

FINDINGS AND RECOMMENDATIONS
OF THE
COMMITTEE ON POST-HIGH SCHOOL EDUCATION

A REPORT
TO
THE GOVERNOR
AND
THE GENERAL ASSEMBLY
OF THE
COMMONWEALTH OF PENNSYLVANIA
FROM THE
JOINT STATE GOVERNMENT COMMISSION

November 1948

The Joint State Government Commission was created by Act No. 459, Session of 1937, as amended by Act No. 380, Session of 1939, and Act No. 4, Session of 1943, as a continuing agency for the development of facts and recommendations on all phases of government for the use of the General Assembly.

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CONTENTS

	<u>Page</u>
Letter of Transmittal	1
Statement by Robert L. Johnson, Chairman of the Committee on Post-High School Education	5
Official Report of Committee on Post-High School Education	9
Summary Statement and recommendations of George Alan Works, Survey Director	22
Financial Statement	32

CONTENTS

Page

1	Letter of Transmittal
3	Statement by Robert L. Johnson, Chairman of the Committee on Post-High School Education
7	Official Report of Committee on Post-High School Education
25	Summary Statement and Recommendations of George Alan Works, Survey Director
33	Financial Statement

LETTER OF TRANSMITTAL

To His Excellency, the Honorable James H. Duff, Governor of Pennsylvania, and the Honorable the General Assembly of the Commonwealth of Pennsylvania.

The Joint State Government Commission transmits herewith report titled "Findings and Recommendations of the Committee on Post-High School Education," in accordance with the provisions of Act No. 565, Session of 1947, Section 2, which requires that the Commission shall file a report with the Governor and the General Assembly on or before November 15, 1948.

Act No. 565 authorizes a study of the educational facilities and needs of the citizens of the Commonwealth in the field of post-high school education and provides for the appointment of a committee. Concerning the appointment and functions of the Committee, Act No. 565 specifies:

"A committee which shall consist of fifteen (15) representatives of educational and other interests in the several geographical sections of the Commonwealth shall be appointed, ten (10) of whom shall be appointed by the Governor, two members shall be appointed by the Speaker of the House of Representatives, and two members shall be appointed by the President pro tempore of the Senate of the General Assembly. The Superintendent of Public Instruction shall be a member of the committee. It shall be the duty of this committee to cooperate with the Joint State Government Commission in making the study referred to in Section one."

By October 9, 1947, the Committee appointments had been made in accordance with the statute. At the organization meeting of the Committee, held on November 6, 1947, Robert L. Johnson, President of Temple University, was elected chairman. Dr. Johnson appointed a subcommittee to outline a preliminary definition of the scope of the study and make suggestions to the full Committee regarding procedures and the employment of research personnel.

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On November 13, 1947, the under signed, acting under authority of Act No. 459, Session of 1937, as amended, appointed five advisors in order to give representation to additional types of institutions offering post-high school instruction.

On January 8, 1948, at a meeting of the Committee on Post-High School Education, Theodore A. Distler, President of Franklin and Marshall College, was elected vice-chairman.

At this meeting the Committee urged that the Joint State Government Commission employ a survey director to plan and superintend the researches of the Committee, and requested that Dr. George Alan Works, formerly Dean of the School of Education of the University of Chicago, be engaged to serve in this capacity. The Commission followed the Committee's recommendation.

Dr. Works, in turn, selected a number of educators and others to serve as consultants. These consultants and the monographs which they prepared under the supervision of the Survey Director are listed below.

1. Engineering Education and Technical Instruction -
A. A. Potter, Dean of Engineering, Purdue University.
2. Post-High School Education in Agriculture -
Ernest L. Anthony, Dean of Agriculture, Michigan State College; William L. Slate, Director Emeritus, Connecticut Agricultural Experiment Station.
3. Population of Pennsylvania: Trends in Growth, Distribution and Educational Attainment -
Newton Edwards, Professor, Department of Education, University of Chicago; Herman G. Richey, Secretary, Department of Education, University of Chicago.
4. Teacher Education in Pennsylvania -
W. Earl Armstrong, Dean of Education, University of Delaware; William J. Haggerty, President, New Paltz State Teachers College, New York.

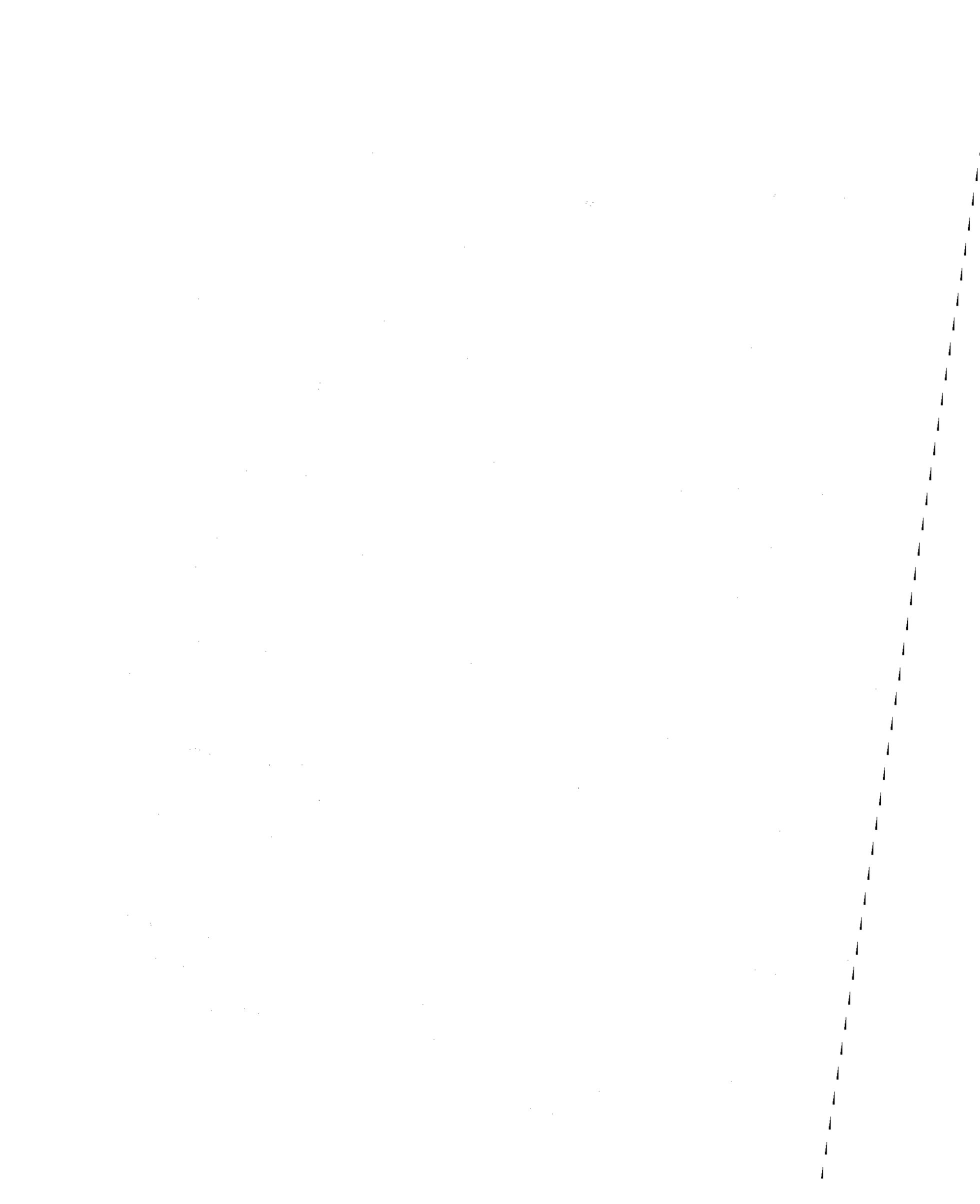
5. A Community-College Plan for Pennsylvania -
L. V. Koos, Professor Emeritus, Department of Education, University of Chicago; Sebastian V. Martorana, United States Office of Education.
6. Medical Education in Pennsylvania -
Division of Public Health Methods, United States Public Health Service.
7. Dental Education in Pennsylvania -
Division of Public Health Methods, United States Public Health Service.
8. Nursing Education in Pennsylvania -
Division of Public Health Methods, United States Public Health Service.

