the overall amplification in terms of the ratio between the input voltage and the transferred voltage measured at the grid of the second valve, when the leak resistance is altered gradually from positive to negative values, as calculated from equation (6).

The above variation of the amplification and the condition of minimum loss of energy have been experimentally verified by using a dynatron valve as negative resistance in the leak R_2 in fig. 1. The details of the observations will appear very shortly in the *Indian Journal of Physics.*

This paper was read in the Indian Science Congress held at Benares and the authors have great pleasure to express their sincere thanks to Prof. S. K. Mitra of the University of Calcutta for his very helpful discussions and suggestions which he made during his stay in Benares at that time.

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OVERALL VOLTAGE GAIN OF LOW FREQUENCY AMPLIFIERS WITH NEGATIVE RESISTANCE

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By

A. S. RAO

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OVERALL VOLTAGE GAIN OF LOW FREQUENCY AMPLIFIERS WITH NEGATIVE RESISTANCE*

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ABSTRACT. A detailed study of the low-frequency amplifiers has been made to investigate the loss of amplified voltage while it is transferred from one stage to the other. An equivalent circuit of a resistance-capacity-coupled amplifier has been analysed and it is found that the loss of voltage will be minimum with a negative grid resistance the value of which depends on the circuit elements. It is also pointed out that the maximum value of the gain increases for high values of the coupling condenser. The above conclusions are verified by using the negative resistance of a dynatron valve in the grid circuit of the valve in the second stage of the amplifier.

INTRODUCTION

The overall voltage gain of a low-frequency valve amplifier of more than one stage is generally found to be sensibly less than that calculated theoretically from the constants of the valves used and the circuit components connected with them. This disagreement has often been attributed partly to the stray and fixed capacities and inductances involved in the circuit, and partly to the behaviour of the valve under the circumstances.[1 2 3]

In the present communication a detailed study has been made of low-frequency amplifiers investigating the cause of the loss of amplified voltage when the energy is transferred from one valve to the next following it. A preliminary note on this has already been published.[4] A two-stage low-frequency resistance-capacity-coupled amplifier was employed for the present investigation and it has been found after analysis of such circuit that the primary seat of attenuation of voltage transferred from one stage to the other lies in the intervalve coupling components. Out of all the components the grid resistance of the second valve only can be varied at will for compensating the loss of voltage incurred without causing any serious alteration in the circuit or valve parameters. The minimum loss of voltage is, however, obtained only by a negative resistance in the grid circuit of the second valve, the exact value of which has been calculated mathematically as shown subsequently. The condition of minimum loss has been verified experimentally by applying a negative resistance with a dynatron valve along with a fixed positive resistance in parallel with it in the grid circuit of the second valve. The resistance of the dynatron was varied from positive to negative values by changing the grid and plate potentials applied, and the gradual change of the overall amplification passing through the maximum value has been recorded.

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THEORY

The equivalent circuit diagram of a resistance-capacity-coupled low-frequency amplifier is shown in fig. 1. R_1 represents the plate resistance of the first valve

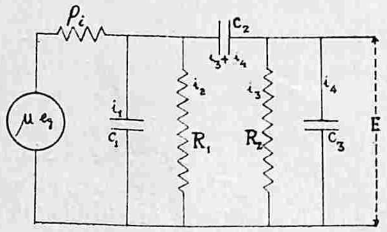

FIG. 1

and R_2 represents the grid resistance of the second valve. C_1 and C_3 are the inter-electrode capacities of the valves. C_2 is the coupling condenser. ρ represents the internal resistance of the first value V_1. Let i_1, i_2, i_3 and i_4 be the currents flowing through different branches of the circuit and i the total current as shown in fig. 1.

If w be the angular frequency of the input e.m.f., the following circuit equations can be obtained from fig. 1.

$$i=i_1+i_2+i_3+i_4 \qquad \dots \quad (1)$$

$$\mu e_g=\rho i+\frac{i_1}{jwC_1} \qquad \dots \quad (2)$$

$$R_1 i_2=\frac{i_1}{jwC_1} \qquad \dots \quad (3)$$

$$R_2 i_3=\frac{i_4}{jwC_3} \qquad \dots \quad (4)$$

$$R_1 i_2=\frac{i_3+i_4}{jwC_2}+R_2 i_3. \qquad \dots \quad (5)$$

If the value of i_2 obtained from equation (5) be substituted in equation (3) and i_4 be expressed in terms of i_3, we will get

$$i_1=\frac{C_1}{C_2}(i_3+jwC_3R_2i_3)+jwC_1R_2i_3. \qquad \dots \quad (6)$$

From equations (1) and (2) we get after some simplifications

$$\mu e_g=\rho\left\{\frac{C_1}{C_2}(i_3+jwC_3R_2i_2)+jwC_1R_2i_3\right\}$$
$$+\frac{\rho}{R_1}\left\{\frac{1}{jwC_2}(i_3+jwC_3R_2i_3)+R_2i_3\right\}$$
$$+\rho i_3+jwC_3\rho R_2i_3+\frac{1}{jwC_2}(i_3+jwC_3R_2i_3)+R_2i_3. \qquad \dots \quad (7)$$

