

To: Dean D. E. Macdonald

From: Professor F. Dow Smith

Subject: Annual Report - Physics Department 1954-55

The academic year just completed can accurately be categorized as a year of growth and solidification of departmental activities in accordance with basic plans. In a general sense two things stand out: (1) The growth of key faculty members in professional and university affairs, and (2) The increase in the number of high caliber students being attracted to physics at Boston University. These gains are definite and are reflected in the summaries given below. These summaries must be considered with some caution, however, since they do not reflect, for example, the percentage shift of students from part-time to full-time basis in the graduate program. A much better criterion can be found in the degree of participation in the Physics Colloquium also discussed below. There is some concern that departmental needs in terms of facilities are growing more quickly than solutions are being found so that an already serious situation worsens somewhat.

This report covers only those activities in physics which have been under the direct supervision of the Chairman of the Physics Department, and excludes therefore the significant and extensive contributions of the Physical Research Laboratory. Notwithstanding this division of administrative responsibility, there has been close interchange of information and of personnel. Physical Research Laboratory personnel have contributed significantly to the teaching program and workshops. Graduate students have found opportunities for study and research on assistantships offered through the sponsored research program. Undergraduates have been given increased opportunity to view the activity of the laboratory, this resulting in a noticeable extra stimulus to their work.

Teaching Faculty for 1954-55

Primarily undergraduate:

Professor L. B. Taylor
Professor L. A. Brigham

Undergraduate and graduate :

Visiting professor C. Apchenbrenner
Assistant Professor F. D. Smith
" " F. Ajzenberg
" " J. Josephs
Mr. Hutson Howell

Primarily graduate:

Research Professor K. Pestrecoff
Assistant Professor W. Hanser
" " A. Siegal
Mr. R. L. Dussault
Dr. E. O'Neill
Mr. G. Fellows
Mr. J. Gardes
Mr. J. Watson

Dean Duncan E. Macdonald

July 9, 1956

F. Dew Smith

Annual Report

Dear Dean Macdonald:

The following recommendations are extracted here from my annual report to you submitted in June. They include some urgent matters on which immediate decisions are necessary. These particular matters have been marked with asterisks with comment made below. The following recommendations appear on Page 11 of this report:

1. Administrative reorganization to make possible a total physics budget.
2. Approval of the following goal for 1957-58 for regular faculty.

1 Professor	at 8000
1 Associate Professor	8000*
1 Associate Professor	7500
1 Associate Professor	7000
1 Assistant Professor	6500
1 Assistant Professor	6000 (50% carried by CIA)
1 Assistant Professor	5600 (50% carried by CIA)
<u>TOTAL CIA BUDGET 42,800 (not including department chairman)</u>	

Currently we have:

1 Professor	at 6800
1 Associate Professor	5700 (have recommended adjustment to 6200)
1 Associate Professor	3300 (CIA budget burden-no base rate assigned)
1 Assistant Professor	5200
1 Assistant Professor	5000 (CIA budget 1250, adjustment to 5300 has been recommended)

Will attempt to hire by September 1956:

1 Assistant Professor	at up to 6000 **
1 Assistant Professor	at up to 6000 (CIA budget 3000)***

TOTAL CIA BUDGET FOR
REGULAR FACULTY OF ALL
RECOMMENDATIONS APPROVED \$31,750 (includes 3300 toward salary
of department chairman)

This goal implies the hiring of only one additional person for 1957-58 and assumes the return and promotion to associate rank of Professor Ajszenberg-Selove.

3. Authorization to use 11,000 square feet of space in the PRL building for academic physics purposes. (This space can be made available through conversion of space now used for storage.)
4. Approval of: 3 Graduate Teaching Assistantships at 1800 for a academic year plus tuition.
3 Graduate Research Assistantships at 1800 for a academic year plus tuition.

*Approval of this specific appointment is urgently requested. A man of the highest possible caliber is known to us who will be available for an appointment to begin July 1, 1957. It will be necessary, however, to give him a firm offer (not necessarily formalized) almost immediately. This man is Dr. Walter Selove, currently on a sabbatical leave from Harvard University. I believe you are fairly familiar with the total implications of this appointment both in terms of its own merits and in terms of the total departmental picture involving the retention of Professor Fay Ajzenberg-Selove.