On May 27, July 29, and August 26, 1948, the above data with the exception of that dealing with medical, dental, and nursing education, were reviewed by the Committee sitting with its advisors.

On September 13, 1948, the Committee and its advisors met to consider the Summary Statement and Recommendations of the Survey Director and to formulate its recommendations. Subsequent to the meeting, copies of the recommendations as agreed upon were submitted to the members of the Committee and the advisors for comment. Dr. Ralph Cooper Hutchison, Dr. Francis B. Haas, and Senator Frederick L. Homsher advised that they did not subscribe to all of the recommendations contained in the report. Others indicated a desire to file minority reports at some later date.

On September 28, 1948, Dr. Johnson presented the Official Report of the Committee on Post-High School Education to the Joint State Government Commission.

Dr. Johnson's statement of presentation, the Official Report of the Committee on Post-High School Education, Summary Statement and Recommendations of George Alan Works, Survey Director (to which the Official Report



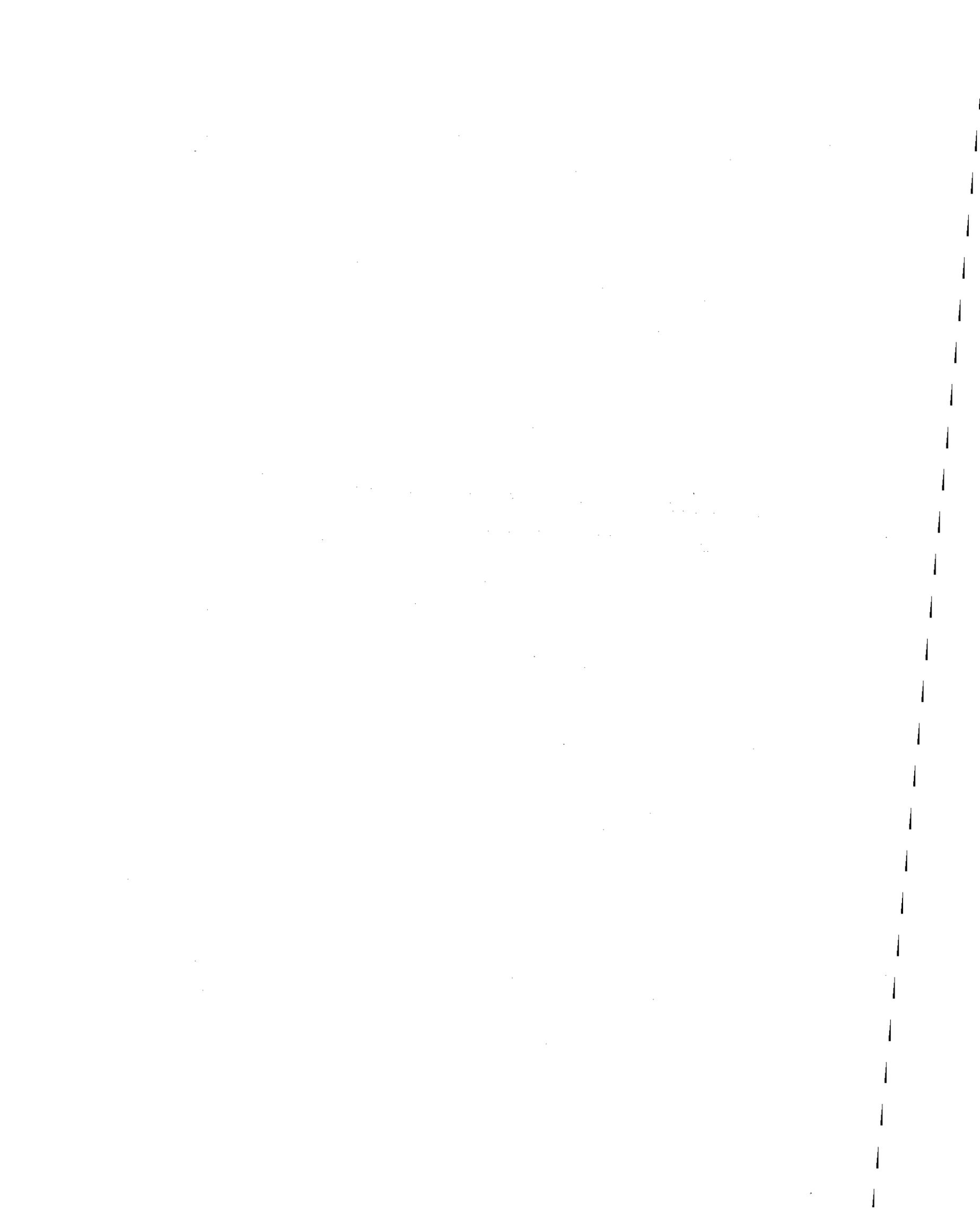
makes reference), and a Financial Statement covering expenditures incurred on behalf of the Committee, are herewith filed with Your Excellency and the General Assembly.

In view of the divergences of opinion indicated above, the Joint State Government Commission has directed its technical staff to review and supplement the material collected by the Committee on Post-High School Education.

WELDON B. HEYBURN, Chairman

Joint State Government Commission
Capitol Building
Harrisburg, Pennsylvania
November 15, 1948.

STATEMENT BY ROBERT L. JOHNSON, CHAIRMAN OF THE
COMMITTEE ON POST-HIGH SCHOOL EDUCATION



STATEMENT BY ROBERT L. JOHNSON, CHAIRMAN OF THE
COMMITTEE ON POST-HIGH SCHOOL EDUCATION

The Committee wishes to express sincere appreciation and thanks to the Legislature and to Governor James H. Duff for authorizing and providing the necessary funds to conduct the study on Post-High School Education in the Commonwealth; to the Joint State Government Commission for their favorable consideration of the plan of procedure suggested by the Committee; and to Senator Weldon B. Heyburn, Chairman of the Joint State Government Commission, and his staff for their thoughtful cooperation, sympathetic understanding, and help in conducting the study.