Taking the output voltage E to be equal to $R_2 i_3$ and eliminating the currents we can rewrite the above equation (7) as

$$\mu e_g=E\left[\left\{1+\frac{\rho C_1}{R_2C_2}+\frac{\rho C_3}{R_1C_2}+\frac{\rho}{R_1}+\frac{\rho}{R_2}+\frac{C_3}{C_2}\right\}\right.$$
$$\left.+j\left\{\frac{w\rho C_1C_3}{C_2}+w\rho C_1-\frac{\rho}{wC_2R_1R_2}+\rho wC_3-\frac{1}{wC_2R_2}\right\}\right]. \qquad \dots \quad (8)$$

From equation (8) the absolute value of E will be given by

$$|E|=\frac{\mu e_g}{\sqrt{\left(A+\frac{B}{R_2}\right)^2+\left(C-\frac{D}{R_2}\right)^2}} \qquad \dots \quad (9)$$

where

$$A=1+\frac{C_3}{C_2}+\frac{\rho}{R_1}+\frac{\rho C_3}{R_1C_2}$$

$$B=\frac{\rho C_1}{C_2}+\rho$$

$$C=\frac{w\rho C_1C_3}{C_2}+wC_1\rho+wC_3\rho$$

$$D=\frac{\rho}{wR_1C_2}+\frac{1}{wC_2}.$$

It may be pointed out that in order to obtain the maximum value of E, the voltage developed across the grid and the filament of the second valve, the plate resistance R_1 cannot be changed to a large extent as it will alter the working conditions of the valve. The loss of transferred voltage decreases with the increase of the capacity of the coupling condenser C_2 and it will be minimum when the capacity reaches infinity. But this is not practicable as it will make the grid of the second valve highly positive and the valve will cease to function.

Therefore in order to get the maximum value of $|E|$ we differentiate the equation (9) with respect to grid resistance R_2 and get

$$\frac{d|E|}{dR_2} = -\mu e_g\left\{\left(A+B/R_2\right)^2+\left(C-D/R_2\right)^2\right\}^{-3/2}$$

$$\left\{\frac{D}{R_2^2}\left(C-D/R_2\right)-\frac{B}{R_2^2}\left(A+B/R_2\right)\right\}. \qquad \ldots \quad (10)$$

Equating the expression for $\frac{d|E|}{dR_2}$ to zero, we get the condition for maximum or minimum value of transferred voltage given by

$$R_2=\frac{B^2+D^2}{DC-AB}$$

$$=\frac{\rho_2+\frac{\rho^2C_1^2}{C_2^2}+\frac{2\rho^2C_1}{C_2}+\frac{\rho^2}{w^2R_1^2C_2^2}+\frac{1}{w^2C_2^2}+\frac{2\rho}{w^2R_1C_2^2}}{-\left(\rho+\frac{\rho^2}{R_1}\right)}. \qquad \ldots \quad (11)$$

Differentiating $|E|$ once more with respect to R_2 we have

$$\frac{d^2|E|}{dR_2^2}=\mu e_g\left\{\left(A+B/R_2\right)^2+\left(C-D/R_2\right)^2\right\}^{-5/2}$$

$$\left[3\left\{\frac{D}{R_2^2}\left(C-D/R_2\right)-\frac{B}{R_2^2}\left(A+B/R_2\right)\right\}^2\right.$$

$$\left.-\left(\frac{3B^2}{R_2^4}-\frac{2DC}{R_2^3}+\frac{2AB}{R_2^3}+\frac{3D^2}{R_2^4}\right)\left\{(C-D/R_2)^2+(A+B/R_2)^2\right\}\right]. \quad (12)$$

Substituting, the value of R_2 from equation (11) in the above equation and simplifying, we get

$$\frac{d^2|E|}{dR_2^2}=-\mu e_g\left\{\left(A+B/R_2\right)^2+\left(C-D/R_2\right)^2\right\}^{-3/2}$$

$$\frac{1}{R_2^4(B^2+D^2)}\left(2AB^3CD+A^2B^2D^2+2ABCD^3\right.$$

$$\left.+A^2D^4+B^4C^2+B^2C^2D^2\right). \qquad \ldots \quad (13)$$

From the above equation it will be observed that the value of $\frac{d^2|E|}{dR_2^2}$ is

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negative. Thus the expression for R_2 given in equation (11) corresponds to the maximum value of the transferred voltage.

From equation (11) it will be observed that the resistance required for minimum loss of voltage will be always negative and the magnitude of this will depend on the constants of the valve used and the values of other associated components. This condition for maximum transfer of voltage has been verified by applying the negative resistance of a dynatron valve between the grid and the filament circuit of the second valve of the amplifier as shown in the next section.