**We have a first-class man available for this position, Dr. Robert K. Nesbet, graduate of Harvard and Cambridge Universities, currently working on theoretical solid state physics at Lincoln Laboratory. He is interested in an academic position which provides him free time for academic research in the summer, particularly in the first years of appointment. The problems on which he wishes to work are not suitable for obtaining immediate sponsorship, but have great potential for the future. He is willing to accept a reduction of \$1000 on his current salary (his salary is \$7500 and is essentially a free grant for research providing him complete freedom within a general field. This rate is therefore much lower than would be available to him in other areas at Lincoln Laboratory.) An academic salary of \$6500 will be required. This represents an increase in our planned budget, but is unavoidable. This rate is consistent with my recommended scale for 1957-58. If this rate is tentatively approved as a basis for negotiation, I would like to invite Dr. Nesbet to meet with the Deans and with Vice-President Yee, Wednesday, July 16. This is the subject of a separate memorandum to you.

*** We have been attempting to fill this position with a man who could be interested in one of our problems as a research in the Physical Research Laboratories. We have been having considerable difficulty in doing this. Our search has narrowed down to two men, one of whom quite definitely could not be supported in this way. Both men currently under consideration represent a possible ultimate replacement for Professor Lucien Taylor and would contribute primarily to the undergraduate program. Approval is requested for permission to negotiate with applicants for this particular position on the basis of either full-time or half-time support from University funds. In the case of one individual involved, it will be necessary for me to know by July 15 whether or not appointment can be made on a full-time basis.

**** Item 3 concerning the use of space in the FRL building for physics is also urgent ~~is~~ from the point of view of both Physics Department planning and FRL planning. If authorization is given, I believe it would be quite feasible to hold the intermediate physics classes in FRL beginning in September 1956, thus releasing classroom space in the College of Liberal Arts with the transfer of the undergraduate laboratories to take place not later than the beginning of the second semester 1956/57.

See page 3

The above recommendations have been singled out because of the particular urgency which applies to them. This is not to imply that early approval of the total recommendation is not needed. One area of importance has not been stressed in my annual report primarily because the specific needs will not be clear until faculty arrangements are solidified. This has to do with the department research budget. It has been adequate over the last two years only because we have not had substantial research activity in the Department requiring need of such funds. This is an item which should be kept in mind for future budget planning.

Research Appointments

In addition formal action on the following appointments is required (subject of separate memoranda in your hands.)

Assistant Research Professor of Physics
effective September 1, 1956.....George Stroke

Associate Research Professor of Physics
effective July 1, 1956.....Ray Ajzenberg-Solove

One other appointment to Associate Research rank is under consideration (Arthur Kohlenberg.) No recommendation is offered at this time.

To: Dean D. E. Macdonald

From: Professor F. Dow Smith

Subject: Annual Report - Physics Department 1955-56

Dear Dean Macdonald:

This report is being submitted following your request of May 15, 1956. I am grateful for this invitation to report at a time when we can look back on many accomplishments achieved, but also at a time when we face serious problems. Some of these problems are not new, but as is so often the case, there comes a time when the accumulation of problems may lead to a total situation, a crucial situation, which can only be considered in totality. Physics at Boston University faces such a situation today. I am therefore presenting this report in two parts--one dealing with the activity of the academic year just completed and the other with long range aims and needs. To provide a consistent picture I include as well certain aspects of the undergraduate program relevant to graduate problems.

Teaching Faculty for 1955-56

Primarily Undergraduate Courses:	Professor L. B. Taylor Professor L. A. Brigham (astronomy courses, no direct participation in Physics Dept.)
Undergraduate and Graduate:	Associate Professor F. D. Smith Associate Professor A. Siegel Assistant Professor F. Ajsenberg-Selove Assistant Professor J. Josephs Visiting Professor Aschenbrenner Dr. E. L. O'Neill Mr. Hutson Howell Mr. William Davis Mr. John Gerdes Research Associates in FRL--each teaches one course
Graduate:	Research Professor Pestreccov Assistant Professor Hauser Mr. R. Clafin (evening program only) Mr. R. L. Dussault (Institute of Air Photography) Mr. G. Sofer (evening program only)

Enrollments (1955-56)

Students in Elementary Courses	200
Undergraduate Physics Majors	50
Masters Candidates	20
Ph. D. Candidates	27

Degrees Awarded August 1955 & June 1956

Bachelor of Arts	12
Master of Arts	6
Doctor of Philosophy	0 (three students have dissertation in final draft stage)

Graduate Assistants

Teaching Fellows	3
Part-time	2
Research A	5

The program of the Physical Research Laboratory has broadened its base of support through working with a wider group of supporting agencies. Contractual obligations as of May 31, 1956, total \$. In addition, contracts within the Physics Department for basic research total \$26,990.