The Committee regrets that it was unable to present the type of final report which it had planned. The report is neither as extensive nor as intensive as was originally visioned. There remain many valuable conclusions still to be drawn from the mass of material collected. Lack of time precluded a more thorough consideration of the facts. The Committee would like additional time in which to complete its findings and to prepare additional recommendations.

It required a great deal of effort and time to secure competent men to do the work; however, we were fortunate to secure men of wide experience and National reputation to assist in the study. Dr. George Alan Works, the Survey Director, is well known all over the United States for his outstanding work and contributions in this field. A. A. Potter, Newton Edwards, Herman G. Richey, Leonard V. Koos, Sebastian V. Martorana, E. L. Anthony, William L. Slate, W. Earl Armstrong, William J. Haggerty, and George Perrott were well qualified and widely known for their work in their respective fields.

THE UNIVERSITY OF CHICAGO
PHYSICS DEPARTMENT

PHYSICS 439: QUANTUM MECHANICS
PROBLEM SET 10
DUE: 11/15/2011

1. A particle of mass m is confined to a one-dimensional infinite potential well of width a . The potential is zero for $0 < x < a$ and infinite elsewhere. The wave function of the particle is given by $\psi(x) = \sqrt{\frac{2}{a}} \sin\left(\frac{n\pi x}{a}\right)$ for $0 < x < a$ and zero elsewhere. Calculate the probability of finding the particle in the region $0 < x < \frac{a}{4}$ for $n=1, 2, 3, 4$.

2. A particle of mass m is confined to a one-dimensional infinite potential well of width a . The potential is zero for $0 < x < a$ and infinite elsewhere. The wave function of the particle is given by $\psi(x) = \sqrt{\frac{2}{a}} \sin\left(\frac{n\pi x}{a}\right)$ for $0 < x < a$ and zero elsewhere. Calculate the expectation value of the momentum $\langle p \rangle$ for $n=1, 2, 3, 4$.

3. A particle of mass m is confined to a one-dimensional infinite potential well of width a . The potential is zero for $0 < x < a$ and infinite elsewhere. The wave function of the particle is given by $\psi(x) = \sqrt{\frac{2}{a}} \sin\left(\frac{n\pi x}{a}\right)$ for $0 < x < a$ and zero elsewhere. Calculate the expectation value of the energy $\langle E \rangle$ for $n=1, 2, 3, 4$.

4. A particle of mass m is confined to a one-dimensional infinite potential well of width a . The potential is zero for $0 < x < a$ and infinite elsewhere. The wave function of the particle is given by $\psi(x) = \sqrt{\frac{2}{a}} \sin\left(\frac{n\pi x}{a}\right)$ for $0 < x < a$ and zero elsewhere. Calculate the probability of finding the particle in the region $\frac{a}{4} < x < \frac{3a}{4}$ for $n=1, 2, 3, 4$.

5. A particle of mass m is confined to a one-dimensional infinite potential well of width a . The potential is zero for $0 < x < a$ and infinite elsewhere. The wave function of the particle is given by $\psi(x) = \sqrt{\frac{2}{a}} \sin\left(\frac{n\pi x}{a}\right)$ for $0 < x < a$ and zero elsewhere. Calculate the expectation value of the momentum squared $\langle p^2 \rangle$ for $n=1, 2, 3, 4$.

6. A particle of mass m is confined to a one-dimensional infinite potential well of width a . The potential is zero for $0 < x < a$ and infinite elsewhere. The wave function of the particle is given by $\psi(x) = \sqrt{\frac{2}{a}} \sin\left(\frac{n\pi x}{a}\right)$ for $0 < x < a$ and zero elsewhere. Calculate the expectation value of the energy squared $\langle E^2 \rangle$ for $n=1, 2, 3, 4$.

7. A particle of mass m is confined to a one-dimensional infinite potential well of width a . The potential is zero for $0 < x < a$ and infinite elsewhere. The wave function of the particle is given by $\psi(x) = \sqrt{\frac{2}{a}} \sin\left(\frac{n\pi x}{a}\right)$ for $0 < x < a$ and zero elsewhere. Calculate the probability of finding the particle in the region $0 < x < \frac{a}{2}$ for $n=1, 2, 3, 4$.

8. A particle of mass m is confined to a one-dimensional infinite potential well of width a . The potential is zero for $0 < x < a$ and infinite elsewhere. The wave function of the particle is given by $\psi(x) = \sqrt{\frac{2}{a}} \sin\left(\frac{n\pi x}{a}\right)$ for $0 < x < a$ and zero elsewhere. Calculate the expectation value of the momentum $\langle p \rangle$ for $n=1, 2, 3, 4$.

9. A particle of mass m is confined to a one-dimensional infinite potential well of width a . The potential is zero for $0 < x < a$ and infinite elsewhere. The wave function of the particle is given by $\psi(x) = \sqrt{\frac{2}{a}} \sin\left(\frac{n\pi x}{a}\right)$ for $0 < x < a$ and zero elsewhere. Calculate the expectation value of the energy $\langle E \rangle$ for $n=1, 2, 3, 4$.

10. A particle of mass m is confined to a one-dimensional infinite potential well of width a . The potential is zero for $0 < x < a$ and infinite elsewhere. The wave function of the particle is given by $\psi(x) = \sqrt{\frac{2}{a}} \sin\left(\frac{n\pi x}{a}\right)$ for $0 < x < a$ and zero elsewhere. Calculate the probability of finding the particle in the region $\frac{a}{4} < x < \frac{3a}{4}$ for $n=1, 2, 3, 4$.

The conclusions by the Committee are based largely on a discussion of the recommendations by the Survey Director. It should be pointed out that the Committee did not accept or consider all of the recommendations of the Survey Director.

The following recommendations deserve favorable consideration:

1. A reorganization of the State Council of Education in order that it may become a more important factor in determining educational policies in the Commonwealth. This to be accomplished by longer terms, staggered appointments and by permitting the Council to elect its own chairman and removing the State Superintendent of Public Instruction as a member of the Council.

2. The creation of a Division of Higher Education in the Department of Public Instruction. This Division should be directed by a Deputy or an Associate Superintendent and be responsible to the State Department of Public Instruction and to the State Council of Education. Its responsibility should be to provide leadership in post-high school education and to work for the cooperation among the various institutions. A Division of Higher Education appears to be a very important need and would solve many of our present difficulties in higher education.

3. It is recommended that the Legislature pass appropriate legislation assigning to the State Council of Education the duty and the responsibility to establish standards for extension centers and require all extension centers to secure the approval of the State Council. Further, that the State Council shall establish a policy and general regulation for the control of extension courses offered by any institutions of higher learning.

4. All grants to privately controlled State-aided institutions should be made on a basis of agreement between the State and the institutions as to the service that is to be rendered.

5. There is a definite need of some type of post-high school education of less than a four-year college curriculum. It should be on a subprofessional basis with one or two year terminal courses. Such institutions should be especially geared to the occupational opportunities of the community with specific emphasis on the technical, commercial, agricultural and home making fields. The present plan of vocational education should be incorporated in the above plan.