Two typical curves have been drawn in fig. 2, to indicate the variation of the voltage gain in decibels when the grid resistance is altered from positive to negative values. The voltage gain is calculated from equation (9). Curve A in fig. 2 has been drawn for high value of coupling condensers and B for low value of the same. From these curves it will be observed that the magnitude of the negative resistance for maximum transfer of voltage decreases as the capacity of the coupling condenser is increased. It will finally reach a limit of about 10,000 ohms with very large value of coupling condensers. It will be further observed that the maximum value of the voltage gain increases very rapidly as the capacity of the coupling condenser is increased. This is shown by the peak of the curve A at P. It may be noted that under suitable circumstances voltage gain with negative resistance may be substantially higher than that with positive resistance. The portions of the curves for negative voltage gain have not been shown in fig. 2, but they can be easily computed from equation (11).

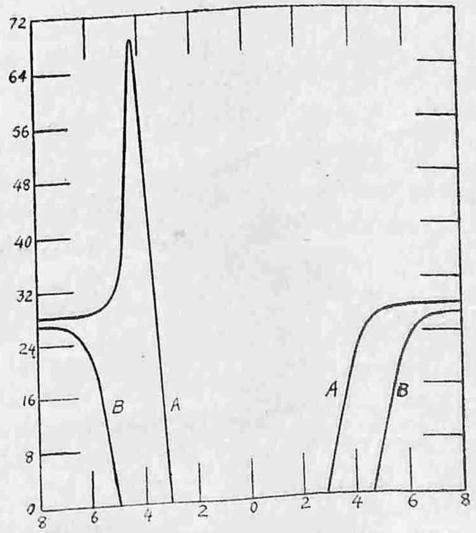

FIG. 2

Experimental Arrangement and Observations

The connections were made as shown in fig. 3 above. V_1 and V_2 represent the two valves of different stages of the amplifier. Other notations for different components are retained the same as in fig. 1. The overall amplification is obtained by measuring the amplified voltage E across the grid of the second valve by a thermionic voltmeter. A small input voltage was applied between the grid and the filament of the first valve from an audio-frequency valve oscillator through an attenuator. Different values of positive and negative resistances were applied in the grid circuit by a dynatron valve V_3 of internal resistance r_1 along with two other resistances r_2 and r_3. Thus the combination of r_1, r_2 and r_3 is equivalent to R_2 in fig. 1. The values of the positive and negative resistances of the valve were obtained from its characteristics drawn under similar conditions.

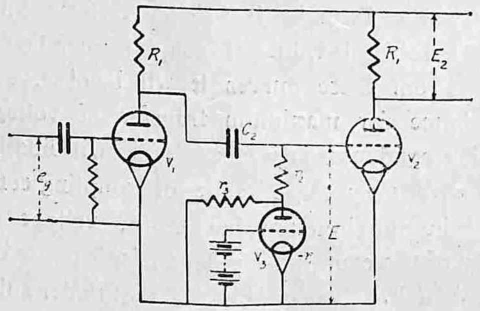

FIG. 3

Table I below gives the observed and calculated values of $|E|/e_g$ for different negative grid leak resistances R_2 of the second valve, with the following circuit constants :

$\rho = 3{,}25{,}000$ ohms,

$\mu = 25$,

$C_2 = .002$ microfarad,

$C_1 = C_3 = 10$ micro-microfarads,

$R_1 = 2{,}50{,}000$ ohms,

R_2 for minimum loss of voltage $= -1.87 \times 10^5$ ohms.

TABLE I

Negative grid leak resistance (R_2) in ohms	Voltage gain (calculated) in decibels	Voltage gain (observed) in decibels
7.1	22.5	21.7
6.0	22.8	22.1
5.0	23.3	22.7
4.1	23.9	23.5
3.5	24.5	24.7
3.0	25.1	25.5
2.8	25.4	25.6
2.1	26.5	26.1
1.9	26.6	26.4
1.5	24.9	26.0
0.5	8.9	11.1

Fig. 4 is drawn to show the variation of voltage gain with negative values of R_2. The continuous curve is drawn from the theoretically calculated values and dotted one from experimentally observed values.

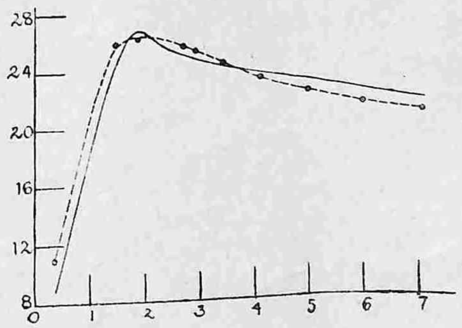

FIG. 4

SUMMARY

Analysis of the circuit of a low-frequency resistance-capacity-coupled amplifier has shown that the loss of voltage incurred in transferring the energy from one stage to the other is minimum with negative resistance in the grid circuit of the second stage of the amplifier. The value of the negative resistance required for minimum loss has been calculated theoretically from the equations derived for the purpose and it has been experimentally verified by inserting a dynatron valve in the grid circuit: It has been shown that the maximum voltage gain with negative resistance is always higher than the gain with positive resistance.

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In conclusion, I express my deep sense of gratitude to Dr. S. S. Banerjee for suggesting the problem and constant help during the progress of the above work.

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