

S. V. P. H.

(19450) Department.

Ms. SERIES.

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close
Ch

G.O. NO. 424. Education.

Dated 10.2.50.

(61)

[Despatch Abstract.]

Overseas Scholarships. 1946-47. Sri. M.
Huthukrishnan - Paper re: to his studies.
Recorded.

Back Papers.

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

Further Papers.

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

No. F.7-2/S.19/46.S.II.,
Government of India,
Ministry of Education,

(N)

New Delhi 3, the 13th September, 1948.



Dr. Tara Chand, M.A., D.Phil.,
Secretary to the Government of India.

To

68557

The Secretary
to the Government of Madras,
Department of Education & Public
Health, MADRAS.



SCHOLARSHIPS FOR ADVANCED STUDIES OVERSEAS -
REPORTS IN RESPECT OF MADRAS GOVERNMENT
SPONSORED SCHOLARS IN UNITED STATES OF AMERICA.

Sir,

I am directed to forward herewith for the
information of the Provincial Government a copy of a
semester report in respect of Mr. M. Muthukrishnadu
a Madras Government 1946/47 sponsored ~~sponsored~~ scholar.

The Provincial Government may kindly forward to
this Ministry, suggestions, if any, in respect of the
scholar's further training, particularly from the
point of view of the employment Mr. Muthukrishnadu is
expected to take up on his return.

Yours faithfully,

Harshehanda
for Secretary.

Indorsement 68557 of L.S. 1 Edn 2d 9.46 Edn a PH Dept
Refers to the Director of Public Instruction
for remarks. The scholar is expected to
return to India in August 1949 and is
intended for absorption in the teaching personnel
of Engineering Colleges.

(By order).

The Director of Public Instruction.

Asst. Secretary to Govt.
L.S.
TAM

REPORT

1947-48 May 1948.

JUN 7 1948

Name in block capitals MOOLAM MUTHUKRISHNUDU.Scholarship by Education and Public Health dept.,Government of Madras.

Date of commencement of scholarship.

28th July 1947.

Course of study or training sanctioned and date of approval. Degree sought and date of examination.

generation, Transmission and utilization
of Electric Power - June 1946.
M. S.
May 1949.

University, College or Works in which scholar is pursuing his training.

Brooklyn Polytechnic,
New York.

Course of study or training attended during session 1947-48.

Electrical Engineering

All Examinations (including subjects) taken and results and date. (In the Final Examination the degree or diploma obtained should be stated, with subjects taken and honours, if any.)

Separate sheet attached.

Any Prizes or other Distinctions.

FOR STUDENTS TAKING PRACTICAL TRAINING:

Name of Firm.	Period	Nature of training.
---------------	--------	---------------------

Education Department,
Indian Embassy,
Washington, D. C.Signed M. Muthukrishnu
Date 3rd June 1948.

Satisfactory
J. B. Woodley
Associate Professor

For Official Use Only

DEPARTMENTAL OBSERVATIONS

Satisfactory 7 B, 2 A 2 C
A. W. S. Hyatt
13.7.48

M. Muthu-krishnadu
Electrical Engineering (Major Power)
Polytechnic Institute of Brooklyn
Brooklyn 2, New York.

<u>Subject</u>	<u>Final Grade</u>	<u>Date</u>
<u>Fall Semester:</u>		
1. Functions of a Complex Variable I	A	Jan 14, '48.
2. Vector Analysis	B	Jan 20, '48.
3. Design of Electrical Machines I	A	Jan 22, '48.
4. Power Transmission & Distribution I	C	Jan 24, '48.
5. Transients in Linear Systems I	B	Jan 26, '48.
6. Electronics I (<i>undergraduate</i> <i>Course</i>)	C	Jan 21, '48.
7. Seminar in Electrical Engineering	(Satisfactory)	Jan 20, '48.
<u>Spring Semester</u>		
1. Design of Electrical Machines II	B	May 27, '48.
2. Power Transmission & Distribution II	B	May 28, '48.
3. Advanced Electric Machinery II	B	May 20, '48.
4. Transients in Linear Systems II	B	May 26, '48.
5. Electronics II (<i>undergraduate</i> <i>Course</i>)	B	May 28, '48.
6. Seminar in Electrical Engineering	(Satisfactory)	May 28, '48.
7. Thesis	(Working on it at present.)	

Brooklyn, N.Y.,
June 3, '48.

M. Muthukrishnadu
M. Muthukrishnadu.

NO.F.7-8/S.19/46 SII.
GOVERNMENT OF INDIA
Ministry of Education

New Delhi 3, the 28th SEPT., 1948.

From

Dr. Tara Chand, M.A., D.Phil. (Oxon),
Secretary to the Govt. of India.

To

The Secretary to the Govt. of Madras,
Education & Public Health Deptt., MADRAS.

SUB: OVERSEAS SCHOLARSHIPS 1946-47 - MADRAS GOVT.
SCHEME - MR. M.MUTHUKRISHNUDU.

Sir,

I am directed to forward for the information
of the Provincial Govt. a copy of the Semester Report for
the period January, 1948 to May 1948 in respect of the
above scholar, who has been received in this Ministry
from the Indian Embassy in Washington.

Yours faithfully,

Vikram Singh
for Secretary.



'THAKUR'23

File to action is
Call for.

10/2
5.4.48

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6.10.48

MM
7/10/48

REPORT. Jan. to May
1948 - 1948

In every case, it is essential for you to state the degree, if any, for which you are studying. The likely date of taking the degree should in all cases be mentioned. If you are not studying for a degree, please mention the likely date when you hope to complete the course of study you are pursuing. Where you have already taken a degree, please give the date of taking it and state what you have been doing since taking the degree and when you hope to complete the course of training you are undergoing at present. It is, of course, presumed that you know the original duration of your scholarship and that you have planned your entire programme accordingly.

Name in block capitals.

M. MUTHUKRISHNUDU

Scholarship.

PROVINCIAL

Government. OF MADRAS.

Date of commencement of scholarship. 28th July, 1947.

Subject for which Scholarship awarded : Generation, Transmission and utilization of Electric Power.

Course of study or training sanctioned and date of approval. Degree sought and date of examination. Electrical Engineering (Major in Power) June, 1947.

M.S. MAY 1949.

University, College or Works in which scholar is pursuing his training.

The Polytechnic Institute, Brooklyn New York.

Course of study or training attended during session 194 .

Electrical Engineering.

All Examinations (including subject) taken and results and date. (In the Final Examination the degree or diploma obtained should be stated, with subjects taken and honours, if any).

Sheet attached.

Any Prizes or other Distinctions.

FOR STUDENTS TAKING PRACTICAL TRAINING:

Name of Firm.

Period.

Nature of training.

Edn. Deptt. Indian Embassy Washington DC.

Sd/- M. Muthukrishnudu.

Date. 9th May 1948.
P.T.O.

10 4
University College or Works Report on the work of the scholar during the period under review :-

His work is good.

Sd/----

Associate Prof.

FOR OFFICIAL USE ONLY.

DEPARTMENTAL OBSERVATIONS.

GOOD PROGRESS

SD/ A.M.D'ROZARIO
17/8/48

@*@*@*@*@*@

'THAKUR'D.
500/-10.8.48.

8 11
SPRING SEMESTER REPORT

SUBJECT

GRADE.

- | | |
|---|---|
| 1. Transients in Linear Systems II | B |
| 2. Power Transmission & Distribution II | B |
| 3. Design of Electrical machines II | B |
| 4. Electronics II (4 credits) | B |
| 5. Seminar in Electrical Engg. § | - Satisfactory. |
| 6. Thesis work - | At present, an working on the sub-
ject. |
| 7. Advanced A.C.Machinery. | - B |

Sd/- M.MUTHUKRISHNUDU.

10
12
No. F.7-8/S.19/46-S.II.,
Government of India,
Ministry of Education,

ASE 137
New Delhi 3, the 6th October, 1948.

From

Dr. Tara Chand, M.A., D.Phil.,
Secretary to the Government of India.

To
8 OCT 1948

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

ADVANCED STUDIES OVERSEAS IN RESPECT
OF MR. M. MUTHUKRISHNUDU, MADRAS
GOVERNMENT 1946/47 SPONSORED SCHOLAR.

74957
Frank
P/S wifa
Sir,

In continuation of this Ministry letter
of even number dated 28th September, 1948 regarding
the above scholar, I am directed to forward herewith
a report on recent tours undertaken by Mr. Muthu-
krishnudu, received from the Indian Embassy, Washington
in this Ministry.

Yours faithfully,

Vikram Singh 4/K.
(VIKRAM SINGH)
for Secretary.

Punn/3.10.

EPH
12

'THAKUR'D.
500/-10.8.48.

102
do p. 48
JP
now
24/10/48

BRIEF REPORT OF THE TOUR.

The tour party left New York for Schenectady where we visited The General Electric Plants and were shown the manufacture of all kinds of cables and turbines, done on a large scale. Then we proceeded to Rochester and on our way we dropped at Syracuse to visit the University. At Rochester we were shown round The Kodak Plants. Reaching Niagara Falls we made efforts to get permission for visiting The American Cynamide Company and The International Graphite Company.

Though we had already written to their head office in advance, we were however refused permission to visit ^{on} grounds of being foreigners.

At Ottawa we visited The Canadian Research Council, Government Experimental Farms and The Observatory. While in Montreal we saw The McGill University.

On our arrival at Quebec we visited The ^{Anglo} American Canadian Pulp & Paper Company. From Quebec we returned to New York and left for Boston where we saw Massachusetts Institute of Technology and Harvard University. At NewHaven we visited Yale University and finally broke journey for seeing the research laboratories of The American Cynamide Company at Stamford.

M. Muth K. S. L.
Regarding 'A' making necessary enquiries.
3/18/08

16
CV
17 (10)
OFFICE OF THE
DIRECTOR OF PUBLIC INSTRUCTION, MADRAS.

R.C. No.3207 C.1/48, Dated 6th November, 1948.

Subject:- Scholarships for advanced studies overseas - 1946-47 Scholar -
Sri M.Muthukrishnudu - Report of progress.

Reference:- Government Education and Public Health Department Endorsement
No.68557 C.2/48-1 Edn., dated 21-9-1948.

05077

ASST. SECRETARY TO GOV.

11 NOV 1948

Resubmitted.

2. The course of studies pursued by Sri M. Muthukrishnudu
is suitable and the scholar may complete the M.S. degree course at
the Brooklyn Polytechnic. Arrangements for practical training in
some works or factory may be made during the long vacations and for
a short period of 3 months or so after completion of the degree course.

[Signature]
DIRECTOR OF PUBLIC INSTRUCTION.

To

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

or factory during the long vacations
and for a short period of three
months or so after completion of the
degree course but within the normal period
of scholarship of two yrs. Y.f.

12.11.48

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15/1/49

MM
17/11/48

Note: Please see the D.P.I. letter on p.17 C.F.
~~The Candidate's scholarship~~ The D.P.I. recommends
practical training for 3 months or so after
completion of the degree course. The Candidate's
scholarship commenced on 28.7.47 and
ordinarily it ends by the end of July 49. He p.3 C.F.
is expected to complete his M.S. Course in

May '49. It may be possible to have
the practical training recommended by
the D.P.I. without extending the period of
scholarship of 2 yrs. The Govt. may however
be informed that the practical training
may be arranged within the normal period
of 2 yrs. The draft above is for approval.

12.11.48

JP
15/1/49

MM
17/11/48

23
No.F.7-8/S-19/46 SII.
Government of India,
Ministry of Education.

New Delhi, 3, the, 16 November, 1948.

Dr. Tara Chand., M.A., D.Phil.,
Secretary to the Government of India.

His Excellency the Ambassador for India,
Education Department Indian Embassy
2111, Massachusetts Avenue,
Washington D.C.

Subject:- Advanced Studies Overseas in respect of
Mr. M. Muthukrishnu, Madras Govt. 1946-47
sponsored Scholar.

Sir,

In continuation of this Ministry endorsement
of even No. dated 28th September 1948 on the above subject,
I am directed to forward herewith for necessary action a
copy of letter No. 68557-C2/48-2 Edu. dated 17th November,
1948 from the Provincial Government to this Ministry.
Arrangements made in this connection may kindly be intimated
to this Ministry in due course.