The following reports have been published from 31 May 1955 to 31 May 1956:

Contract No. AF 33(616)-432
The Science of Aerial Photography

- Technical Note No. 120, The Effect of Increase in Base/Height Ratio on Height Judgments, June 1955.
- Technical Note No. 121, A Quantification of Textures on Aerial Photographs, June 1955.
- Technical Note No. 122, The Analysis and Synthesis of Linear Coherent and Incoherent Optical Systems, September 1955.
- Technical Note No. 123, An Application of Berek's Method for the Third-Order Design of a Triplet, September 1955.
- Technical Note No. 124, An Experimental Study of Factors Affecting Haze Penetration in Long Range Photography, December 1955.
- Technical Note No. 125, Some Remarks on the Approach to an Optimum USAF Reconnaissance Posture, December 1955.

Quarterly Progress Reports of the Director

- No. 39 - for the First Quarter of 1955.
- No. 40 - for the Second Quarter of 1955.
- No. 41 - for the Third Quarter of 1955.

Contract No. AF 19(604)-857
Spectroscopic Recording Techniques

Quarterly Status Reports

- No. 7 - for the period ending 31 March 1955
- No. 8 - for the period ending 30 June 1955
- No. 9 - for the period ending 30 Sept. 1955
- No. 10 - for the period ending 31 Dec. 1955
- No. 11 - for the period ending 31 March 1955

Contract No. AF 19(604)-1030
System 119L

Quarterly Status Reports

No. 4 - for the period ending 31 Dec. 1954

No. 5 - for the period ending 31 March 1955

Final Report - July 1955

Contract No. AF 19(604)-1547
Optical Navigational System

Scientific Report No. 1 (Includes Quarterly Status Report No. 1 and No. 2) Dec. 1955
Quarterly Status Report No. 3, for the period ending 31 March 1956.

Contract No. AF 04(645)-60
Photographic Visibility Study

Monthly Progress Reports

No. 1 - for the month of Dec. 1955

No. 2 - for the month of January 1956

Final Report - A Survey of Photographic Visibility Problems at Patrick Air Force
Base February 1956

Bi-monthly Progress Report for the period ending 30 April 1956

Contract No. AF 19(604)-1735
Application of Communication Theory to Radar Antenna Scanning

Quarterly Status Report No. 1 - for the period ending 30 April 1956

Nonr - 492(03)
Radar Target Simulation Study

Summary Technical Report No. 3, February 1955

Summary Technical Report No. 4, Dec. 1955

Radar Target Simulation (Special Report), March 1956

P. O. No. 6108 - 2470
Effect of Thermal Shock on Aerial Camera Focus

Final Report

P. O. DDL - 2576 and P. O. DDL - 2947
Reversal Processing

Final Report (Part I), July 1955

Final Report (Part II), April 1956

During the year members of the laboratory have participated in many symposia and meetings, many of them of international scope and prestige.

The following is a partial list of papers presented by members of the Physical Research Laboratories:

"Detection and Recognition of Photographic Detail I: Empirical Data Applied to the Prediction of Performance of Diffraction Limited Systems," by Duncan E. Macdonald and John T. Watson, presented at the University of Rochester Symposium, June 1955, and at the Annual Meeting of the Optical Society of America Philadelphia, Pennsylvania, April 5-7, 1956.

"The Effect of Wavelength and Emulsion Contrast on Long Range Photographic Haze Penetration," by Hutson K. Howell and John T. Watson, at a meeting of the Photographic Society of America, Boston Convention, October 4-7, 1955.

"Some Applications of Combined Developer-Fixers," by Hutson K. Howell, at a meeting of the Photographic Society of America, Chicago, Illinois, October 6-9, 1955.