6. The State Council of Education has the authority to expand, contract, or redefine the functions of any or all the State Teachers Colleges; therefore, the Committee desires to call attention to the urgent need for elementary school teachers and the possibility that this might be given immediate attention. It may be possible to restrict a number of the State Teachers Colleges to the education of elementary school teachers. Another possibility would be to require all State Teachers Colleges to reserve a certain percentage of their enrollment to elementary teacher education and to limit the enrollment in other fields, namely, the secondary field.

7. All institutions on the approved list for the preparation of teachers for any certificates should be notified that this permission will be cancelled automatically three years from March 1, 1949. Institutions should be informed that their proposals for preparing teachers for the various levels and areas will be approved upon the presentation of evidence of carefully formulated goals, and adequate facilities, faculty, internal organization, and programs to prepare teachers.

8. The medical schools of Pennsylvania should develop a more general policy of giving consideration to the needs of Pennsylvania residents, since 45 per cent of the capacity of the medical schools and 48 per cent of the capacity of the dental schools is utilized by the residents of other states.

9. A new formula of State-aid for medical education should be devised, possibly a block grant to each school plus an additional grant based either on the total number of students or the total number of Pennsylvania residents enrolled in each school.

10. There should be further study given to the following areas and it is recommended that the proposed Division of Higher Education be assigned this responsibility:

- a. A comprehensive study of professional schools of nursing.
- b. Further study of medical education.
- c. Further study to determine to what extent there is a need for junior or community colleges.
- d. A careful study of scholarship plans for young people of the Commonwealth recognizing that the present scholarship plans are not entirely satisfactory nor adequate from many points of view.

OFFICIAL REPORT
OF COMMITTEE ON POST-HIGH SCHOOL EDUCATION

O F F I C I A L

REPORT OF COMMITTEE ON POST-HIGH SCHOOL EDUCATION
Introductory Statement

The Post-High School Committee regrets that lack of time has not permitted as complete a study as the committee would have liked to give; that it has not been possible under the circumstances for the committee to do as thorough a job as it had hoped. Both the Survey Director and the committee desired a far more intensive and extensive study than that which was possible under the time limitations. The committee strongly feels that there are certain phases of higher education which require further study and recommends that such studies continue. It is further suggested that such studies should be among the primary responsibilities of a Division of Higher Education in the Department of Public Instruction. The committee is willing to render further service, if this service is desired by the Joint State Government Commission. The committee will be very happy to meet at any time for conference or discussion of any phase of the study. The committee deeply appreciates the opportunity which it has had to work with the Joint State Government Commission and the splendid cooperation which it has received. The committee hopes that something of value may result in the improvement of higher education in the Commonwealth of Pennsylvania.

Recommendations

The following recommendations by the committee on Post-High School Education consist of the adoption without modification of certain recommenda-

tions contained in the final report of the Survey Director, George Alan Works. Some of his recommendations were modified before approval by the committee. It should be pointed out that there are a number of recommendations in the final report of the Survey Director not referred to in this report. They were either rejected or not considered. It should be further noted that the recommendations on medical, dental and nursing education were not ready for consideration by the committee at its final meeting on September 13, 1948, but are included in this report upon the suggestion of the Chairman, Robert L. Johnson.

Recommend --

1. That members of the State Council of Education be appointed by the Governor for nine-year terms and shall not be removed from office without due cause,

That the membership be fixed at a minimum of twelve and a maximum of eighteen with terms staggered so that the terms of two members expire each year,

That the members be representative citizens who have to be sought out for the position and who serve without compensation but receive reimbursement for expenses incurred in the discharge of their duties,

That no more than half of these members shall come from the field of education and that such members shall not be drawn from either the officers or the trustees of state-aided institutions,

That a majority of the Council shall constitute a quorum.

2. That the Council of Education be a policy making and legislative body within the limits set by the General Assembly. The executive functions should be discharged by the members of the professional staff working under the policies established by the Council.

3. That the State Superintendent of Public Instruction be the sole executive officer of the Council, but not a member of it. The Council should elect a Chairman from its own membership.

4. That an effort be made to secure an amendment to the Constitution in order that the Superintendent of Public Instruction may be nominated by the State Council of Education and appointed by the Governor for an indefinite term of office.

5. That the State Legislature create the position of Deputy or Associate Superintendent of Public Instruction who shall be given responsibility for higher education under the supervision of the State Superintendent of Public Instruction. This officer should have the assistance necessary for proper conduct of the duties as have been suggested for assignment to that office.

6. That the presidents of the State Teachers Colleges be selected by the Boards of Trustees in cooperation with the Superintendent of Public Instruction and appointed by the State Council of Education.

7. That a careful study be made of scholarship plans for young people of the Commonwealth, recognizing that the present scholarship plans are neither entirely satisfactory nor adequate from many points of view.

8. That all grants to privately controlled State-aided institutions be made on the basis of agreements between the State and the institutions as to the service that is to be rendered.

The following statement contained on pages 8 and 9 of the Survey Director's report was approved after eliminating one paragraph and one other statement.

"The recommendations in the summary of the special report on

teacher education are consistent with and, in several instances, reinforce the recommendations contained in this general report. They go into greater detail in certain phases of teacher education than does this statement. Attention is directed to specific recommendations concerning the need for continuing data regarding the supply and demand for teachers; the statutory provisions relating to teacher education; the appointment and functions of the local Boards of Trustees of the State Teachers Colleges and the relation of the State Council of Education to those institutions; the budgetary and purchasing procedures affecting the State Teachers Colleges; the relation of the State Council of Education to private institutions preparing teachers, including the criteria for approving such institutions and the method by which those criteria are administered; the need for State-wide cooperation in studying and working out solutions to problems of teacher education; the importance of in-service programs of education for teachers; and the need for greater financial support from the State for teacher education if an adequate supply of competent and qualified teachers is to be available for the children in the public schools.

“The data on financial expenditures (Chapter V) show that Pennsylvania places heavy dependence on student fees as a source of educational income. This practice, unless other sources of income can be increased, places a relatively heavy dependence on the students to meet the costs of their education. It is a well established fact that considerable numbers of able youths are deprived of the opportunity for higher education as a result of their economic status. The greater the fees the more marked the limitation becomes . . .

“The suggested expansions in engineering, which are made only after careful consideration, appear to be conservative. The director does not join

in endorsing the proposal for the 200 to 500 undergraduate scholarships recommended in that report. No recommendation is made for a general program of undergraduate scholarships in this report. The suggestion of research professorships, graduate fellowships and assistantships is endorsed in the belief that the resulting studies and research will contribute materially to the development of the engineering profession in the State.

“There is a brief statement in Chapter V regarding the extension of educational facilities in which caution is urged in establishing additional State-aided privately controlled institutions. This suggestion applies with emphasis in the case of the National Agricultural College which changed from a junior college to a degree granting institution in the field of agriculture. In the opinion of the survey committee one such institution in agriculture is adequate for the needs of the Commonwealth. . . .”

The following statements by George Alan Works, Survey Director, found on page 10 of his report are submitted for inclusion in this report as suggestions, but not as recommendations of the committee.

“During the last two decades efforts have been made to increase the number of State-aided privately controlled institutions in the Commonwealth. Governors have vetoed some of these efforts in the past, and undoubtedly similar attempts will be made in the future.