Yours faithfully,

sd. V. Singh
for Secretary.

Copy to the Secretary to the Government of Madras, Education
and Public Health Department, Madras.

By Order,

Vishram Singh
for Secretary.

SS/25/11/

Files.

KPM/2

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3 12/48

103
4/12/48

JP
31/12/48

EXPRESS LETTER

EDHEALTH MADRAS

F.7-8/8-19/46-S.II. REFERENCE CORRESPONDENCE RESTING WITH THIS
MINISTRY ENDORSEMENT OF EVEN NUMBER DATED 26TH NOVEMBER 1948
REGARDING MR.M.MUTHUKRISHNUDU, MADRAS GOVERNMENT 1946-47 SPONSORED
SCHOLAR.

2. ENCLOSED HEREWITH IS A COPY OF AN APPLICATION FOR EXTENSION
IN THE PERIOD OF HIS SCHOLARSHIP, RECEIVED FROM THE SCHOLAR
THROUGH INDIAN EMBASSY, WASHINGTON IN THIS MINISTRY. THE SCHOLAR
HAS REQUESTED FOR FOUR MONTHS EXTENSION UPTO 27TH NOVEMBER, 1949
TO ENABLE HIM TO DO SIX MONTHS PRACTICAL TRAINING AFTER HE
COMPLETES THE U.S. COURSE IN ELECTRICAL ENGINEERING AT BROOKLYN
POLYTECHNIC IN MAY, 1949. THE INDIAN EMBASSY AND THE SCHOLAR'S
PROFESSOR HAVE RECOMMENDED THE SCHOLAR'S REQUEST FOR PRACTICAL
TRAINING.

3. GOVERNMENT OF INDIA ARE INCLINED TO AGREE TO THE SCHOLAR'S
REQUEST PROVIDED THE PROVINCIAL GOVERNMENT CONSIDER THE PROPOSED
PRACTICAL TRAINING NECESSARY SO AS TO JUSTIFY THE GRANT OF THE
EXTENSION ASKED FOR.

4. THE PROVINCIAL GOVERNMENT MAY KINDLY CONSIDER THE MATTER
PARTICULARLY FROM THE VIEWPOINT OF THE SCHOLAR'S EMPLOYMENT ON
HIS RETURN AND COMMUNICATE THEIR DECISION TO THIS MINISTRY AT
AN EARLY DATE.

EDUCIND

1: MAR 1949

Endorsement 68557 2/48-3 Edu 926 2.48

Referred to the Director of Public Instruction
for urgent remarks. His attention is invited
to his no. 3207-C1/48 & 6.11.48.

(By order)

R.K.16/2/49

Asst. Secretary to Govt.

New Delhi 3, the 16th January, 1949.

(Vikram Singh)
for Secretary,

Government of India,
Ministry of Education,

No. F.7-8/8-19/46-S.II.
Government of India,
Ministry of Education.

New Delhi, 3, the 16th November, 1948.

Dr. Tara Chand, M.A., D.Phil.,
Secretary to the Government of India.

His Excellency the Ambassador for India,
Educational Department Indian Embassy,
3111 Massachusetts Avenue,
Washington D.C.

Advanced Studies Overseas in respect of
Mr. M. Muthukrishnu, Madras Govt. 1946-47
sponsored scholar.

Subject:-

In continuation of this Ministry endorsement
of even No. dated 28th September 1948 on the above subject,
I am directed to forward herewith for necessary action a
copy of letter No. 68557-C2/48-3 Edu. dated 17th November,
1948 from the Provincial Government to this Ministry.
Arrangements made in this connection may kindly be intimated
to this Ministry in due course.

Yours faithfully,

24.11.48
for Secretary.

Copy to the Secretary to the Government of Madras, Education
and Public Health Department, Madras.

By Order,

for Secretary.

26

27

(h)

OVERSEAS SCHOLARSHIPS (CENTRAL/PROVINCIAL)
APPLICATION FOR EXTENSION OF PERIOD OF SCHOLARSHIP

(To be filled in triplicate)

N.B. This application must be made in time so as to reach the Government of India, Ministry of Education at least three months before the expiry of the sanctioned period of scholarship.

1. Name of the Scholar. M. Muthukrishnadu.
2. Sponsoring Government. (with year of selection in brackets.) Madras Government. (1946).
3. Date of commencement of scholarship (Date of arrival in U.K./U.S.A.) July 28, 1947.
4. Date of normal termination of scholarship. July 27, 1949.
5. Approved course of study: Generation, transmission and utilization of Electric Power.
6. Details of the courses expected to be completed upto the date of normal termination of scholarship. (Give full details and if the space is insufficient separate sheet may be attached.)

Institution or University attended.	Date of Joining.	Date of Leaving.	Subject with exact branch.	Some details of the course.	Degrees, diplomas or certificates if any, obtained.
(1)	(2)	(3)	(4)	(5)	(6)

(a) Academic courses.

Polytechnic Institute, Brooklyn, N.Y.	Sep. 22, 1947	May 31st, 1949.	Separate sheet attached.	M.S. in Electrical Engineering.
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(b) Practical training.

7. Final date upto which extension is required. Nov. 27, 1949.

8. Reasons why extension is considered essential. After completing my studies in the institute by May 31st, 1949, an extension of four months over the usual period, enables me to undergo Practical Training for the minimum period of six months as advised by Dr. M. Liwachitz-Garik, Professor of Electrical Engineering, Brooklyn Polytechnic, N.Y. My letter for extension and Dr. Garik's letter to that effect are attached herewith.

9. Details of the work to be done during the period of extension (give full details)

Institution or University to be attended.	Duration		Subject with exact branch	Details of the course to be followed.	Degree, diplomas or certificates if any, to be obtained.
	From	To			

(a) Academic courses.

(b) Practical Training.

Westinghouse Electric Manufacturing Company and other firms.	June to Nov. 1949.	Electrical Machinery.	Practical training in the design and manufacture of the electric machines and their apparatus, and their applications.	Certificate.
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Signature of the scholar

M. Mathur

10. Recommendations of the Professor, or other University authority supervising the work of the scholar.

A letter from the Professor is attached.

11. Recommendations of the Embassy.

Strongly recommended that the extension asked for may be granted, if this practical training suggested above is considered necessary by the Government; we consider such training very valuable. His work has been satisfactory.

Agan

Decision on the application.
(to be filled in by the Ministry of Education.)

Sheet to supplement para No. 6

Details of the courses:

(4)

Subject with exact branch.
Theory of electrical machines.

Design of Electrical Machines.

Advanced Alternating-Current Machinery.

Electric Power Machinery and Distribution.

Insulation of Electrical Apparatus.

Power Transmission and Distribution.

(5)

Some details of the course.

This course on electrical machines is an advanced theory which includes: magnetic circuit of highly saturated induction motors & D.C. machines, differential leakage, additional losses caused by magnetic flux & load currents, stray load losses, skin effect losses in armature conductors, heat flow & determination of the temperature rise of winding and iron, commutation of D.C. & A.C. commutator motors and transient & subtransient reactances of the synchronous machines. Application to practical examples.

The following design topics are presented: no-load & full-load excitation of the various types of electrical machines, slot leakage, end-winding leakage, differential leakage. The fundamental relations & the equivalent circuit of the induction motor are then derived & the complete design of the machine with wound rotor & squirrel cage rotor is discussed. Design of the synchronous machines, the theory & design of the D.C. machines, & commutation.

This course involves a discussion of special problems of Ele. M/cs under steady & transient conditions in the following classifications: Operation of induction motor; the stator & the rotor harmonics, asynchronous cusps while running, speed torque curve, locking torques at standstill, synchronous cusps while running, noise due to the radial & tangential forces. Speed and power factor control of induction motor by a rotary converter, by A.C. commutator machine, & by a synchronous machine. Determination of the synchronous machine reactances, synchronizing torque, damping torque, hunting of synchronous machines, short-circuit currents & torques in asynchronous & synchronous machines; damper winding, starting performance, and pulling in-to step of the synchronous motors.

This course covers the theory of direct and alternating current machines and their application to the electric power distribution. Study of the theory and the economic aspects of electric power distribution.

This course reviews the electrical characteristics of the dielectric materials at low and high frequencies within strong electric fields. The basic principles are then given for the design of insulation in electrical machines, transformers and electronic apparatus. Transformers for power and audio frequencies are considered.

This course deals with methods of analysis of power transmission and distribution systems. The first semester is devoted to a study of symmetrical faults and operation under normal conditions, and the second semester to a study of the methods of symmetrical components as applied to unsymmetrical faults and operation under unbalanced conditions.

Subject with exact branch.

(4)

Electronics.

Vector Analysis.

Theory of Functions
of a complex Variable.Transients in Linear Sys-
tems.

Electromagnetic Theory.

Water Power
Engineering.

2.

Some details of the course.

(5)

The first semester is devoted to the study of the phenomena within electron tubes. The content of the course includes thermionic emission, motion of electrons in vacuum & gas tubes, cathode ray formation & deflection, properties & characteristics of various vacuum & gas tubes, photo-electric tubes, and cathode ray tubes. The Laboratory Work illustrates the characteristics and basic applications of electron tubes. During the second semester this course treats those topics in electronic circuits which are of interest to the students in all fields of electrical engineering. The discussion includes diode rectification, power supply filters, poly-phase rectifiers, the equivalent circuits of tubes, voltage amplifiers, power output & efficiency, push-pull operation, Class C amplifiers, and oscillators. Fundamental design of the tubes.

This course is a survey of vector algebra & vector calculus. It includes a study of surface & line integrals, with application to the theorems of Gauss, and Green and Stokes in vector form. Many applications to physical problems are included, particularly in the field of electrical theory.

This is a rigorous development of the theory of functions of a single complex variable. The concepts developed in the course on the theory of functions of a real variable are extended to complex numbers and functions of a complex variable. Topics include the complex system, differentiation and integration, analytic functions, theory of residues, conformal mapping, and Riemann surfaces. This theory finds good application in Transients in Linear Systems.

After developing the basis of direct operational method and applying these to the analysis of simple circuits, the Laplacian transform concepts are introduced and are connected with integration in the complex plane. The transient analysis of linear passive networks with lumped parameters, of wave filters, and of transmission lines is then undertaken.

This is a course comprising the development of the principles of electrostatics and magnetostatics, and electromagnetism in the notation of vector analysis; the derivation of Maxwell's equations for the quasi-stationary fields in media at rest; and the propagation of electromagnetic waves along lines and in space. Application of the theory will be made to the solution of problems chosen from the variations in the various branches of electrical engineering, with emphasis upon the physical interpretations.

This is a course devoted to the principles of design construction, and operation of water power plants. Various methods of developing hydraulic power are considered. The characteristics of impulse wheels and turbines and their selection are studied. Consideration is given to hydraulic structures, generation of electric power, and electric power, and economic aspects of water power development.

December 16, 1948.

To:

The Secretary of the Government of Madras,
Education and Public Health Department,
Madras, (India).(Through the Secretary, The Education Department,
Embassy of India, U.S.A.)

Dear Sir:

With reference to the copy of your letter No. 68557-C2/48-2
Edn., dated November 17, 1948, I thank you very much for permitting
me to complete the M. S. course at the Brooklyn Polytechnic. According
to the program that was given to me by the Authorities of the Poly-
technic and the courses I have taken, I shall be finishing my studies
by May 31, 1949.

Most of the courses I am pursuing are in the advanced theory
and the design of Electrical Machinery, and I have the opportunity
of studying these courses under Dr. M. Liwschitz Garik, Professor in
Electrical Engineering, who is an authority on electrical machinery,
especially induction motors. He is also Consulting Engineer for
Westinghouse Electric Manufacturing Company and many other electrical
firms. When I discussed with him the subject about my practical
training, he advised me to undergo training in Westinghouse Electrical
Company. To get good practical training in the manufacture of electrical
machinery, the design of which is very important for the future of our
Country, he also advised that I should work at least for six months in
the factory.

In view of finishing my studies in the Institute by May 31,
1949, I shall be grateful to you if I am granted an extension of four
months over the usual period of two years, thus enabling me to undergo
training for the minimum period of six months as advised by Dr. M.
Liwschitz Garik. A letter from him to that effect is enclosed herewith.