"The Effects of Supersonic Air Flow on Image Quality," by William C. Britton, at the Annual Meeting of the Optical Society of America, Philadelphia, Pennsylvania, April 5-7, 1956.

"The Effect of Striae on Optical Image Quality," by Virgil E. Fieker, presented at the Annual Meeting of the Optical Society of America, Philadelphia, Pennsylvania, April 5-7, 1956.

"The Effect of Image Motion on Recognition of Photographic Detail," by Duncan E. Macdonald and John T. Watson, presented at the Annual Meeting of the Optical Society of America, Philadelphia, Pennsylvania, April 5-7, 1956.

"The Effect of Primary and Third-Order Spherical Aberration on the One-Dimensional Transfer Function," by G. B. Parrent, presented at the Annual Meeting of the Optical Society of America, Philadelphia, Pennsylvania, April 5-7, 1956.

"Spatial Phase Shifts and the Optical Transfer Function," by F. D. Smith and Edward I. O'Neill, presented at the Annual Meeting of the Optical Society of America Philadelphia, Pennsylvania, April 5-7, 1956.

"Transient Effects of Thermal Shock on the Focus of Aerial Cameras," by H. B. Lechner, presented at the Annual Meeting of the Society of Photographic Engineers, West Point, New York, May 7-11, 1956.

"Photographic Monobaths for Rapid Processing II," presented at the Annual Meeting of the Society of Photographic Engineers, West Point, New York, May 7-11, 1956.

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The following publications were made by regular members of the Physics Department (February 1955 through February 1956.)

"Transfer Function for an Annular Aperture," E. O'Neill, Journal of the Optical Society of America, March 1956.

"The Analysis and Synthesis of Linear Coherent and Incoherent Optical Systems." (Now being reviewed by editorial board for publication in the Transactions of the Institute of Radio Engineers (professional group on Information Theory)).

"Differential-Space Theory of Quantum Systems," Norbert Wiener and Armand Siegal, *Nuovo Cimento* 2, Supplement 4 (1955).

"'Theory of Measurement' in Differential-Space Quantum Theory," Armand Siegal and Norbert Wiener, *Physical Review* 101, 429-432 (1956).

"Energy Levels of Light Nuclei. V," Ajsenberg and Lauritsen, *Reviews of Modern Physics* 27, 77 (1955).

"Neutrons from the Proton Bombardment of S^{32} and S^{34} ," Ajsenberg, Rubin and Likely, *Physical Review* 99, 654A (1955).

"Neutrons from the Proton Bombardment of B^{11} ," Ajsenberg, Rubin, Johnson and Masari, *Physical Review* 100, 960A (1955).

"Energy Levels of Si^{28} ," Rubin, Ajsenberg and Mark, *Physical Review* 100, 961A (1955).

"'Classical' Nuclear Physics in the USSR," Ajsenberg, to be published in *Nuovo Cimento*.

Book Review of Kaplan's "Nuclear Physics," *Reviews of Scientific Instruments*, 26, 782 (1955).

Translation of "The Isotopic Shift in the Spectrum of Plutonium," by A.R. Striganov, L. A. Korostyleva, and Yu. P. Dartsov (*J.E.T.P.* 22, 480 (1956)), published in "Soviet Physics" 1, 354, (1955).

"Real and Simulated Interferometry," A. F. Dow Smith, *Journal of the Optical Society of America*, V. 45, #5, p. 408, 1955.

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Physics Department faculty participated in the following symposia, meetings, and activities among others:

Summer term, Physics Department, Columbia University
Physics Department, National University of Mexico, Mexico City
Smith-Mundt Fellowship Program, U. S. Department of State
Subcommittee on Nuclear Constants, National Research Council.
Steering Committee, Conference on Cooperative Emulsion Research, National Science Foundation
Newsletter of the Conference on Cooperative Emulsion Research
Nuclear Data group, National Research Council
Greencastle Conference on Cooperative Emulsion Research, March 1955
Washington Meeting, American Physical Society, April 1955.
Conference on Nuclear Structure, University of Michigan, June 1955.
Mexico City meeting, American Physical Society, August 1955
New York meeting, American Physical Society, January 1956.