“Instead of extending opportunities for higher education by this means the following suggestions are offered:

- “1. Increase the State's participation in the support of publicly controlled higher education by additional aid to publicly controlled institutions now in operation or by the establishment of new publicly controlled institutions.

"2. Increase the aid to privately controlled institutions that now receive funds from the State.

"3. Establish contract colleges as is done in New York State."

Recommendations on Special Areas of Post-High School Education

A. Community College

The committee fully recognized the need of some type of Post-High School Education on the sub-professional level and accepted the following statement contained in the Survey Director's report:

"1. Data show that Pennsylvania ranks very low in the percentage of her youth having the opportunities of post-high school education.

"2. A canvass made of the vocational interests of students graduating from senior high school in 1948 revealed that approximately three-fourths of those reporting were interested in sub-professional fields of service. The sub-professional fields of work have received little attention by most of the post-high school institutions of the Commonwealth. Emphasis is also placed on the need for this kind of training in the section of the report dealing with engineering and technical training."

The committee rejected the Survey Director's recommendations 3,4, 5,6,7 & 8 and substituted the following recommendation:

'That a further study be made on a county and community basis to determine to what extent there is a need for junior or community college programs.'

B. Engineering Education and Technical Training in Pennsylvania

1. Pennsylvania has 7.24 per cent of the country's population and employs more than 9 per cent of its industrial workers. It seems that considering its industrial situation the ratio of engineers to the total population will

increase.

2. Programs leading to engineering degrees are offered by fifteen Pennsylvania institutions. Ten of these are on the approved list of the Engineers Council for Professional Development.

3. Undergraduate enrollment in the engineering schools of Pennsylvania constitutes about 6.5 per cent of the Nation's total full-time undergraduate enrollment in this subject.

4. A conservative estimate places at 10 per cent the proportion of the output of the engineering colleges of the country that must be made available to the armed forces as civilian engineers to insure adequate national security.

5. In comparison with the assistance given to Land Grant Colleges in other industrial states engineering education at Pennsylvania State College is receiving a small amount of financial aid from the Commonwealth.

6. It is considered desirable to increase the undergraduate enrollment in engineering by 20 per cent.

7. That a study be made to determine whether the present engineering colleges in the State can formulate a plan to increase undergraduate enrollment in engineering for the required 20 per cent set forth in item 6. The study is to determine whether such increase in enrollment can be offered without cost to the State and if not, what State funds would be required.

8. It is suggested that all the engineering schools be requested to make a study of the possibility of setting up a cooperative plan of engineering.

9. That a scholarship program be studied including engineering education and technical training.

1. Programs leading to engineering degrees are offered by fifteen Pennsylvania institutions. Ten of these are on the approved list of the Engineering Council for Professional Development.

2. Undergraduate enrollment in the engineering schools of Pennsylvania constitutes about 0.5 per cent of the Nation's total full-time undergraduate enrollment in this subject.

3. A conservative estimate places at 10 per cent the proportion of the output of the engineering colleges in the country that must be made available to the armed forces as civilian engineers to insure adequate national security.

4. In comparison with the standards given to West Point College and other industrial states engineering education at Pennsylvania State College is receiving a small amount of financial aid from the Commonwealth.

5. It is considered desirable to increase the undergraduate enrollment in engineering by 50 per cent.

6. That a study be made to determine whether the present engineering colleges in the State can accommodate a plan to increase undergraduate enrollment in engineering for the required 50 per cent enrollment in ten years. The study is to determine whether such increase in enrollment can be obtained without cost to the State and if not, what State funds would be required.

7. It is suggested that all the engineering schools be requested to make a study of the possibility of setting up a cooperative plan of engineering.

8. That a scholarship program be studied including engineering education and technical training.

10. That attempts be made to increase the facilities for graduate engineering and research.

11. Since training at the technical institute level is most inadequate, it is recommended that the State give special consideration to the development of technical institutes at industrial centers. The present part-time programs provide opportunities for about 7000. This number should be increased to about 20,000 to insure about 2000 graduates a year.

It is recommended that further study be made by the State Council of Education in conjunction with the study of junior or community colleges.

12. The full-time programs enroll about 1500. This should be increased to about 2500 which should result in 500 to 750 graduates a year.

13. These expansions would involve an annual expenditure of about a million dollars for operating expenses.

C. Agricultural Education

1. The School of Agriculture is one of the seven schools of Pennsylvania State College. Its organization is based on its three-fold functions: resident instruction, research (The Agricultural Experiment Station), and extension.

2. The resident instruction consists of a considerable variety of short courses; technical preparation leading to the bachelor's degree; graduate instruction designed to prepare teachers, researchers and other workers at the professional level.

3. It is recommended that the School increase its emphasis on the two-year vocational curriculum. The logical place to develop this program is at the State School where the faculty, farms, herds, and flocks are to be found.

In the opinion of the survey committee it would be a mistake to locate it elsewhere.

4. It is recommended that facilities be provided for a minimum of 500 short course students. The need for housing is especially urgent. These facilities should be provided even though they may call for a decrease in the emphasis given some of the present activities of the College.

5. The Agricultural Experiment Station, which has had a long record of service to the State, should have more adequate financial support than it is now receiving.

6. At present college policy prohibits cooperation of the Agricultural Extension Service with such Federal agencies as the Soil Conservation Service. This policy has brought some criticism of the Extension Service. The extension staff is following the instruction of the Board of Trustees of the College.

D. Population of Pennsylvania: Trends in Growth, Distribution and Educational Attainment

1. If birth and death rates fluctuate in the State about the same as for the rest of the Nation, it appears that the number of young persons of college age in the Commonwealth will not again exceed the number in this age group in 1945 except during a period centering around the decade 1960-1970.

2. It appears all too clear that in view of the increasing demands which modern life makes upon trained intelligence, technical skill, and social understanding far too few of the youth of Pennsylvania are acquiring any part of a college education. This conclusion seems all the more true when the record of educational attainment of the youth of Pennsylvania at the college level is compared with the record of youth in other states. When its education-

... (faint text) ...

al attainment is measured by the percentage of its population 25 to 29 years of age in 1940 who had completed two or more years of college, or four or more years of college, Pennsylvania ranks extremely low in comparison with other States. In the percentage of its total population in this age group that had attended college two or more years Pennsylvania ranked eleventh from the bottom.

In 1940, Pennsylvania ranked lowest among the states for which data are available in the percentage of its white urban population 25 to 29 years of age that had attained two or more years of college education.

E. Teacher Education

1. Three factors are contributing to the teacher shortage (a) opportunities in other fields; (b) loss in relative prestige of the teaching profession; (c) low salaries paid teachers.

2. Shortage of teachers in elementary schools is greater than in high schools.

3. There is need for data bearing on supply and demand of teachers, and it is recommended that the State Council of Education make provision for the continuing collection of such data.

4. Recommendations affecting the State organization for teacher education:

(a) That it be clearly established that the State Council of Education is the responsible agency for the determination of educational policies and plans at the post-high school level for State-aided and State-controlled institutions.