Thanking you in anticipation,

Yours faithfully,

M. Muthukrishnudu

M. Muthukrishnudu.

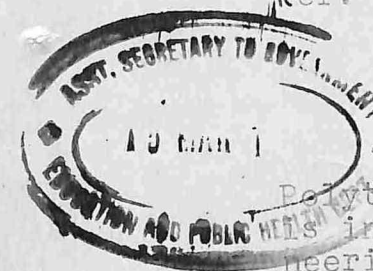
M. Liwschitz-Garik
Professor of Electrical Engineering.

Office of the Director of Public Instruction, Madras.

Roc.3207 Cl/48 dated the 11th March 1949.

Sub: Overseas Scholarships - Sri M. Muthukrishnudu - a Madras Government Scholar - Arrangements for practical training.

Ref: Govt. Indt. 68557-C2/48-3 Edn., dated 26-2-49. p 25 aut



Resubmitted.

2. Sri M. Muthukrishnudu, who is now studying in the Polytechnic Institute, Brooklyn, N.Y. for the M S.Degree, is intended for absorption in the teaching personnel of Engineering Colleges. On return from America he will be employed as an Instructor in Electrical Engineering. Practical training in works would, therefore, be valuable from the point of view of his future employment and is necessary. The scholar's request for four months' extension of his scholarship for undergoing practical training may be complied with.

for Director of Public Instruction.

To the Secretary to Government, Education and Public Health Department, Madras (with encls)

KHR. 12-3.

Brip.

36
No. F.7-8/46 -S.II
Government of India,
Ministry of Education,

New Delhi 3, the

March 1949

6.4.49

From

To

Dr. Tara Chand, M.A., D.Phil.,
Secretary to the Government of India.

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

Subject:

Progress Report in respect of Mr.
M. Mothurkrishnudu, Madras Govt.
1946-47 sponsored scholar.

Sir,



2727A

I am directed to refer to this Ministry
letter of even number dated 16th February, 1949, regarding
the above scholar and to forward herewith for information a
copy of a semester report for September, 1948, to January,
1949, in respect of Mr. Muthukrishnudu, received from the
Indian Embassy, Washington in this Ministry.

I am to add that the Provincial Government's
reply to this Ministry letter referred to above may kindly
be expedited.

Yours faithfully,

D. Madhavi

for Secretary.

Bakhshi 20/3

NOTE TO STUDENTS

1. In every case, it is essential for you to state the degree, if any, for which you are studying. The likely date of taking the degree should in all cases be mentioned. If you are not studying for a degree, please mention the likely date when you hope to complete the course, of study you are pursuing. Where you have already taken a degree, please give the date of taking it, and state what you have been doing since taking the degree, and when you hope to complete the course, or training you are undergoing at present. Of the four copies that are being sent to you, three are to be returned; one is for your record.

II. This report must be submitted through your Professor or Supervisor in-charge (See reverse).

Name in Block Capitals M. MUTHUKRISHNUDU. File No. G.221/46 H.C.

Scholarship/ Study Leave/ Deputationist Provincial Scholarship.

SPONSORING AUTHORITY Govt. of Madras.

1. Date of Arrival in U.S.A. July 28, 1947.
2. Subject for which selected Electrical Engineering.
3. Course of study or training undertaken generalization,
Transmission and utilization of Electric Power.
4. Degree sought/obtained M.S. (Ele.)
5. Approximate date of degree-award June 1949
6. Institution in which student is pursuing study/training Brooklyn Polytechnic
Brooklyn, New York.
7. Course of study or training attended during period under review Advanced Theory and design of Ele. machines,
Power Distribution, Electromagnetic Theory and
thesis work.
8. All Examinations (including subjects) taken, with dates, and results. (In the final examination the degree or diploma obtained should be stated, with subjects taken, and honours, if any.) The grades obtained in the final examination, must be stated. Grades should be explained.
Separate Sheet attached.
All examinations at the end of Fall Semester.
9. Any Prizes or other Distinctions

10. FOR STUDENTS TAKING PRACTICAL TRAINING:

Name of Concern: Date of Joining: Stay to last until: Nature of Training:

42
- 2 -
11. This Report covers period beginning from Sep. 1948 and lasting up to Jan. 1949.

12. University or Institution Supervisor's Report on the work of the student during the period under review:

This is to certify that Mr. Muthukrishnudu has been doing exceptionally well in his studies at the Polytechnic.

Date 2/14/49

Signature

Anthony B. Henderson
Graduate Advisor

13. Observations of the Education Department, Embassy of India.

He is seeking extension and his application has been referred to India separately.

Allen

Date

Signature

Signature of Student

M. Muthukrishnudu

Place 140 Prospect Place, B'klyn, N.Y.

Date

Feb. 14, 1949.

43
SHEET TO SUPPLEMENT PARA NO. 8.

Name of the Course.

Grade.

Advanced A.C. Machinery.

A.

Theory of Electrical Machines.

A.

Electromagnetic Theory.

B.

Insulation of Electrical Apparatus.

Satisfactory.

THESIS on Inductor Alternator.

At work.

M. Muthukrishnudu
(M. Muthukrishnudu.)

Name of the Course.

THESES ON INDUCTION ALTERNATOR. At work.
Insulation of Electrical Apparatus. Satisfactory.
Electromagnetic Theory. B.
Theory of Electrical Machines. A.
Advanced A.C. Machinery. A.

(M. Mathukrishnan)

12 Tappal class.

The file has been
 rec'd back in section
 after dpl without
 the draft. It may a search
 list for the your Stat.

14. 4. 49 The file with the draft was received on 11. 4. 49 and sent to section ^{on} the same day. It was not misplaced here. Please make a search in the section itself.

$$\frac{1000}{1874}$$

By Air Mail.

No.F.7-8/S-19/46 SII,
Ministry of Education,
Government of India,
New Delhi 3, the April, 1949.

From Dr. Tara Chand, M.A., D.Phil.,
Secretary to the Government of India.

To The First Secretary,
Education Department,
Indian Embassy, Washington D.C.

Subject:- Advanced Studies Overseas in respect of Mr. M. Mathur
Krishnudu, 1946-47 Madras Government Sponsored
Scholar.

Sir,
With reference to this Ministry's endorsement of even
No. dated 16th February 1949 on the above subject, I am
directed to convey the sanction of Government to the extension
in the period of Scholarship of Mr. M. Mathur Krishnudu for 4
months upto 27th November, 1949 to enable him to do practical
training. In this connection I am to invite attention to your
endorsement No. G. 291/46 dated 11th March 1949 and to request
that the present position in regard to the practical training
arrangements for the Scholar may kindly be communicated to the
Ministry at an early date.

Yours faithfully,

Sd/- (Vikram Singh)
for Secretary.

No. F. 7-8/S-19/46-S. II.

(1) Copy forwarded to the Secretary to the
Government of Madras, Education & Public Health Department,
Madras, with reference to letter No. 68557 E2/48-5 Edn dated
5th April, 1949. It is confirmed that the Government of India
will share equally with the Provincial Governments in the
additional expense involved in this Extension.

(2) S-V.

(3) Progress Clerk S II.

By Order,

EPH(E2)

Vikram Singh
(Vikram Singh)
for Secretary.

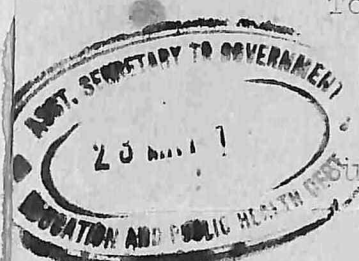
(GD) 18/4/49.

No.F.7-8/8-19/46-S.2.
GOVERNMENT OF INDIA
MINISTRY OF EDUCATION

NEW DELHI 3, THE 21st MAY, 1949.

From
Dr. Tara Chand M.A., D. Phil.,
Secretary to the Govt. of India.

To
The Secretary to the Govt. of Madras,
Education & Public Health Deptt.,
Madras.



Subject:- SCHOLARSHIPS FOR ADVANCED STUDIES OVERSEAS - MADRAS
GOVT. 1946-47 SPONSORED SCHOLAR - Mr. Muthu Krishna Rao.

39328
Sir,

In continuation of this Ministry endorsement of
even number dated the 20th April, 1949, on the above subject
I am directed to state that the Indian Embassy, Washington
has informed this Ministry that no practical training with
industry has been finalised. If this is not possible, it is
proposed to approach one of the United States Government
agencies for practical training as an alternative plan. It is
presumed that the Provincial Government have no objection to
this course. Efforts will be made to approach the Department
of Interior (Donneville Power Administration) the Tennessee
Valley Authority, Knoxville Tennessee, and the National
Bureau of Standard Washington, D.C. in this connection.

Yours faithfully
Vikram Singh
(VIKRAM SINGH)
for Secretary.

From
Dr. Tara Chand M.A., D. Phil.,
Secretary to the Government of India.

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

Subject:- Advanced Studies Overseas in respect of Mr. Muthu Krishna Rao
Govt. 1946-47 Sponsored Scholar

Sir,
With reference to this Ministry's endorsement of even
No. dated 10th February 1949 on the above subject, I am
directed to convey the sanction of Government to the extension
in the period of scholarship of Mr. Muthu Krishna Rao for a
month up to 31st November 1949 to enable him to do practical
training. In this connection I am to advise attention to your
endorsement No. 291 dated 11th March 1949 and to request
that the present position in regard to the practical training
arrangements for the scholar may kindly be communicated to the
Ministry at an early date.

(Vikram Singh)
for Secretary.

No. F. 7-8/8-19/46-S.11.
(1) Copy forwarded to the Secretary to the Government of Madras, Education & Public Health Department, Madras, with reference to letter No. 6557/12/46-S.2 dated 20th April 1949. It is confirmed that the Government of India will share equally the private Government in the additional expense involved in this extension.

(2) S.V.
(3) Progress Report II.
Vikram Singh
(Vikram Singh)
for Secretary.

(cc) 18/1/49.
18/1/49

48

8/5



2200

12/5/49
2/6
Mr. M. M. Krishnaiah
2/6

47CP

49

(27)

EPH.(E2)

Letter/Ref. No. 68557 E2/48-6 Edu. 2/6/49.

To

The Secy. to the Govt. of India
Ministry of Edu.
New Delhi 3.

Sir,

Sub. Overseas Scholarship-
46-47-^{Mr.} M. Muthu Krishnaiah
Ref. your letter F-7-8/S-19/46S2 d12-5-48

I am directed to ~~say~~ state
that this Govt have no objection to the ~~alternative~~
~~alternative~~ course of ~~practical~~ training proposed
for ~~Mr. M. Muthu Krishnaiah~~ proposal of the
India Embassy to arrange
for Mr. Muthu Krishnaiah's
28/5/49.

48

8/5

50

practical training with one of
the United States Govt agencies.

cwa
1.6.49

y.f.
2/6/49

2/6/49

No. F.7-8/S.19/46.S.II.
Government of India,
Ministry of Education,

New Delhi 3, the 15th June, 1949.

From

The Secretary to the Government of India.

To

The Secretary to the Government of Madras,
Education and Public Health Department,
M A D R A S.

46329

SUBJECT:- ADVANCED STUDIES OVERSEAS IN RESPECT OF MR. M. MUTHUKRI-
SHNUDU, MADRAS GOVERNMENT 1946-47 SPONSORED SCHOLAR.

...

Sir,

I am directed to refer to your letter No. 68557 E2/48-6,
Education, dated 2nd June, 1949, regarding the above scholar
and to forward herewith a copy of letter No. G.291/46, dated
25th May, 1949, received in this Ministry from the Indian Embassy
at Washington.

2. The Provincial Government may kindly inform this
Ministry whether they desire the scholar to return to India after
27th November, 1949 or do further practical training in the
United States of America. In the latter case the Provincial
Government will have to bear the entire additional cost of training.

3. I am also to enclose for information a copy of a tour
report of Mr. Muthukrishnu.

Yours faithfully,

Vikram Singh
(Vikram Singh)
for Secretary.

Gope) 14.6.1949.

52

53 (2)

Copy of letter No. G.291/46, dated the 25th May, 1949, from the Education Secretary, Embassy of India in the U.S.A, Washington D.C. to the Secretary to the Government of India, Ministry of Education, New Delhi.