Harvard University Seminar on "Experimental Evidence in the Light Nuclei,"
April 14, 1955
Columbia University, "Experimental Evidence in the Light Nuclei," July 14, 1955
Columbia University, "Neutron Spectroscopy," August 4, 1955
National University of Mexico, Five seminars on "The Light Nuclei" and on
"Neutron Spectroscopy," Sept. 6, 7, 12, 13, 14, 16, 1955.
American Physical Society Meeting, New York City, January 27-29, 1956.
Optical Image Evaluation Symposium at Rochester, N. Y., June 1955.
Third London Symposium on Information Theory, London, England, Sept. 12-17, 1955.
Greater Boston Branch, Federation of American Scientists, Executive Committee
Committee on Radiological Hazards, Federation of American Scientists
Probability Seminar, MIT Mathematics Department
New England Section, Optical Society of America
Optical Society of America, October 1955, January 1956, April 1956.
American Association of Physics Teachers, New York City, January 1956.
Science Teaching Panel of Catholic Graduates Club

Part II: Physics at B. U.—Problems and Objectives

I should like to discuss at this time some more general aspects of the program in physics at Boston University. The following comments, a condensation of more lengthy notes which I have prepared on the subject, are in abbreviated form which I hope will therefore be more usable. This does mean, however, that in certain cases further amplification or detail may be desirable. I shall be happy to provide any such additional comment or information as may be required.

This report may be considered in the context of:

1. "Physics at Boston University—Its Goals, Its Problems, Its Present-Day Needs" by D.E. Macdonald, April 1954.
2. Letter Report to President Case from F. D. Smith, June 15, 1954
3. Annual Report to Dean of the Graduate School, June 1955.

It is consistent with the general tenor of all of these. It differs in that certain problems raised previously have been essentially solved, that other problems have assumed different proportions, and that new problems have arisen.

1. Basic University Policy toward Physics

Physics can play a significant role in the future of Boston University. As discussed in my article in the April 1956 issue of the Graduate Journal, we face a situation in which our society is organized more and more in ways depending on technological developments. Yet we also face a deterioration in the teaching of science and its meaning. These things were once considered a significant part of a liberal education. If anything, that significance increases, yet real understanding of what science is about decreases steadily. Boston University is in a particularly appropriate position to contribute toward reversing this trend.

Part I of this report shows a healthy activity in physics. It is a record of accomplishment. Yet this accomplishment is not necessarily synonymous with the establishment of a situation advantageous to the University over the long run.

Over past years the physics program has suffered from lack of a definitive policy to guide its actions. The reports mentioned above, particularly the first two, are essentially invitations for administrative action toward the setting up of short and long-term goals. No such action has been forthcoming.

I have assured in my planning, consistent with your own announcements to faculty, that we are aiming at a Graduate program of the highest possible caliber. This does not mean we should plan or even wish to compete on a full scale basis with established departments like Harvard or MIT. Neither can we accept a caliber of instruction or research that is in any sense lower than that of such established groups. It does mean consolidation of our efforts toward specialization in relatively fewer fields of research within the broad field of physics.

Graduate education in physics is a highly expensive form of education. This is not recognized at Boston University. The caliber of research expected from graduates in physics is high, and can be achieved only through the activities of a faculty of the very highest caliber. Administrative policies yield many instances which reflect the lack of consideration given to indirect support of the graduate program.

As a trivial example to show how far we are from realizing the basic necessities I might point out that we operate under administrative restrictions where obtaining a telephone for a faculty member (a specific case in which the individual has a research contract for \$9000 for the year, paying overhead of \$2220 to the University) can become a major problem requiring special action and significant amount of time on the part of the department chairman. The effects of problems of this kind on faculty morale are impossible to dispel.

As another example let me refer to a situation in which the department chairman spent four days at a meeting of the American Physical Society. During this period he spent one-half hour presenting a paper to the American Association of Physics Teachers and almost the entire balance of time interviewing prospective candidates for faculty positions. The University's contribution to his total expenses consisted of payment of couch fare round trip. The incident would be laughable were it not a reflection on the general administrative atmosphere within which a department chairman must operate.

These incidents are by-products of a failure of the administration to establish a definitive policy consistent with its announced generalized objectives.