(b) That provision be made for the nomination of the State Superintendent of Public Instruction by the State Council of Education and appointment by the Governor for an indefinite term.

(c) That the Department of Public Instruction be placed under the jurisdiction of the State Council of Education with a professional staff headed

by the Superintendent of Public Instruction.

(d) That the General Assembly place matters of detailed policy concerning teacher education in the hands of the State Council of Education.

5. As a means of further clarification of the place of the State Teachers Colleges in teacher education the following recommendations are made:

(a) Since the State Council of Education has the authority to expand, contract, or redefine the functions of any or all of the State Teachers Colleges, the committee desires to call attention to the urgent need for elementary school teachers and urges that this need be given immediate attention.

(b) Make provision for the local Boards of Trustees to be appointed by the State Council of Education on the recommendation of the State Superintendent of Public Instruction.

(c) Among the responsibilities of the Board of Trustees should be: final approval of curriculum problems on recommendation of faculties and presidents; appointment of staff members on recommendation of the presidents of the Colleges; authorization that each institution be a body authorized to receive, hold locally, and expend or dispose of any money or property from public or other sources except that which comes through appropriations by the General Assembly.

(d) It is recommended that the presidents of the State Teachers Colleges be selected by the Boards of Trustees in cooperation with the Superintendent of Public Instruction and be appointed by the State Council of Education.

(e) The liaison between the State Department of Public Instruction and the Colleges should be through the office responsible for post-high

school education.

(f) The identity of the budgets of the individual State Teachers Colleges should be maintained from the time they are formulated until the funds are expended.

6. It is recommended that all institutions now on the approved list for the preparation of teachers for any certificates should be notified that this permission will be cancelled automatically three years from March 1, 1949. Institutions should be informed that their proposals for preparing teachers for the various levels and areas will be approved upon the presentation of evidence of carefully formulated goals, and adequate facilities, faculty, internal organization, and programs to prepare teachers.

7. A program of in-service education for teachers should be formulated under the general direction of the State Department of Public Instruction.

F. Medical and Dental Education

Pennsylvania provides more than its share of the medical education of the Nation. It educates 10.5 per cent of the doctors and 12.1 per cent of the dentists, but utilizes itself only 7.7 per cent of the doctors and 8.4 per cent of the dentists.

The Commonwealth does not meet the demands for such education for its own residents. Available figures indicate that for both medicine and dentistry there are each year many qualified applicants who do not secure admission to those professional schools.

Although Pennsylvania has relatively ample facilities for medical and dental education, about 45 per cent of the capacity of the medical schools and 48 per cent of the capacity of the dental schools is utilized by the residents of other states. To give Pennsylvania residents an opportunity equal to that of many other states would require either increasing the enrollment of the Penn-

sylvania schools or the development of a more general policy of giving consideration to the needs of Pennsylvania residents.

Elsewhere in this report the establishment of a division or bureau of post-high school education is suggested. It is recommended that this bureau give early consideration to the following problems in medical and dental education:

1. The determination of a policy to meet the needs of Pennsylvania youth for medical and dental education.

2. Study the possibility of devising a formula for State financial aid to the medical and dental schools. Consideration should be given to the feasibility of a block grant to each school plus an additional grant based either on the total number of students or the total number of Pennsylvania residents enrolled in each school.

G. Nursing Needs and Resources

There is a marked deficiency in the numbers of nurses available for the several different forms of nursing service. To correct this situation 5000 to 6000 nurses should be graduated annually during the next few years.

There are at present 128 schools approved for the education of professional and non-professional nursing personnel. There are marked differences in the quality of the work done in the schools.

It is recommended that the suggested division or bureau of higher education make a comprehensive study of these schools including plans for the education of the professional nurse in both basic and advanced programs as well as for training programs for the non-professional nurse.

(Signed) CARL E. SEIFERT
for the Committee

SUMMARY STATEMENT AND RECOMMENDATIONS OF
GEORGE ALAN WORKS, SURVEY DIRECTOR

SUMMARY STATEMENT AND RECOMMENDATIONS
OF GEORGE ALAN WORKS, SURVEY DIRECTOR

The study of post-high school education in Pennsylvania, beginning with the appointment of the Director on January 26, 1948, has involved the services and cooperation of many individuals and groups of persons in the State. In addition to the consultants who prepared reports in special fields, groups of persons engaged in working in those fields have been called together from time to time, to contribute suggestions, criticisms, and points of view arising out of their experience.

The Committee authorized in the law "To cooperate in making the study" has cooperated at all points during the progress of the work, not only through meetings of the Committee as a whole, but through meetings of its Steering Committee and through the help of individual members of the Committee on various problems. The suggestions of individual members and the deliberations of the Committee have influenced the course of the study from its inception.

The collection of data began with the preparation of the following reports:

1. Engineering Education and Technical Instruction, Dean A. A. Potter, Purdue University.
2. Post-High School Education in Agriculture, Dean E. L. Anthony, Michigan State College, and Dr. William L. Slate, Director Emeritus of the Connecticut Agricultural Experiment Station.
3. Population of Pennsylvania: Trends in Growth, Distribution and Educational Attainment. Professor Newton Edwards, University of Chicago, and Professor Henry G. Richey, University of Chicago.

4. Teacher Education in Pennsylvania, Dean W. Earl Armstrong, University of Delaware, and President William J. Haggerty, State Teachers College, New Paltz, New York.

5. A Community-College Plan for Pennsylvania, Leonard V. Koos, Professor Emeritus, University of Chicago.

6. Medical Education in Pennsylvania.

7. Dental Education in Pennsylvania.

8. Nursing Education in Pennsylvania.

Reports Nos. 6, 7 and 8 were prepared in cooperation with the Division of Public Health Methods, United States Public Health Service.

Each member of the Committee has been furnished with copies of these reports except the last three. They will be completed October 1, 1948.

During the time the consultants were preparing the foregoing special reports Mary Elizabeth Schlayer and the director prepared a General Report consisting of the following chapters:

Chapter I. Post-High School Educational Institutions in Pennsylvania

Chapter II. Education at Post-High School Level in Pennsylvania

Chapter III. The State Council of Education and Post-High School Education

Chapter IV. Enrollment Data

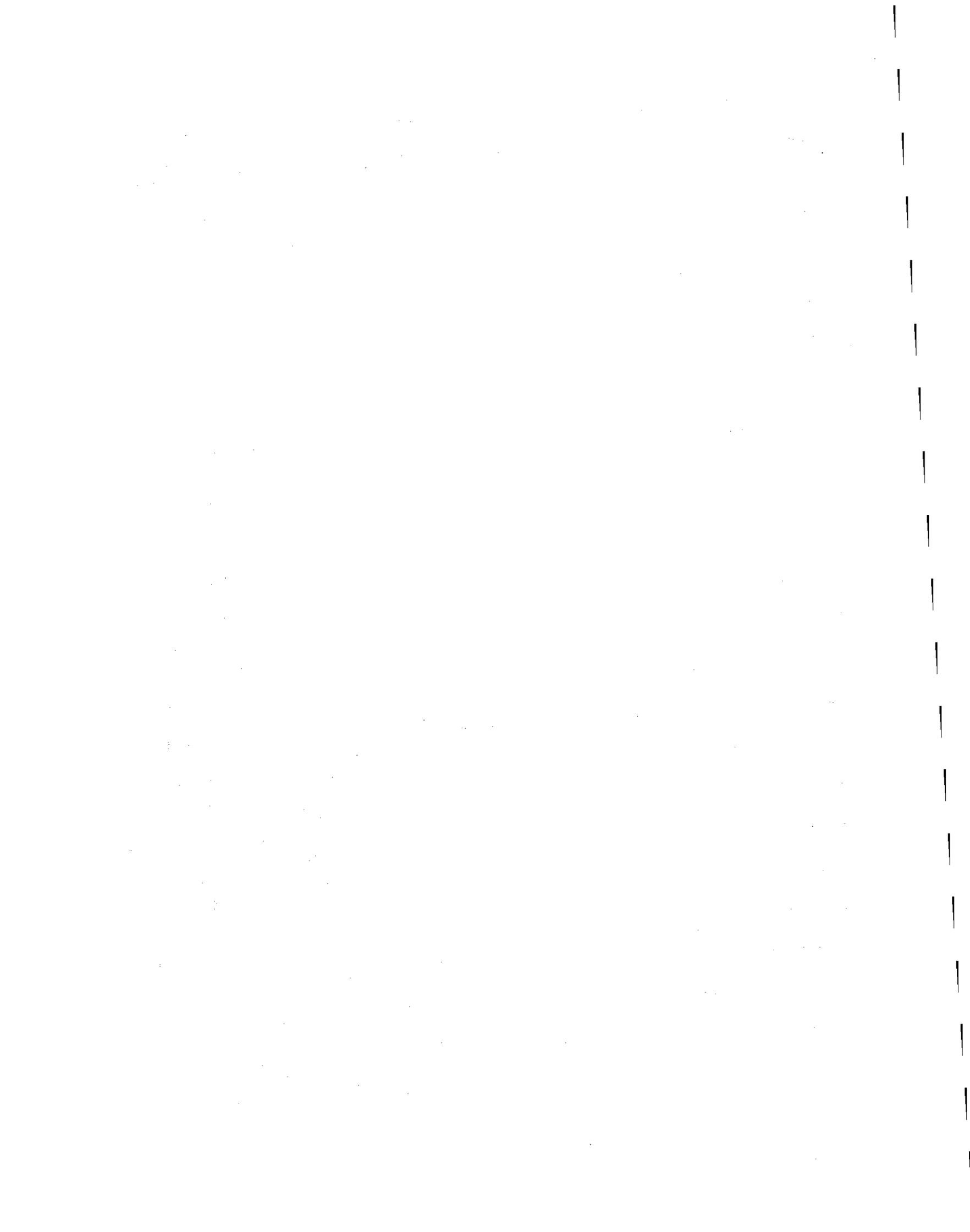
Chapter V. Economic and Financial Data

Using the data from the studies made by the consultants and those made in the director's office this general statement has been prepared by the director. It includes what appear to be the more significant aspects of Post-High School Education in Pennsylvania.

The data in the special report on population (Report C) and Chapter II (Education at the Post-High School Level in Pennsylvania) reveal a picture of a relatively low level of college attainment on the part of the population of the Commonwealth. If the citizens of the State are interested in improving this situation the report on a Community College Plan for Pennsylvania is recommended as a practicable one. Furthermore, the report on Teacher Education carries a statement from the consultants in that phase of the study indicating that they believe the adoption of the community-college plan would contribute materially to the program of Teacher Education of the State by increasing the supply of prospective teachers through making it possible for large numbers of young persons to begin their pre-professional work at lower costs than are now possible. The community-college would serve the same function with regard to other professions as well as furnish an opportunity for a broader basis for citizenship for large numbers of youths.

Data obtained through a questionnaire sent to all high schools in the State, that had students completing the work of the senior year, revealed that approximately 75 per cent of the seniors reporting were interested in securing preparation for some subprofessional type of service rather than a professional career. This is an area of educational service in which the higher institutions of Pennsylvania have done relatively little. The report on Engineering Education and Technical Training makes definite suggestions concerning the numbers of students the State should have enrolled on a full-time and on a part-time basis in this phase of higher education. These estimates cover only the phases of technical training related to engineering.

There are two questions in connection with the technical institute that



should be borne in mind. As developed in the engineering field the technical institute is only one of the forms which should be available. There is a need for parallel opportunities for youths to prepare as clerical workers, laboratory technicians, farmers, and home makers, and other like opportunities for usefulness.

There appears to be an honest difference of opinion among those interested in this form of preparation as to where it should be placed in a State plan of education. The question is whether it should be developed as a part of the locally controlled school program or whether this development should come through the establishment of State schools. Experience may show that for some condition both types of institutions may be needed but it is evident that it is a field of service in which the community college can make a large contribution.

The short-course work in agriculture (Report D) comes within the scope of the kind of training under consideration. In that report a great deal of attention is given to the need for instruction in farming through the development of short-courses or terminal programs, especially of the two-year type. Emphasis is placed on the importance of locating the instruction at the State School of Agriculture. The facilities and faculty are there and to duplicate them would involve heavy expenditures. If the demand for instruction in agriculture at the short-course level becomes so heavy that it cannot be met at one location, other centers, if established, should be under the supervision of the School of Agriculture as a means of safeguarding against over expansion.

For the country as a whole there has been a marked increase in the past generation in the expenditure of public funds for post-high school education. As is pointed out in this study (Chapter V) Pennsylvania has placed relatively little dependence on funds from public sources. In spite of this fact it

will be seen from the table in Chapter I that the amount of money appropriated by the General Assembly for higher education has reached sizeable proportions. With the lapse of time the amount expended from State sources on post-high school education will almost certainly increase. Furthermore, it seems highly probable that the proportion of the funds expended for post-high school education coming from the State will increase.

The increase in the number of publicly-controlled higher institutions, the multiplicity of curriculums, the duplication of work and requests for public funds have directed attention in many states to a consideration of means by which the efforts of the publicly-controlled higher institutions can be coordinated so as to give the maximum return on the expenditures. As a result of this movement, in the past generation, thirteen states have replaced their several boards of control of public higher institutions with a single board for the purpose of securing a greater degree of unification in their programs of higher education.

Pennsylvania has fourteen State Teachers Colleges each with its own Board of Trustees. These institutions, however, are under the general supervision of the State Council of Education which has ample authority for coordinating their efforts.

In addition to the State Teachers Colleges there are twelve privately-controlled colleges and universities receiving financial aid from the State. They are known as State-aided institutions. It is no reflection on those responsible for the guidance of these institutions to suggest that very naturally they have a tendency to look at the educational needs of the State from an institutional point of view a problem that is discussed in Chapter III of this report. In the judgment of members of the survey staff some provision should be made

for the further coordination of the expenditures of State funds through the State-aided colleges and universities in Pennsylvania.