I am to refer to your letter No. F.7-8/S.19/46.S.II., dated 20th April, 1949, concerning Mr. M.Nuthukrishnu, a 1946 Madras Government scholar, and to inform you that practical training for this scholar has been offered by the Elliott Company, Inc., Ridgway, Pennsylvania, for several months, starting early June, 1949. This training is offered in the first instance until November 1949, but there is a possibility that this period could be extended if the Government so desire. This training has been arranged for the student to work on the Test Floor and in the Engineering Department at the Company's factory at Ridgway, Pennsylvania, where they manufacture motors, generators and other electrical machinery.

A

For lack of sufficient notice, the student is being permitted to undertake this training, subject to the sponsoring Government's final approval. Considering that such industrial training facilities are so hard to obtain in this country, it is hoped that the sponsoring Government will approve of this training plan. This matter may please be confirmed at your earliest convenience.

54

8

TOUR REPORT.

55

(35)

We left New York on 15th April (morning) and reached Baltimore in the afternoon. We visited chemical and Engineering labs of John Hopkins Institute. Also we went round the supersonic wind tunnel of the aeronautical Engineering Department.

Left Baltimore on 16th afternoon for Savannah, reaching there by midnight. On 18th (Monday), we visited Herty Foundation Labs, which is a research laboratory to investigate the manufacture of paper from different varieties of wood. They also incorporate plastic material especially Hycar and GR-S into the paper sheets and also manufacture vinyl resin sheets. Later we visited Uncon Bag and Paper Corporation who manufacture different varieties of paper Corporation who manufacture different varieties of paper and resin impregnated paper bags.

Left Savannah 19th morning and reached Jackson Ville in the afternoon and visited Pittsburg testing labs. Where we were shown round the analytical and Engineering apparatus designed to test the plastic materials. We were told of the various research problems that the above said laboratories handle from time to time.

Left Jacksonville on 20th morning, reaching West Palm Beach in the evening. Visited Palm Plastics on 21st. 'Palm Plastics' manufacture articles of general utility, novelties and artware from mostly acrylic resins.

Left W. Palm Beach on 22nd afternoon and reached Miani in the evening. Visited 'Modern Plastics' on 25th (Monday). They also fabricate acrylic resins in the same fashion as Palm Plasters. Later we visited 'South Florida Test Service' a big testing laboratories where various articles especially plastics, plants varnishes, fabrics, mental sheets etc. manufactured by the most leading concerns like Du Pont, Monsanto Chemical Co. etc. are subjected to the severest weather conditions in Florida. Besides corrosion tests under sea water and tides are carried out on an elaborate scale. X

Leaving Miani on 26th Morning, we reached Tampa in the evening.

As the 'Pensar Plastics' were shut down, we proceeded +

56

=2=

the same evening and visited Southern Plastics Industries the following day. They carry out various kinds of mouldings mostly injection, transfer, compression and extension on a wide variety of plastics.

Left Atlanta on 27th night and reached New York on 28th.



No. F.7-8/S-19/46-S.II.
GOVERNMENT OF INDIA.
MINISTRY OF EDUCATION.

57
Pun
(7)

NEW DELHI 3, the

June, 1949.

From

The Secretary to the Government of India.

To

✓ The Secretary to the Government of Madras,
Education and Public Health Department, MADRAS.

SUBJECT:

ADVANCED STUDIES OVERSEAS IN RESPECT OF MR.M.
MUTHUKRISHNUDU - MADRAS GOVERNMENT 1946-47 SPONSORED
SCHOLAR.

48042

Sir,

file in issue branch In continuation of this Ministry letter of even number dated the 15th June, 1949 regarding the above scholar, I am directed to forward herewith a copy each of a transfer form and tour report in respect of Mr. Muthukrishnudu, received in this Ministry from the Indian Embassy, Washington.

Yours faithfully

Vikram Singh 21/6

(VIKRAM SINGH)
for SECRETARY

sin

Main file in issue branch

(KARTAR) 21/6.

25.6.49
27.6.49

File
27/6/49
27/6/49

A brief report of the tour.

506

On the morning, May.15, 1949, left New York for Baltimore. At Baltimore visited the John Hopkin's Institute, and was shown round the various engineering departments. The project on the supersonic wind tunnel in the Aeronautics Section was an interesting research. On May.16, left Baltimore for Savannah. At Savannah on 18th., visited the Herty Foundation Laboratory where investigations ^{are made} for the manufacture of the paper from different kinds of wood pulp. The precision instruments for the testing of the bending, folding, tension and torsion of the paper, are the novel developments. Later visited the Union Paper And Bag Company where the make of the resin impregnated bag was interesting. On May.19, left Savannah for Jacksonville to visit the Pittsburg Testing Laboratory. From Jacksonville reached West Palm Beach on 20th. Visited the Palm Plastics where the accessories for the electric lamps are made. The electric furnace for softening the material is a latest development in that field. On May.22, left West Palm Beach to reach Miami. Visited the South Florida Testing Service where metal sheets, rubber sheets, paints and varnishes are tested against the severe conditions of the weather, in sea water and in tides. Then visited the Electric Thermal Generating Sub-station. The distribution network and the stand-by units are well planned. Also visited the Los Tropicales Inc., where the electric lamp bases, shades, and other accessories are manufactured. The manufacture of these things from the shell material is a novelty. On April 26, left Miami, reached Tampa and left on the same night to proceed to Atlanta. Reaching Atlanta visited the Southern Plastic Factory. The application of Compression, extension, and injection molds in the field of plastics is interesting. On April 27, left Atlanta to reach New York on April 28, 1949.

M. MUTHUKRISHNUDU.

TRANSFER FORM

(to be filled in Triplicate)

N.B. This application must be made in time so as to reach First Secretary, Education Department, Embassy of India, Washington, D.C., at least two months before the transfer is desired.

1. Name of the Scholar. M. MUTHUKRISHNUDU.
2. Sponsoring Government (with year of selection in brackets) Government of Madras, (1946).
3. Date of commencement of scholarship (Date of arrival in U.K./U.S.A.) July 28, 1947.
4. Date of normal termination of scholarship. July 27, 1948.
- *5. Nature of Transfer desired e.g. From one country to another.
From Brooklyn Polytechnic, N.Y., " " institution to another. **X**
after the completion of studies " " subject to another.
to Elliott Co., for Prac. Training.
6. Details of the courses undertaken up to date (Give full details and if the space is insufficient a separate sheet may be attached.)

Institution attended.	Date of Joining.	Date of Leaving.	Subject with exact branch.	Details of the course.	Degrees, diplomas, or certificates obtained, if any.
(1)	(2)	(3)	(4)	(5)	(6)

(a) Academic course.

Brooklyn Polytechnic, N.Y.	Sep. '47. June '49.	Electrical Engineering.	Generation, Transmission and Utilization of Electric Power.	M.E.E. Degree to be obtained in June '49.
----------------------------	---------------------	-------------------------	---	---

(b) Practical Training.

7. Whether transfer applied for will need any extension in the normal period of scholarship, if so, indicate the period.

Four months, and the Government has kindly granted extension upto Nov. 27, '49.

8. Reasons why transfer is considered essential

I wish to acquire practical experience in the design, manufacture and testing of the electrical machinery in one of the electrical firms after good theoretical knowledge from Brooklyn Polytechnic, N.Y., and Elliott Co., Ridgway, Pennsylvania, has kindly accepted to admit me for practical training in their company.

* Mention in detail the subject and institution and /or country to which transfer is desired.

60
- 2 -
9. Details of the work proposed to be done after transfer (give full details)

Institution to be attended.	Duration From To	Subject with exact branch.	Details of the course to be followed	Degrees, diplomas or certificates, if any, to be obtained.
-----------------------------	------------------	----------------------------	--------------------------------------	--

(a) Scademic course.

(b) Practical training.

Elliott Co., June '49. Nov. '49. Ridgway, Pennsylvania.	Electrical Engineering.	Design, Manufacture and Testing of Electrical Machinery.	Certificate to be obtained.
---	-------------------------	--	-----------------------------

Signature of the Scholar

M. Muthukrishnu

10. Recommendations of the Professor, or other University authority supervising the work of the scholar.

Letter from the Professor is attached.

11. Recommendations of the Embassy of India.

This may please be approved.

[Signature]

Decision on the application
(to be filled in by the Ministry
of Education.)

761
Polytechnic Institute Of Brooklyn,
99 Livingston Street,
Brooklyn 2, New York.

Department of
Elec. Engineering.

Dec. 21, 1948.

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

Dear Sir,

Mr. M.Muthukrishnu is a student in my classes in electrical machinery, for the second year.

He has taken a course in "Design of Electrical Machines", and he is now taking two courses - one in "Advanced A.C Machinery" and the other in "theory of Electrical Machines". I am his thesis Adviser.

Mr. M.Muthukrishnu is a very diligent student and does very well in his classes. If he continues to work as he has done upto now, he will acquire good theoretical knowledge in electrical machinery. He will need, then, practical experience, and I suggest allowing him to acquire as much of it as possible in this country. In my opinion he should work at least half a year with a large company after he has finished his studies. I am sure that Mr. Muthukrishnu will be a good engineer.

Very truly yours,

(Sd.) M.Liwschitz-Garik,

Professor of Electrical Engineering.

(A True Copy.)

862

9/63

EPH
E2

Delhi / Ref. 68557 E2 / 48-7 Kdn 24.6.48
%

The Secy to the Govt of India,
Ministry of Education,
New Delhi-3.

Sr.

Overseas Scholarships - 1946-7.
Sri M. Muthukrishnan. Ref your
letter no. F.7-8/5.19/46 S2 15.6.48

I am directed to state
that Sri Muthukrishnan may be
requested to return to India after
27th Nov 48.

W2
20.6.48
CWA
m.b.ue

DM
20/6/48

y.f.
24/6

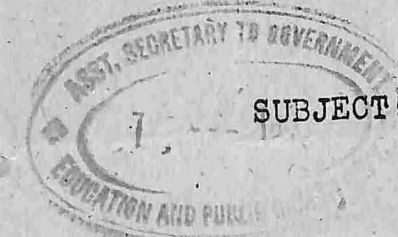
No. 7-8/519/465II.
Government of India.
Ministry of Education,
New Delhi, the 5-7-1949

From

~~Dr. Tara Chand M.A., D.Phil.,~~
Secretary to the Government of India,

To

The Secretary to the Government of Madras
Department of Education & Public Health
Madras



SUBJECT:-

SCHOLARSHIPS FOR ADVANCED STUDIES OVERSEAS
REPORTS IN RESPECT OF PROVINCIAL GOVERNMENTS
SPONSORED SCHOLARS/DEPUTATIONISTS IN ~~U.S.A.~~
U.S.A./~~AUSTRALIA~~/NEW ZEALAND.

51573

Sir,

I am directed to forward herewith for the
information of the Provincial Government, a copy of the
progress report in respect of Mr. Muthukrishnan
a Madras Government 1946-47.
sponsored scholar/deputationist,

The Provincial Government may kindly forward
suggestions, if any, from the point of view of the
employment of Mr. Muthukrishnan is expected to take
up on his return.

19.5.49.500

Yours faithfully,
Vikramjit Singh
for Secretary.

Filed
9.7.49

NOTE TO STUDENTS

1. In every case, it is essential for you to state the degree, if any, for which you are studying. The likely date of taking the degree should in all cases be mentioned. If you are not studying for a degree, please mention the likely date when you hope to complete the course, of study you are pursuing. Where you have already taken a degree, please give the date of taking it, and state what you have been doing since taking the degree, and when you hope to complete the course, or training you are undergoing at present. Of the four copies that are being sent to you, three are to be returned; one is for your record.

- II. This report must be submitted through your Professor or Supervisor in-charge (See reverse).

Name in Block Capitals M. MUTHUKRISHNUDU. File No. G. 291/46.

Scholarship/ Study-Leave/ Deputationist Provincial.

SPONSORING AUTHORITY Government of Madras.

1. Date of Arrival in U.S.A. July 28, 1947.

2. Subject for which selected Generation, Transmission & Utilization of Ele.Power.

3. Course of study or training undertaken Electrical Engineering.

4. Degree sought/obtained Master's Degree in Electrical Engineering.

5. Approximate date of degree-award June 15, 1949.

6. Institution in which student is pursuing study/training The Polytechnic Institute, Brooklyn, New York.

7. Course of study or training attended during period under review
(1) Advanced A-C. Machinery. (2) Theory of Electrical Machines.
(3) Electromagnetic Theory. (4) Thesis on the "Design of a High Frequency Generator. (5) Electric Power Machinery and Distribution.