2. The Status of Physics at B.U. on a Competitive Basis

I believe that the University administration is not aware of how far we actually need to go. It is difficult to get data with which to compare our effort. The following is, however, of relevance. The figures for Harvard are given as typical of a major department. The figures for Illinois are given since this is the only department for which accurate figures are available.

Harvard University (Physics & Applied Physics)

Professors	}	33
Associate Professors		
Assistant Professors		20
Instructors & Lecturers		12

University of Illinois

<u>Faculty (Physics)</u>		<u>Students (Physics)</u>	
Professors	15	Elementary Courses	600
Associate Professors	6	Undergraduate Majors	125
Assistant Professors	10	Graduate Physics	140
Instructors	4	Post-Doctoral Research Associates or Fellows	15
Research Professors	2		
Research Assoc. Prof.	1		
Research Asst. Prof.	7		
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TOTAL	45		

(Research Associates not included)

Boston University (1955-6)

<u>Faculty</u>		<u>Students</u>	
Professors	1	Elementary Courses	200
Associate Professors	2	Undergraduate Physics Majors	90
Assistant Professors	3	Graduate Physics	47
Instructors	1		
Research Professors	1		
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TOTAL	8		

(Research Associates not included)

The ratio of students between Illinois and Boston is of the order of three to one, the ratio of faculty is between five and six to one. The ratio, if weighted for the greater efficiencies (e.g. larger classes) which come with a larger student group would be even less favorable to us. In fairness it must be pointed out that a sizable fraction of the P. U. graduate group are part-time students. We can, however, anticipate a continuing trend toward increasing the number of our full-time students.

Our ability to attract good graduate students suffers from what we can offer in terms of assistantships and fellowships.

As typical examples:

- University of Kentucky—Graduate Teaching Assistants up to \$2000 (academic year)
- Graduate Research Assistants—\$1600 to 2000 (academic year)
- Penn State University—to \$1770 plus tuition (academic year)
- Wayne University ——— \$1900 plus tuition
- U. of Notre Dame—up to \$2000 plus tuition (academic year)
- U. of Illinois—\$1500 plus tuition (academic year)
- Case Institute of Technology—\$2200-3000 (academic year)

Carnegie Institute of Technology—\$1500-2100 plus tuition (academic year)
Rutgers University—\$1560 minimum plus tuition (academic year)
Stevens Institute—\$1500 plus tuition (academic year)

Many departments announce lower offers than this, particularly the established departments. Physics at P. U. is not, however, established. It desperately needs high caliber students to act as the trigger in stimulating our total activity. This year we have made three offers to new students of our \$1200 teaching assistantships. All were turned down. Two of these will be accepted by students already here. One remains open. I am recommending, therefore, not only that we should match our competition, but that we make available for 1957-58 the following:

3 Graduate Teaching Fellowships at \$1800 for the academic year plus tuition
3 Graduate Research Fellowships at \$1800 for the academic year plus tuition
(over and above those available through sponsored research)

It is further recommended that the name of these awards be changed from "Fellowship" to "Assistantship" to be more consistent with usual practice.

With regard to faculty we must revise drastically our ideas on what must be paid as base academic rates. This is discussed further below. Our offers to prospective faculty this year have been consistently too little and too late.

3. The Role of Sponsored Research

Sponsored Research has given us the position we now have and the substantial beginning toward establishment of a first rate department of Physics.

Sponsored Research of the programmatic type cannot continue to exist without the support of a first class academic department.

An academic department serving physics as a field cannot be built on personnel paid primarily from funds arising from restricted areas of sponsored research.

Sponsored Research cannot continue to be regarded as a profit-making enterprise alone. Substantial amounts of reserve funds must be diverted toward building the academic program. If this is not done the sponsored program will itself not be able to survive.

4. Status of Personnel in Sponsored Research

We have been asked many times why it is that no retirement plan is available for PRL personnel. Many other universities offer such plans, e.g. MIT in its DIC and Lincoln Laboratory.

In addition we need to broaden the concept of appointments to the rank of Assistant Research Professor, Associate Research Professor and Research Professor for personnel of appropriate stature.

5. Eleven-Sevenths

The eleven-sevenths formula for determining a total annual salary for faculty involved in research has now outlived its general usefulness. It was initiated, wisely, as a device for creating competitive salaries from completely inadequate base rates. There are still inequities, but we now have specific cases where the formula creates total salaries which are too high.