8. All Examinations (including subjects) taken, with dates, and results. (In the final examination the degree or diploma obtained should be stated, with subjects taken, and honours, if any.) The grades obtained in the final examination, must be stated. Grades should be explained.

All Examinations were held at the end of May 1949. For subjects and grades a separate sheet is attached. M.E.E. is to be obtained in June 15, 1949.

9. Any Prizes or other Distinctions

10. FOR STUDENTS TAKING PRACTICAL TRAINING:

Name of Concern: Elliott Co., Date of Joining: June 6, 1949. Stay to last until: Nov. 1949. Nature of Training: Design, Manufacture and Testing of Ele. Machines.

11. This Report covers period beginning from Jan. 29, 1949. and lasting up to June 1, 1949.

12. University or Institution Supervisor's Report on the work of the student during the period under review:

This is to certify that Mr. Muthukrishnan has satisfactorily completed all the requirements for the M.E.E. degree, which he will formally receive on June 15, 1949.

We have been extremely pleased with his overall performance while at the Polytechnic

Date 6/1/49 Signature Anthony B. Giordano
Graduate E.E. Adviser

13. Observations of the Education Department, Embassy of India.

Date _____ Signature [Signature]

Signature of Student M. Muthukrishnan

Place 140 Prospect Place, Brooklyn, N.Y.

Date June 1, 1949.

Sheet to supplant Item No. 8.

Subject.	Grade.
1. Thesis on "Design of a High Frequency Generator. (8 Credits)	A.
2. Electro-magnetic Theory.	B.
3. Advanced A.C. Machinery.	Satisfactory.
4. Theory of Electrical Machines.	"
5. Electric Power Machinery and Distribution.	"

Date 6/1/49

Attested by Anthony B. Giordano
(Anthony B. Giordano)
Graduate Adviser,
Electrical Engineering Dept.,
The Polytechnic Institute,
Brooklyn 2, New York.



No. F.7-8/S.19/46-S.II,
Government of India,
Ministry of Education,

New Delhi 3, 7th July, 1949.

The Secretary to the Government of India.

The First Secretary, Education Department,
Indian Embassy, 2111, Massachusetts
Avenue N.W., Washington D.C.

SUBJECT:- ADVANCED STUDIES OVERSEAS IN RESPECT OF MR.
M. MUTHUKRISHNUDU, MADRAS GOVERNMENT 1946-47
SPONSORED SCHOLAR.

52765
Sir,

I am directed to refer to your letter No.
G.291/46 dated 25th May, 1949, regarding the above
scholar and to state that the Provincial Government
have since informed this Ministry that the scholar may
be required to return to India after 27th November, 49.

I am to add that three copies of employ-
ment forms of Mr. Muthukrishnudu may kindly be sent to
this Ministry at an early date.

Yours faithfully,

(VIKRAM SINGH)
for Secretary.

Copy to the Secretary to the Government of Madras,
Education and Public Health Department, Madras with
reference to his letter No. 68557.E.2/48-7 Education
dated 24th June, 1949.
Copy to S. V.

By Order,
for Secretary.

TANEJA
7.7.49

No.F.7-8/8.19/46.S.II.
Government of India,
Ministry of Education,

From New Delhi 3, Dated the 25th July, 1949.
the Government of India,

To The Secretary to the Government of Madras,
Department of Education and Industries,

Subject:- SCHOLARSHIPS FOR ADVANCED STUDIES OVERSEAS TOUR REPORT'S
IN RESPECT OF PROVINCIAL GOVERNMENTS SPONSORED SCHOLARS
IN UNITED STATES OF AMERICA.

Sir, I am directed to forward herewith for the
information of the Provincial Government, a copy of a tour
report in respect of Mr. M. Muthukrishnudu a Madras Government
1946-47 sponsored scholar.

Yours faithfully,

Vikram Singh
(VIKRAM SINGH)
FOR SECRETARY.

OM/21/7
29.7.49
30/7/49

A brief report of the Study Tour.

75 (K)

On Tuesday evening, June 14, '49, left Ridgway reaching New York on Wednesday morning. On June 15, attended the Annual Commencement Exercises of the Polytechnic Institute, Brooklyn, New York, to receive the Master's Degree in Electrical Engineering. On June 16, visited the Roto Division of the Elliott Company, Newark. Was shown around the factory where the Rotos for cleaning the tubes of the steam boilers to run the electric generators, are manufactured. The Rotos are operated both by air and water pressure. The different kinds and sizes of the Rotos for removing the hard and soft scales, are machined to minute accuracies. The method of working and cooling the tools during the manufacture process is interesting. On June 17, visited the Princeton University and was shown around the various Engineering Departments of the College. The equipment in the Electrical Engineering Department is up to date. On June 18, left New York reaching Ridgway on June 19, '49.



Handwritten notes and signatures at the bottom of the left page, including "R.P.B." and "W.C.P.".

No. F7-8/S.19/46 II
Government of India.
Ministry of Education,
New Delhi, the 12th September 1949.

SECRETARY
15 SEP 1949

From Dr. Tara Chand M.A., D.Phil.,
Secretary to the Government of India.

To . The Secretary to the Government of MADRAS,
Department of Education & Public Health,
MADRAS

SUBJECT:-SCHOLARSHIPS FOR ADVANCED STUDIES OVERSEAS
EMPLOYMENT FORMS IN RESPECT OF PROVINCIAL
GOVERNMENTS SPONSORED SCHOLARS/~~DEPUTATIONISTS~~ in
~~IN U.K./U.S.A./AUSTRALIA ETC.~~

Sir,
I am directed to forward herewith in duplicate for
information and necessary action of the Provincial Government
the Employment Form in respect of Mr. M. MUTHUKRISHNAN
a MADRAS Government 1946-47
sponsored scholar/~~deputationist~~, received through ~~High~~
~~Commissioner for India in the U.K./Indian Embassy, Washington.~~

Yours faithfully
Vikram Singh
(VIKRAM SINGH)
for Secretary.

IK
19.5.49.

19.5.49.

Overseas Scholarships - 1946-47
 Sri M. Mulkarishunda - Employment
 Forms: _____

From the Secy, Ministry of Edu
 No. P. 7. 8/5. 19/46 S2 & 12. 9. 49

Memo No 68557 K2/49-8 Edu & 20. 9. 49

A copy of the Employment Form
 in respect of Sri M. Mulkarishunda is
 forwarded to the D.P.I. The Scholar was
 selected in 1946-47 for advanced studies
 in "Elekt. Engg., Generation, Transmission & Utilisation of
 Electric Power", with the intention of absorbing
 him in the teaching personnel of the Engg.

81
BY FAST AIR MAIL
No. F.7-8/8.19/46-SII
GOVERNMENT OF INDIA
MINISTRY OF EDUCATION.

NEW DELHI-3, the 12th October, 1949.

From

To

14 OCT 1949

The Secretary to the Government of India.

The First Secretary,
Education Department, Indian Embassy,
2111 Massachusetts Avenue, N.W.,
WASHINGTON D.C.

SUBJECT:

ADVANCED STUDIES OVERSEAS IN RESPECT
OF MR. MUTHUKRISHNAN MADRAS GOVERNMENT
1946-47 SPONSORED SCHOLAR.

79400 Sir,

I am directed to refer to your letter No. G291/46 dated the 15th September, 1949 regarding the above scholar and to state that Government regret their inability to extend the scholarship of Mr. Muthukrishnandu beyond 27th November, 1949. They have however no objection to continue his training upto January 1950 provided he himself bears the entire cost of his training and it does not require any dollar exchange. If he is unable to stay in the United States of America at his own cost after 27th November, 1949 he should be asked to return to India after this date.

Yours faithfully,

Sd/-

(VIKRAM SINGH)
for Secretary.

Copy to the Secretary to the Government of Madras, Education & Public Health Department, Madras in continuation of this Ministry letter of even number dated 12th September 1949.

A copy each of a transfer form and extension application is enclosed for information.

It is presumed that the Provincial Government agree with the decision of the Government of India regarding the scholar's request for further extension upto 27th January 1950.

By order,

LEPH

62

Vikram Singh
(VIKRAM SINGH)
for Secretary.

Filed.

No reply is necessary
with ref. to A above as Mr.
Gosh have already asked the scholar
to be sent back to India after
27.11.49 - vide p. 63 ante.

103
11.8.49
CWA
m.p.m.

103
24/10/49

80
Colleges. He is expected to return
to India in Dec 1949.
The Director is requested to submit
proposals for his employment.

103
10.9.49
CWA
19.9.49

To Mr. M. S. S. S.
The D. P. I.
(with a copy of
the Employment Form.)
Copy to A. Section
(with a copy of
the Employment Form.)

(4)
63

OVERSEAS SCHOLARSHIPS (CENTRAL/PROVINCIAL)
APPLICATION FOR EXTENSION OF PERIOD OF SCHOLARSHIP

(To be filled in triplicate)

N.B. This application must be made in time so as to reach the Government of India, Ministry of Education at least three months before the expiry of the sanctioned period of scholarship.

1. Name of the Scholar. M. Muthukrishnan
2. Sponsoring Government. (with year of selection in brackets.) The Government of Madras (1946)
3. Date of commencement of scholarship (Date of arrival in U.K./U.S.A.) July 28, 1947
4. Date of normal termination of scholarship. November 27, 1949
5. Approved course of study: Electrical Engineering
6. Details of the courses expected to be completed upto the date of normal termination of scholarship. (Give full details and if the space is insufficient separate sheet may be attached.

Institution or University attended.	Date of Joining.	Date of Leaving.	Subject with exact branch.	Some details of the course.	Degrees, diplomas or certificates if any, obtained.
(1)	(2)	(3)	(4)	(5)	(6)

(a) Academic courses.

Brooklyn Polytechnic, New York	Sept. 1947	June 1949	Electrical Engineering	Advanced theory and design of Elec. machines, and generation and transmission of electric power.	Master's degree in Electrical Engineering. (June 1949)
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(b) Practical training.

Elliott Company, Ridgway, Pa.	June 1949	Nov. 1949	Electrical Engineering	Design, manufacture and testing of electric machines of large output.	Certificate to be obtained.
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7. Final date upto which extension is required. January 27, 1950

8. Reasons why extension is considered essential. A letter is attached.

84

9. Details of the work to be done during the period of extension (give full details)

Institution or University to be attended.	Duration		Subject with exact branch	Details of the course to be followed.	Degree, diplomas or certificates if any, to be obtained.
	From	To			

(a) Academic courses.

(b) Practical Training.

Crocker-Wheeler Company, Amper, N.J.	Nov. 1949	Jan. 1950	Electrical Engineering	Design, manufacture and testing of electrical machines of small output.	Certificate to be obtained.
--------------------------------------	-----------	-----------	------------------------	---	-----------------------------

Signature of the scholar M. Muthukrishnan

10. Recommendations of the Professor, or other University authority supervising the work of the scholar.

A letter is attached.

11. Recommendations of the Embassy.

The training proposed by the scholar seems to be valuable. This short extension is therefore recommended. The scholar's Sponsoring Government may judge the value of the proposed training from the point of view of the employment which the scholar is to secure upon his return. It is requested that a decision in this case may kindly be sent by cable.

Decision on the application.
(to be filled in by the Ministry of Education.)

R. K. Nair
for Education Secretary.

ELLIOTT COMPANY
(INCORPORATED)



GENERAL OFFICES
JEANNETTE, PA.
WORKS
JEANNETTE, PA.
RIDGEWAY, PA.
SPRINGFIELD, O.
NEWARK, N.J.

RIDGEWAY, PA.

September 9
1949

TO WHOM IT MAY CONCERN:

In accordance with a recent discussion with Mr. Muthukrishnan, I will be glad to help make arrangements for him to be transferred to our new Crocker-Wheeler Division at Amper, New Jersey, for the completion of his training course. I agree with him that a few months of experience in a plant manufacturing smaller electrical equipment should be very helpful to him and his Government in rounding out his practical education. His progress here has been sufficiently rapid to justify shortening the original program here by one month and starting a similar program in the new Crocker-Wheeler Division.