We should therefore work with a method which allows separate computation of research salary independently from the academic rate.

It will probably be desirable for some time to come to retain some flexibility in the manner of computing research salaries.

6. The Role of the Department Chairman

Under existing administrative procedures the department chairman is very seriously limited in the extent to which he can act effectively in forming and building his own program.

He has no budget. He is asked once a year for a general recommendation concerning the salaries of his faculty. If he puts these in the form of specific recommendations on his own initiative, he is not consulted concerning them. He is not informed what, if any, action is to be taken on them. When re-appointments are made, he is not informed. His most effective method is to enquire directly from the faculty member in question.

He is given no guidance in balancing his own recommendations with those of other departments, or with anticipated University policy. Recommendations were made by the department chairman for new physics faculty members in February and later in April 1956. These recommendations were made on the basis of the current salary distribution at that time. They should have been coordinated with general budget changes then being planned.

The department chairman is seriously limited in his freedom to hire new personnel. He must negotiate each appointment separately and by a tortuous procedure in which he never knows clearly until a very late stage of the proceedings what his offer can be.

7. Limitations of Physical Space

Physics urgently requires 11,000 square feet of floor space for establishment of laboratory space, efficient classroom space and office space. Physics would release all space now held in the Stone building and all classroom space in CLA except for the facilities used by the General Physics course for non-physics majors.

8. Specific Recommendations (will require approval of both CIA and Graduate School)

1. Administrative reorganization to make possible a total physics budget.
2. Approval of the following goal for 1957-58 for regular faculty.

1 Professor	at 8000
1 Associate Professor	at 8000*
1 Associate Professor	at 7500
1 Associate Professor	at 7000
1 Assistant Professor	at 6500
1 Assistant Professor	at 6000 (50% carried by CIA)
1 Assistant Professor	at 5600 (50% carried by CIA)
<hr/>	
TOTAL CIA BUDGET	42,800 (not including department chairman)

Currently we have:

1 Professor	at 6800
1 Associate Professor	at 5700 (have recommended adjustment to 6200)
1 Associate Professor	at 3300 (CIA budget burden--no base rate assigned)
1 Assistant Professor	at 5200
1 Assistant Professor	at 5000 (CIA budget \$1250, adjustment to \$3300 has been recommended)

Will attempt to hire by September 1956:

- 1 Assistant Professor at up to 6000 * *
- 1 Assistant Professor at up to 6000 (CIA budget \$3000) * * *

TOTAL CIA BUDGET
 FOR REGULAR FACULTY OF ALL
 RECOMMENDATIONS APPROVED \$31,750 (includes \$3300 toward salary of department chairman)

This goal implies the hiring of only one additional person for 1957-58 and assumes the return and promotion to associate rank of Professor Ajsenberg-Selove.

3. ^{XXXX} Authorization to use 11,000 square feet of space in the PRL building for academic physics purposes. (This space can be made available through conversion of space now used for storage.)

4. Approval of: 3 Graduate Teaching Assistantships at \$1800 for academic year plus tuition
- 3 Graduate Research Assistantships at \$1800 for academic year plus tuition.

9. Conclusion

The recommendations in this report have been arrived at through a long process of

* Approval of this specific appointment is urgently requested. A man of the highest possible caliber is known to us who will be available for an appointment to begin July 1, 1957. It will be necessary, however, to give him a firm offer (not necessarily formalized) almost immediately.

sifting, experimentation, and discussion. They result, too, from a close examination of the experimentation and improvisation which have taken place over recent years. They are a consistent extrapolation of gains already made in faculty position and in the total status of physics at B.U. I urgently request they be approved in their entirety and that this approval be granted at the earliest possible date.

Let me express my very great appreciation of the real support that has been given me by all members of the administration. The preceding report may, in some respects, appear critical. We have great aims before us; we must from time to time take real and specific strides toward realization of those aims.

It is, it seems to me, the responsibility of the department chairman who, after all, is closest to the problems, to interpret and to recommend action when he sees the need. My criticism is of a situation, not of individuals nor the actions of individuals.

Respectfully submitted,

P. Dow Smith
Chairman, Physics Department

PD8:sfh