Very truly yours,

ELLIOTT COMPANY

Quentin Graham

Quentin Graham.
VICE PRESIDENT.

QG:BN
In tripl.

86
87
ELLIOTT COMPANY

(INCORPORATED)



GENERAL OFFICES
JEANETTE PA.
WORKS
JEANETTE PA.
RIDGWAY, PA.
SPRINGFIELD O.
NEWARK N. J.

RIDGWAY, PA.

September 9

1949

TO WHOM IT MAY CONCERN

In accordance with a recent discussion with Mr. Muthukrishnu, I will be glad to help make arrangements for him to be transferred to our new Crocker-Wheeler Division at Ampere, New Jersey, for the completion of his training course. I agree with him that a few months of experience in a plant manufacturing smaller electrical equipment should be very helpful to him and his government in rounding out his practical education. His progress here has been sufficiently rapid to justify shortening the original program by one month and starting a similar program in the new Crocker-Wheeler Division.

Very truly yours,

ELLIOTT COMPANY

Quentin Graham,
VICE PRESIDENT

cc: Mr.
Mr. Muthukrishnu

G 291/46

M. Muthukrishnu,
219 Cook Avenue,
Ridgway, Pa.
September 8, 1949.

TO: The Secretary,
Department of Education & Public Health,
Government of Madras, India.

THROUGH: The Secretary,
Education Department,
Embassy of India,
Washington, D. C.

Dear Sir:

From the general notice No. 49-12 of Elliott Co., Ridgway Division, a copy is herewith attached, I understand that the Crocker-Wheeler Co., Ampere, N. J. is bought by the Elliott Company. The Ridgway Division deals with the design, manufacture and testing of electrical machines of large output, whereas, the Crocker-Wheeler Company is particularly active in the building of small electrical machines, both alternating and direct currents.

I feel that in addition to the practical training at Elliott Co., Ridgway, the knowledge in the design, manufacture and testing of electrical machines of small output, which I shall acquire by working in the Crocker-Wheeler Co., Ampere, N. J., will be very useful to me and my country. The Vice-President of the Ridgway Division has kindly agreed to arrange for my training in Ampere, N. J.

Though I am scheduled to undergo training in the Ridgway Division for six months (up to November 27, 1949) I am confident that I will complete the schedule a month earlier (by October 27, 1949) and then I need three more months to acquire fairly good knowledge in the design and testing of small electrical machines.

I, therefore, request a further extension of two more months, which allows me three months for training in Crocker-Wheeler Company after the completion of work in Elliott Company, Ridgway, Pa. This is an opportunity I cannot afford to miss and so I request that this application be favorably considered.

Thanking you in anticipation,

Yours faithfully,

M. Muthukrishnu

M. Muthukrishnu

(88)
4ELLIOTT COMPANY - RIDGWAY DIVISIONGENERAL NOTICE #49-12

CROCKER-WHEELER DIVISION

Today's issue of the local newspaper will carry an announcement of the purchase of the Crocker-Wheeler Division of Joshua Hendy Corporation by the Elliott Company.

Crocker-Wheeler is an old name in the electrical industry, the company having started as builders of motors and generators in the early pioneering days. They are particularly active in the building of smaller motors, both AC and DC, down to sizes as low as 1 HP. With the acquisition of this new plant, Elliott Company will have a complete line of motors and generators, from the smallest sizes up to the larger sizes made here at Ridgway.

The addition of this new division of the Elliott Company, indicating the Company's greater importance in the industry, should be a source of satisfaction to all Elliott Company employees.

Q.S.

QG:BH

Sept. 7, 1949

Remove Sept. 16, 1949.

Q. Graham.
VICE PRESIDENT * RIDGWAY DIVISION.

90

OVERSEAS SCHOLARSHIPS (CENTRAL/PROVINCIAL)

49

TRANSFER FORM

(to be filled in Triplicate)

N.B. This application must be made in time so as to reach First Secretary, Education Department, Embassy of India, Washington, D.C., at least two months before the transfer is desired.

1. Name of the Scholar. M. Muthukrishnu
2. Sponsoring Government (with year of selection in brackets) The Government of Madras (1946)
3. Date of commencement of scholarship (Date of arrival in U.K./U.S.A.) July 28, 1947.
4. Date of normal termination of scholarship. Nov. 27, 1949.
- *5. Nature of Transfer desired e.g. From one country to another.
From-Elliott Co., Ridgway, Pa. " " institution to another.
To -Crocker-Wheeler Co., " " subject to another.
Ampere, N. J.
6. Details of the courses undertaken up to date (Give full details and if the space is insufficient a separate sheet may be attached.)

Institution attended.	Date of Joining.	Date of Leaving.	Subject with exact branch.	Details of the course.	Degrees, diplomas, or certificates obtained, if any.
(1)	(2)	(3)	(4)	(5)	(6)

(a) Academic course.

Brooklyn Polytechnic, N. Y.	Sept. 1947	June 1949	Electrical Engineering	Advanced theory and Design of Elect. machines and generation and Transmission of Elect. Power.	Master's Degree in Elect. Engineering. (June 1949)
--------------------------------	------------	-----------	------------------------	--	---

(b) Practical Training.

Elliott Co., Ridgway, Pa.	June 1949	Nov. 1949	Electrical Design, Manufacturing and testing of Elect. machines of large output.	Certificate to be obtained.
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7. Whether transfer applied for will need any extension in the normal period of scholarship, if so, indicate the period.

Two more months

8. Reasons why transfer is considered essential A letter is attached.

* Mention in detail the subject and institution and /or country to which transfer is desired.

P.T.O.

ALL ORDERS ACCEPTED SUBJECT TO DELAYS ARISING FROM CAUSES BEYOND THE QUOTATIONS SUBJECT TO CHANGE WITHOUT NOTICE

100VD.

9. Details of the work proposed to be done after transfer (give full details)

Institution to be attended.	Duration From To	Subject with exact branch.	Details of the course to be followed	Degrees, diplomas or certificates, if any, to be obtained.
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(a) Scademic course.

(b) Practical training.
Crocker-Wheeler Nov.1949 Jan.1950 Electrical Engineering Design, Manufacture and testing of Elect. machines of small output. Certificate to be obtained.

Signature of the Scholar M. Muthukrishnan

10. Recommendations of the Professor, or other University authority supervising the work of the scholar. A Letter is attached.

11. Recommendations of the Embassy of India.

Decision on the application (to be filled in by the Ministry of Education.)

No. F7-8/3-19/4657
Government of India.
Ministry of Education,
New Delhi, the 25th Octo ber 1949

From

Dr. Tara Chand M.A., D.Phil.,
Secretary to the Government of India.

To

The Secretary to the Government of Madras
Department of Education & Public Health
MADRAS

SUBJECT:- SCHOLARSHIPS FOR ADVANCED STUDIES OVERSEAS
Study Tour REPORTS IN RESPECT OF PROVINCIAL GOVERNMENTS
SPONSORED SCHOLARS/DEPUTATIONISTS IN U.K./
U.S.A./AUSTRALIA/NEW ZEALAND.

Sir,

I am directed to forward herewith for the information of the Provincial Government, a copy of the progress report in respect of Mr. M. Muthukrishnan a Madras Government 1946-47 sponsored scholar/deputationist.

The Provincial Government may kindly forward suggestions, if any, from the point of view of the employment of Mr. M. Muthukrishnan is expected to take up on his return.

Yours faithfully,
Vikram Singh
(VIKRAM SINGH)
for Secretary.

19K# 49.500

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1.11.49
Cera
1.11.49
3/11/49

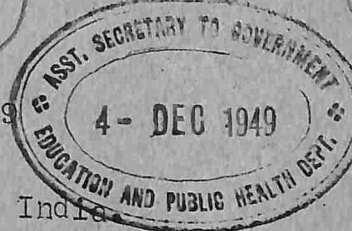
A Brief Report of the Study Tour.

95
10

On Friday evening, Sep. 9, 1949, left Ridgway for Pittsburgh. Saturday visited the University of Pittsburgh and was shown round the various engineering sections, the Electrical Engineering Department with different types of electrical apparatus is upto date. Left Pittsburgh and reached Chicago on Sunday. Monday morning visited The Zenith Ele. Co., and was shown round the plant. The timing switches that can be set for any time within a period of one week, the units for cutting in the emergency supplies when the main supply fails, the impulses and other types of units and instruments are points of special interest. Tuesday visited the Howard Ele. Co., and had a general study of different types of electrical machines. On Wednesday visited the Museum of Science and Industry and the Railroad Fare. The complete history of The Plastics, the development of Magnetism and Electricity from the fundamentals, and the installation and the operation the Tele-communication system in the museum and the design and features of different types of engines and the coaches, and the show "Wheels-a-rolling" are very informative. From Chicago proceeded to Detroit to visit the Ford Motor Company on Thursday. It is interesting to see the a section of that 130 miles of the assembly line and the final assembly of the car. On Friday left for Cleveland to visit the Columbia Ele. Mng. Co. The design and manufacturing of the low voltage generator for Electro-plating, is specialized in this company. Left Cleveland reaching Ridgway by Sunday morning.

On Friday evening, Sep. 2, 1949, left midway for Pittsburgh. Saturday visited the University of Pittsburgh and was shown round the various engineering sections, the Electrical Engineering Department with different types of electrical apparatus is upto date. Left Pittsburgh and reached Chicago on Sunday. Monday morning visit the Zenith Mfg. Co., and was shown round the plant. The timing switches that can get for any time, it is needed of one week, the units for cutting in the emergency supplies when the main supply fails, the appliances and other types of unit and instruments are points of special interest. Tuesday visited the Howard Mfg. Co., and had a general study of different types of electrical machines. On Wednesday visited the Museum of Science and Industry and the Railroad Term. The complete history of the plastics, the development of motor and electricity from the fundamentals, and the installation and the operation the Tele-communication system in the museum and the design and features of different types of engines and the coaches, and the show "Wheels-a-rolling" are very informative. From Chicago proceed to Detroit to visit the Ford Motor Company on Thursday. It is interesting to see a section of that 130 miles of the assembly line and the final assembly line. On Friday left for Cleveland to visit the Columbia Mfg. Co. The design and manufacturing of the low voltage generator for electro-plating, is specialized company. Left Cleveland reaching midway by Sunday morning.

No. F.7-8/8-19/46.S.2
Government of India,
Ministry of Education,
New Delhi 3, the 30th Nov. 1949



From

Secretary to the Government of India

To

The Secretary to the Government of Madras
Department of Education and Public Health
MADRAS

SUBJECT:-

SCHOLARSHIPS FOR ADVANCED STUDIES OVERSEAS
REPORTS IN RESPECT OF PROVINCIAL GOVERNMENTS
SPONSORED SCHOLARS/DEPUTATIONISTS IN U.K./
U.S.A./AUSTRALIA/NEW ZEALAND.

Sir,

following

I am directed to forward herewith for the information of the Provincial Government, a copy of the progress report each of the Government of Madras in respect of Mr. Muthukrishnu, M. a 1946-47 sponsored scholar/deputationist.

The Provincial Government may kindly forward suggestions, if any, from the point of view of the employment of Mr. Muthukrishnu, M. is expected to take up on his return.

1. Form 'B'
2. Progress Report - Bakshi (29.10.49/500)
3. Final Report with attachments

Yours faithfully,
E.P.H. Vikram Singh
for Secretary.

Filed.

6.12.49 me
6.12.49 me
7.12.49

1. Name (in full in block letters) M. MUTHUKRISHNUDU.
2. Name of sponsoring authority and year of selection The Government of Madras, 1946.
3. Sponsored scholar/deputationist Provincial.
4. Date of birth June 15, 1923.
5. Community, Province, State Non-brahman, Madras.
6. Qualifications prior to selection
Admitted to the DEGREE OF BACHELOR OF ENGINEERING, Electrical Branch,
by the University of Madras, placed in I CLASS.
7. Experience, if any, prior to selection
One year practical training in the generation, transmission, distribution,
maintenance and office work in the Madras Electricity Dept., Madras Presidency.
Nearly two years as an Assistant Lecturer in the Government Central Polytechnic,
Madras.
8. Subject, course and institution overseas
where training received or being received
with dates of commencement of studies
Electrical Engineering, (Major in Power).
Brooklyn Polytechnic, New York.
From Sep. 1947 to May 1949.
Master's Degree in Electrical Engineering obtained on June 15, 1949.
9. Practical experience, if any, gained overseas
Worked in Elliott Company, Ridgway, PA., for practical training from
June 1949 to November 1949. The Final Report of the practical experience
gained, is herewith attached.
10. Approximate date of completion of studies Nov. 27, 1949.

N.B. If the space is insufficient, the details must be
given on separate sheets.

NOTE TO STUDENTS

- I. In every case, it is essential for you to state the degree, if any, for which you are studying. The likely date of taking the degree should in all cases be mentioned. If you are not studying for a degree, please mention the likely date when you hope to complete the course, of study you are pursuing. Where you have already taken a degree, please give the date of taking it, and state what you have been doing since taking the degree, and when you hope to complete the course, or training you are undergoing at present. Of the four copies that are being sent to you, three are to be returned; one is for your record.
- II. This report must be submitted through your Professor or Supervising authority in-charge. (See reverse).

Name in Block Capitals M. MUTHUKRISHNUDU.

File No. G. 281/46H.C.

Scholarship/ Study Leave/ Deputationist Provincial Scholarship.

SPONSORING AUTHORITY The Government of Madras.

1. Date of arrival in U.S.A. July 28, 1947.
2. Subject for which selected Generation, Transmission & Utilization of Ele. Power.
- @ 3. Course of study or training undertaken Electrical Engineering, (Major in Power).
4. Degree sought/obtained M.E.E. (Obtained in June 15, 1949.)
5. Approximate date of degree-award June 15, 1949.
6. Institutions in which student is pursuing study/training Brooklyn Polytechnic, N.Y.,
and Elliott Company, Ridgway, PA. (Practical Training).
- @ 7. Course of ~~study or~~ training attended during period under review A Final
Report of the work done during the practical training, is attached.
- @ 8. All Examinations (including subjects) taken, with dates, and results. (In the final examination the degree or diploma obtained should be stated, with subjects taken, and honours, if any.) The grades obtained in the final examination, must be stated. Grades should be explained.
For the practical training, a certificate from The Elliott Co., Ridgway, PA.,
is attached.
9. Any Prizes or other Distinctions

10. FOR STUDENTS TAKING PRACTICAL TRAINING:

Name of Concern:	Date of Joining:	Stay to last until:	Nature of Training:
Elliott Co., Ridgway, PA.	June 7, 1949.	november 1949.	Design, manufacture and testing of the electrical machines.

11. This Report covers period beginning from June 1949 and lasting up to November 1949.
12. University or Institution Supervisor's Report on the work of the student during the period under review:

The letters from the authorities of Elliott Company, Ridgway, Pa., are here-with attached.

Date _____ Signature _____

13. Observations of the Education Department, Embassy of India.

Date _____ Signature A. B. S.

Signature of Student M. M. H. K. S.

Place Elliott Company, Ridgway, PA.

Date Nov. 11, 1949.

FINAL REPORT.

A brief and detailed report of the work done during the Practical Training:

Design of the Induction Motor, squirrel cage type, either semi-closed or totally closed; Choice of the stator and rotor slots to avoid the effects of the harmonics and magnetic noise; Skin effect in the deep-bar machine; The calculations of the reactances and resistances of the machine both for the starting and the running conditions, to satisfy the standard requirements of the starting and the pull-out torques, power-factor, efficiency and the temperature rise in the machine; Determination of the magnetic circuit, flux densities and no-load and load losses in the machine; Design of a multi-speed induction motor; Study of the manufacture of the motor from the standard sizes available to satisfy the most economical conditions and standard specifications for a given out-put of the machine.

Design of the Alternating-current Machines, generator, synchronous and turbo-alternators; Choice of the main dimensions of the machine to satisfy the out-put constant and W/k ; Determination of the fractional slot winding for the given number of poles satisfying the chord-factor, balanced winding and the noise problem; The graphical method of finding the pole and the winding constants; Calculations of the direct-axis and quadrature-axis reactances to obtain a given value of the Short-Circuit-Ratio; Calculation of the no-load and full-load ampere-turns; An analytical method to determine the voltage regulation; Estimation of the no-load and the load losses and the efficiency; Determination of the Transient and Sub-transient Reactances; Starting and the Pull-in Torques of the synchronous motors; Study of the production of the different parts and the assembly of the A.C. Polyphase Machines.

Design of the Direct-current Machine, generator, motor and exciter; The best choice of the winding; the dimensions of the exciter to satisfy the main drive; Cross-connectors, commutation and the reactance voltage; Determination of the magnetic-circuit and no-load saturation densities; Design of the shunt field, the commutating field and the series field; Calculation of the losses and the efficiency; Study of the manufacture and assembly of the different parts.

Study, in the Test Floor, of the electrical tests for saturation, regulation, no-load and load losses, power factor and efficiency. Punching of the stator and rotor cores and poles; stacking of the stator and rotor cores and welding of the frames and the spiders respectively; slot insulation; coil-insulation and winding; static and dynamic balance of the machine; assembly and alignment for correct air gap; final check for vibration of the bearing and minute mechanical details of the machine before shipment.

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102

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[Faint, mostly illegible text, likely bleed-through from the reverse side of the page. Some words like "motor", "efficiency", "load", "speed", "torque" are visible.]

ELLIOTT COMPANY

(INCORPORATED)



GENERAL OFFICES
JEANNETTE, PA.
WORKS
JEANNETTE, PA.
RIDGWAY, PA.
SPRINGFIELD, O.
NEWARK, N. J.

RIDGWAY, PA.

November 11

1949

CERTIFICATE

Mr. M. Muthukrishnamu has just completed a six-month period of training at our plant. We have permitted him to work in our testing department, to observe all manufacturing operations, and to familiarize himself with design and calculation methods in our engineering department.

He has shown considerable aptitude and diligence and has impressed all of our people with his seriousness of purpose and his ability to learn. He has a good understanding of the fundamentals of engineering, as well as a lot of practical knowledge of shop methods.

We have been particularly impressed by his personal characteristics which have enabled him to make a great many friends both in the plant and among the residents of Ridgway.

ELLIOTT COMPANY

Quentin Graham

Quentin Graham.
VICE PRESIDENT.

QG:BN

103

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ELLIOTT COMPANY

(INCORPORATED)



RIDGEWAY, PA.

November 11

1949

GENERAL OFFICES
JEANNETTE, PA.
WORKS
JEANNETTE, PA.
RIDGEWAY, PA.
SPRINGFIELD, O.
NEWARK, N. J.

RECOMMENDATION

Mr. M. Muthukrishna has just completed a six-month period of training at our plant. We have permitted him to work in our testing department, to observe all manufacturing operations, and to familiarize himself with design and construction methods in our engineering department. He has shown considerable aptitude and diligence and has impressed all of our people with his thoroughness of purpose and his ability to learn. He has a good understanding of the fundamentals of engineering, as well as a lot of practical knowledge of shop methods. He has been particularly impressed by the personal character of the people with whom he has come in contact. He has a great many friends here in the plant and among the residents of Ridgway.

ELLIOTT COMPANY

Charles Graham
Charles Graham
VICE PRESIDENT

Charles Graham
VICE PRESIDENT

104

ELLIOTT COMPANY

(INCORPORATED)

107



RIDGEWAY, PA.

November 10

1949

GENERAL OFFICES
JEANNETTE, PA.
WORKS
JEANNETTE, PA.
RIDGEWAY, PA.
SPRINGFIELD, O.
NEWARK, N. J.

TO WHOM IT MAY CONCERN:

In July of this year it was my privilege to write a recommendation for Mr. M. Muthukrishna, and comment upon his education, ability, and personality. The four months which have intervened have only served to further convince me that my first conclusions were entirely correct.

Mr. Muthukrishna has applied himself diligently to his studies. He has dug into design problems and kept at them until he has found the answer. He has supplemented his theoretical work by much observation in our shop, so that he has learned not only the theoretical but also the practical answer to many design and manufacturing problems.

His personality is a "natural." He attracts all types of people to him by his friendly manner, his thoughtfulness, and his cheerful disposition. It is my belief that he will go far in his chosen field and be surrounded by a host of friends throughout his life. His many friends here hate to see him leave, but extend him every best wish for success in his future endeavors.

Very truly yours,

ELLIOTT COMPANY

F. I. Biggs
F. I. Biggs (B.S. Cornell University '33)
SECTION ENGINEER, A.C. Generator Division.

FIB:BE

ALL ORDERS ACCEPTED SUBJECT TO DELAYS ARISING FROM CAUSES BEYOND OUR CONTROL.
QUOTATIONS SUBJECT TO CHANGE WITHOUT NOTICE

105

ELLIOTT COMPANY

(INCORPORATED)



RIDGWAY, PA.

November 10
1949

GENERAL OFFICES
JEANETTE, PA.
WORKS
JEANETTE, PA.
RIDGWAY, PA.
SPRINGFIELD, O.
NEWARK, N.J.

TO WHOM IT MAY CONCERN:

This is to advise that Mr. M. Muthukrisnadu received extensive training in the design of two pole turbine-driven generators for a period of three months in the Ridgway Division of the Elliott Company. In addition to his experience in design, he acquired a thorough practical knowledge of the actual construction of two pole generators in the various stages of manufacture and test.

Mr. Muthukrisnadu proved to be very efficient and capable in acquiring comprehensive training in the latest design practices, construction, and application of two pole alternating current generators.

Socially speaking, Mr. Muthukrisnadu likes to meet people and to make friendly contacts. I have found him to be alert, intelligent, and cooperative. I highly recommend him as a sincere and responsible person.

ELLIOTT COMPANY

R. W. Zehner

R. W. Zehner,
DESIGN ENGINEER
A.C. DESIGN SECTION.

RWZ:mea

107

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28 DEC 1949

5

Washington, D.C.

16th November, 1949.

Ref.G. 291/46/A

From: Education Secretary,
Embassy of India in the U.S.A.

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

101262

Sir,

plio info

I am directed to enclose herewith three copies
of an Individual Financial Statement for Mr. M. Muthurkrishnudu
a 1946 Madras Government Sponsored Scholar who departed from
the U.S.A. on 29th November, 1949.

Yours faithfully,

KPH/9.

Filed.

for Education Secretary.

62
3.1.50
4.1.50
5/1/59

Copy to: Secretary to the Government of Madras, Education
Department.

How

109

99

Washington, D.C.

16th November, 1949

Ref. G. 231/46/A

From: Education Secretary,
Embassy of India in the U.S.A.

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

Sir,

I am directed to enclose herewith three copies
of an Individual Financial Statement for Mr. M. Muthukrishnan
a 1946 Madras Government sponsored scholar who departed from
the U.S.A. on 29th November, 1949.
Yours faithfully,

For Education Secretary,

Copy for: Secretary to the Government of Madras, Education

OVERSEAS SCHOLARSHIPS SCHEME

Individual Financial Statement

1. Name of Scholar: **M. Muthukrishnan**

2. Central, Provincial (State here whether sponsored or deputationist) or State scholar. If Provincial or State scholar, give the name of Province or Indian State concerned:

Madras sponsored Scholar

3. Year of Selection:

1946

4. Date of embarkation after completion of studies abroad:

Nov. 29th, 1949

5. Date up to and for which stipend or leave salary has been paid and the rate of stipend or leave salary:

Stipend paid July 28/47 to Nov. 29/49 at rate of \$160.00 per month

6. Amount paid as journey allowance:

\$5. or \$14.00

7. Amount paid towards railway journey in India:
In case an authority to the travel agents for providing a railway ticket for journey in India has been issued, it should be mentioned here.

NIL

8. Any other advances, advance payments, overpayments or disputable payments made to the scholar or outstanding against him, which require recovery or regularization in India:

NIL

9. Amounts, if any, due to the scholar but not paid to him:

NIL

Signature of returning scholar

M. M. M. K. S.

Date: **Nov. 13. 1949.**

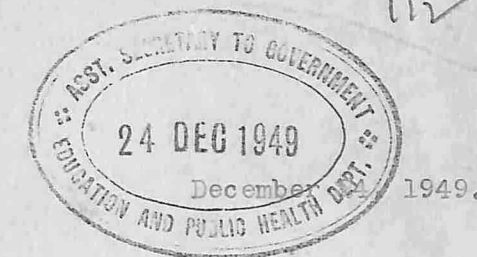
Signature of competent authority

[Signature]

Date: **8/14/49**

111

M.Muthukrishnudu,
Government Scholar,
59 Varadha Muthiappen Street,
G. T. Madras.



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

Dear Sir,

100930

I am here-with reporting my arrival at Madras. In June 1947 I left for
The United States of America to do my Post Graduate work in Electrical Engineering,
(Major in Power). After completing my Master's Degree in The Polytechnic Institute,
Brooklyn, New York, I joined Elliott Company, Ridgway, Penna. to undergo practical
training for six months when I specialised in the design, manufacture and testing
of the electrical machines of large out-put.

I am sure that the theoretical knowledge and the practical experience that
I gained, can very beneficially be applied towards the industrial development of our
country, and I am very eagerly looking forward to serve my Government and my Country.

I am deeply grateful to you for this opportunity.

Yours faithfully,

M. M. Muthukrishnudu

(M.MUTHUKRISHNUDU.)

113



M. Muthukrishnan,
Government Scholar,
59 Varadha Muthiappen Street,
G. T. Madras.

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

Dear Sir,

100930

I am here-with reporting my arrival at Madras. In June 1949 I left for the United States of America to do my Post Graduate work in Electrical Engineering (Major in Power). After completing my Master's Degree in the Polytechnic Institute, Brooklyn, New York, I joined Mott MacDonald Company, Midway, Tenn. to engage practically training for six months when I was called in the Indian Navy and working of the electrical machines of large out-put.

I am sure that the theoretical knowledge and the practical experience that I gained, can very beneficially be applied towards the industrial development of our country, and I am very eagerly looking forward to serve my Government and my country.

I am deeply grateful to you for this opportunity.

M. Muthukrishnan
(M. Muthukrishnan Esq.)

114
LPH 9

Letter / Ref 100930 9 / 49-1 Edu 99.1.50
To

The Secy to the Govt,
Ministry of Edu,
New Delhi.

copy to DRI ✓
KPK/A section } will
of this } a copy
Scholar's letter.

Overseas Scholarships Scheme.
1946-5. Sri M. Muthukrishnan.

I am directed to state that
Sri M. Muthukrishnan has reported his
arrival in India on 24.12.49. His
address is:

59. Varadha Muthiappen St.
George Town. Madras

103-200
6.1.50 7.1.50

MM
9/1/50

Y.F.

113



M. Muthukrishnu
Government Scholar,
59 Versha Krishna Street,
G. T. Madras.

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

115

4

8

Asst

116

PRIORITY.

63

No-F.7-8/S.19/46 S.2,
Government of India,
Ministry of Education.

New Delhi, the 11/14 January, 1950.

From The Secretary to the Govt. of India.



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

Subject:- Return to India from the U.S.A. via the U.K.
of Mr. M. Muthu Krishnu, Madras Government
1946-47 sponsored scholar.

=====

3420
p 96 ank

Sir,
In continuation of this Ministry letter of
even number, dated the 30th November, 1949, regarding
the above scholar, I am directed to state that the Indian
Embassy at Washington have since informed this Ministry
that Mr. Muthukrishnu sailed from the U.S.A. for the
United Kingdom on 29th November 1949, by S.S. 'De Grasse'

Yours faithfully,

D. Madhavi
for Secretary.

EPH
9

Filed.

[The scholar reached India
on 24.12.49. The accompanying
visa orders in his passport are
under issue.]

file in A

115
17.1.50
CMM
18.1.50

19/1/50

Overseas Scholarships - 1946-7

Sri M. Muthukrishnan - Extension

in the period of scholarship

From the Ctg D, Ministry of Edu & M. P. 7-8/5 19/46 & 4/2/49

From the D.P.I. No. 3207 C/US & 11.3.49

Sri M. Muthukrishnan, a 1946 scholar, who is undergoing the M.Sc course in Electrical Engg at the Brooklyn Polytechnic, USA, has applied for four months extension in the period of his scholarship in order to undergo the six months practical training advised by his Professor. This work has required the scholar to undergo practical training during vacations and also ^{almost three months training} after completion of the M.Sc course, within the normal period of scholarship of two yrs. Apparently this was not possible for the scholar. The Indian Embassy and the scholar's professor have recommended extension for the purpose of the practical training and the Govt of India are inclined to agree to it provided this Govt consider the proposed practical training necessary from the point of view of the scholar's employment on return.

2. The scholar is intended for absorption in the teaching personnel of the Engg colleges and the D.P.I. considers that the proposed practical training would be valuable from the point of view of the scholar's employment. The four months extension, from 28-7-49 to 27-11-49, may therefore be agreed to. The Ctg D will meet half the cost during the extension.

3. Subject to order a draft letter to the Ctg D is submitted for approval. Finance may see it before circulation.



Edn no 685576/46.6
22.3.49

19/3/49

19/3/49

MINISTRY

No. F-7-8/5/46 S.S.
Government of India
Ministry of Education

New Delhi, the 11th January, 1949.

The Secretary to the Govt. of India.

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

Subject: - Return to India from the U.S.A. via the U.K.
of Mr. M. Muthukrishnan, Madras Government
1946-47 sponsored scholar.

In continuation of this Ministry letter of even number dated the 25th November, 1948, regarding the above scholar, I am directed to state that the Indian Embassy at Washington have since informed this Ministry that Mr. Muthukrishnan sailed from the U.S.A. for the United Kingdom on 28th November 1948, by S.S. 'De Grasse'.

Yours faithfully,

[Signature]

(S. S. Madhav)
For Secretary

[Handwritten notes in margin]

FIN (F. H.)

The notes of F.P.H. on p.1. above may be perused. The case relates to the proposal for granting an extension of 4 months to Sri. M. M. Muthukrishnan, a overseas scholar, sponsored by this Govt, to enable him to undergo practical training. The proposal at A. on p.1. above may be agreed to in Fin, as it is stated, provided half the cost ^{during the extension will be} met by the Centre. The draft letter below may be ^{accepted} perused and the case referred to F.P.H. H.M (FIN) who may see.

M/S 131111

M/S 131111

E. P. H. E2

FIN. U. O. 19254/ENT. 1
23.3.49



The notes from p.1. above may be perused. ~~In order as to circulation~~ the file may be circulated to H.M (Edn) + H.M (Fin) for approval of the draft.

25.3.49

26/3/49

3/4/49

3.4

23244 NO 29/3



(6)

[Issued as 6855762/48-5 Edn d.5/4/49]
C.No. 39338/49 From the Govt. of India, Ministry of Edu.
F.T.8/5.19/46 Sd 2.12-5-49.

The scholar, Sri Muthu Krishnan was granted an extension ^{the period of} in his scholarship for 4 months from 28-7-49 to 27-11-49 to enable him to undergo practical training. According to the original plan, the practical training for the scholar was to have been arranged with the Westing House Electric Manufacturing Co. and other firms. As it is doubtful whether the arrangements can be finalised with those firms the Indian Embassy are approaching the U.S.A. Govt. agencies for the scholar's practical training, as an alternative plan. Govt. of India enquire whether this Govt. have any objection to the alternative course. This Govt. need not object and may allow the Indian Embassy in the U.S.A. and the Govt. of India to arrange for the training which they deem ~~to be~~ suitable ~~alternative~~.

A draft letter to the Govt. of India is submitted for approval.

28/5/49

2/6/49

1.6.49

[Delivered] Reg. No. 6855762/48-6 Edn 9.2.6.49
C.No. 40329/49 From the Govt. Ministry of Edu.
F.T.8/5.19/46 Sd 9.15.6.49.

49.50 CF
51 CF

Please see the notes above and the Govt. letter at p.51 CF. The Embassy has arranged practical training for Sri Muthukrishnan with M/s Elliot Co. till Nov 1949 in the first instance, with the possibility

50 CF

to extend the period further, if so required.
 But the Govt. state that the Govt. will have
 to meet the entire cost if extension practical
 training is to be extended beyond Nov '49.
 The scholar was granted 4 months' extension
 in the period of scholarship for practical training
 till 27.11.49. As the Govt. will not consider
 further extension, the scholar may be asked to
 return to India after Nov '49.

Subject to Order a draft letter is
 submitted for approval.

163
 to 6.48
 Cua
 22.6.49
 23/6/49
 24/6/49

Dev. should see A
 as page 53 for remarks please
 I am approved
 24/6/49

Letter No. 68557, 6/48-7 Ldn 24.6.49 p 63 CF

Sri M. Muthukrishnan has been
 appointed as Inspector in Elect. Engg. Co 113 Ldn
 Kakinada, 16.1.50

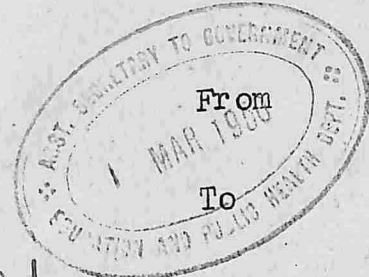
No further action is called for in
 this file. These papers may be recorded.

Order 424 Ldn 10.2.50 Co 68557/48
 Recorded.

Cua
 9.2.50
 24/2/50

Overseas Scholarships.
 1946-5. Sri M.
 Muthukrishnan.
 Papers re. to his
 studies - Recorded.

The Scholar is for
 Edn. Dept.



161

No. F.7-8/S.19/465II, (16)
 Government of India,
 Ministry of Education,
 New Delhi, the 28/11 February 1949.

The Secretary to the Government of India.

The Secretary to the Govt. of MADRAS,
 Department of Education & Public Health
MADRAS.

SUBJECT:-

SCHOLARSHIPS FOR ADVANCED STUDIES OVERSEAS -
 INDIVIDUAL FINANCIAL STATEMENT IN RESPECT
 OF PROVINCIAL GOVERNMENTS SPONSORED SCHOLARS/
 DEPUTATIONISTS IN U.K./U.S.A./AUSTRALIA/
 NEW ZEALAND.

Sir,

I am directed to forward herewith for the
 information and necessary action, a copy of the Individual
 Financial Statement, in respect of Mr. M. MUTHUKRISHNAN
 a Madras Government 1946-47 sponsored
 scholar/deputationist. received in this Ministry from
 the High Commissioner for India, London. Yours faithfully,
 (Mrs. D. MADHAN) for Secretary. PTO

May be filed with: ① Ldn 1/6.

163 Cua
 9.3.50

24/3/50

2

-: 2 :-

Copy with a copy of the Individual Financial Statement forwarded to:-

(1) The Accountant General, Central Revenues, New Delhi,

(2) Accountant General, _____

By order,
for Secretary.

IK
22.9.49.

OVERSEAS SCHOLARSHIPS SCHEME

E.41.

Individual Financial Statement.

1. Name of Scholar.
2. Central Provincial (Please state here whether sponsored or deputationist) or state Scholar: if Provincial or State Scholar, the name of the Province or Indian State concerned.
3. Year of Selection.
4. Date of commencement of scholarship.
5. Date of embarkation after completion of studies abroad.
6. Date upto and including which stipend or leave salary has been paid and the rate of stipend or leave salary.
7. Daily allowance paid during the period of waiting for return transportation.
8. Amount, if any, paid as journey allowance.
9. Amount, if any, paid towards railway journey in India: (In case on authority to the travel agents for providing a railway ticket for journey in India has been issued, it should be mentioned here).
10. Any other allowances, advance payments, overpayments, or disputable payments, made to the scholar or outstanding against him, which require recovery or regularisation in India.
11. Amounts, if any, due to the scholar but not paid to him.

1. M. Muthukrishnu.
2. Madras Government Scholar. In transit from the U.S.A.
3. 1946 - 1947.
5. 18th December, 1949. By chartered plane. (Delayed from 16th December.)
7. Maintenance Allowance at the rate of 19/- per day for the period 8th to 15th December, 1949.
8. Nil.
9. Scholar given a letter of authority to the American Express Co. to provide him with a class two single ticket from Bombay to Madras.
10. Nil.
11. Nil.

Phram
Signature of competent authority.

Date:

17th January, 1950.