In the opinion of the staff this can be done best by a further development of the means now used. Briefly stated this would be through a lay board consisting of outstanding citizens serving the Commonwealth without compensation. This body should have authority to determine educational policies within the limits set by the legislature. And it should have a professional staff competent to execute the policies established by it. The State has created the State Council of Education which in a measure meets the need but not as completely as seems desirable but it does appear to furnish a basis for further development. The functions envisioned by the survey staff are considered in Chapter III of this report, in the special report on Teacher Education, and in the consideration of Senatorial Scholarships in Chapter V.

Apparently the State Council of Education has legal authority for the discharge of most of the functions suggested in Chapter III but apparently they are not fully meeting them except in the case of the State Teachers Colleges. It is recommended that the State Council of Education accept the responsibilities outlined in this report in full if it has legal authority for such action. If it does not have the authority, it should be assigned to the Council by the General Assembly.

The list of proposed functions will increase materially the activities of the State Council of Education over those now exercised by that body. To make for their most effective discharge the following suggestions are offered:

1. Members of the State Council of Education should be appointed for nine year terms instead of six as is now provided by law. There are nine members of the Council and it is recommended this number be continued with

the terms staggered so that one term expires each year. The purpose is to reduce the dangers of abrupt changes of policy.

2. The members of the Council should be appointed by the Governor as is now the case. They should be laymen, who serve without compensation, but receive reimbursement for expenses incurred in the discharge of their duties. They should be representative citizens who would have to be sought out for the position.

3. The Council of Education should be a policy making and legislative body within the limits set by the General Assembly. The executive functions should be discharged by the members of the professional staff working under the policies established by the Council.

4. The State Superintendent of Public Instruction should be the sole executive officer of the Council but he should not be a member of it. The Council should elect a Chairman from its own membership.

5. The appointment of the executive officer of a council or state board by that body itself is generally regarded by students of educational administration as the most desirable procedure. In Pennsylvania the Superintendent of Public Instruction is appointed by the Governor. To have him elected by the State Council of Education would require an amendment of the Constitution of the State. It is recommended that an effort be made to secure such an amendment.

6. Reference has been made to the need for a professional staff to deal with problems in post-secondary education. To meet this situation it is recommended that the position of Deputy or Associate Superintendent of Public Instruction be created and given responsibility for higher education under the supervision of the State Superintendent of Public Instruction. This officer

should have the assistance necessary for the proper conduct of duties such as have been suggested for assignment to that office.

7. The choice of an individual for the presidency of a teachers college should be subject to the approval by the Superintendent of Public Instruction rather than by the Governor as is now the case.

8. Appointments to the staff in the Department of Public Instruction should be made by the State Council of Education only on the recommendation of the Superintendent of Public Instruction.

The recommendations in the summary of the special report on teacher education are consistent with, and in several instances, reinforce the recommendations contained in this general report. They go into greater detail in certain phases of teacher education than does this statement, and attention is called to specific recommendations concerning: the need for continuing data regarding the supply and demand for teachers; the statutory provisions relating to teacher education; the appointment and functions of the local Boards of Trustees of the State Teachers Colleges and the relation of the State Council of Education to those institutions; the budgetary and purchasing procedures affecting the State Teachers Colleges; the relation of the State Council of Education to private institutions preparing teachers including the criteria for approving such institutions and the method by which those criteria are administered; the need for State-wide cooperation in studying and working out solutions to problems of teacher education; the importance of in-service programs of education for teachers; and the need for greater financial support from the State for teacher education if an adequate supply of competent and qualified teachers is to be available for the children in the public schools.

The data on financial expenditures (Chapter V) show that Pennsylvania

places heavy dependence on student fees as a source of educational income. This practice, unless other sources of income can be increased, places a relatively heavy dependence on the students to meet the costs of their education. It is a well established fact that considerable numbers of able youths are deprived of the opportunity for higher education as a result of their economic status and the greater the fees the more marked the limitation becomes.

The report on engineering (Engineering Education and Technical Training (Report B) recognizes this situation by suggesting that two institutions with relatively low fees be encouraged to expand their facilities to accommodate a total of 2500 to 3000 additional students. The utilization of institutions with relatively low fees is sound in view of the effect of heavy tuition fees. It would in the opinion of the survey staff be a distinct gain for the youth of the State if there were more opportunities for them to attend good low cost institutions.

The suggested expansions in engineering which are made only after careful consideration appear to be conservative. The director does not join in endorsing the proposal for the 200 to 500 undergraduate scholarships recommended in that report. No recommendation is made for a general program of undergraduate scholarships in this report. The suggestion of research professorships, graduate fellowships and assistantships are endorsed in the belief that they will contribute materially to the development of the engineering profession in the State.

There is a brief statement in Chapter V regarding the extension of educational facilities in which caution is urged in establishing additional State-aided privately controlled institutions. This suggestion applies with emphasis in the case of the National Agricultural College which changed from a jun-

places heavy dependence on student fees as a source of educational income. This practice, unless other sources of income can be increased, places a relatively heavy dependence on the students to meet the costs of their education. It is well established that the considerable number of able youths are deprived of the opportunity for higher education as a result of their economic status and the greater the need the more marked the limitation becomes.

The report on engineering, Engineering Education and Technical Training (Report B) recognizes this situation by suggesting that two institutions with relatively low fees be encouraged to expand their facilities to accommodate a total of 1500 to 2000 additional students. The utilization of institutions with relatively low fees is stated in view of the effect of heavy tuition fees. It would be the opinion of the survey staff that a gradual gain for the youth of the State if there were more opportunities for them to obtain good low cost institutions.

The suggested expansion in engineering which is made only after careful consideration appears to be conservative. The director does not join in endorsing the proposal for the 100 to 200 undergraduate scholarships recommended in that report. No recommendation is made for a general program of undergraduate scholarships in this report. The suggestion of research professorships, graduate fellowships and assistantships are endorsed in the belief that they will contribute materially to the development of the engineering profession in the State.

There is a brief statement in Chapter V regarding the extension of educational facilities in which action is urged in establishing additional State-aided privately controlled institutions. This suggestion applies with emphasis in the case of the National Agricultural College which changed from a

ior college to a degree granting institution in the field of agriculture. In the opinion of the survey committee one such institution in agriculture is adequate for the needs of the Commonwealth and it is suggested that State funds should not be appropriated to the National Agricultural College.

During the last two decades efforts have been made to increase the number of State-aided privately controlled institutions in the Commonwealth. Governors have vetoed some of these efforts in the past but undoubtedly similar attempts will be made in the future.

Instead of extending opportunities for higher education by this means the following suggestions are offered:

1. Increase the State's participation in the support of publicly controlled higher education by additional aid to publicly controlled institutions now in operation or by the establishment of new publicly controlled institutions.
2. Increase the aid to privately controlled institutions that now receive funds from the State.
3. Establish contract colleges as is done in New York State.

All grants to privately controlled State-aided institutions should be made on the basis of agreements between the State and the institutions as to the service that is to be rendered.

In this same chapter consideration is given to Senatorial scholarships. The conclusion reached is that they should be discontinued and it is so recommended. In case this step cannot be taken it is suggested that the selection of the recipients should be left to the State Department of Public Instruction.

FINANCIAL STATEMENT

Financial Statement
as of October 30, 1948

Appropriation approved by the Governor (Act No. 565, Symbol No. 835019)		\$ 50,000.00
Expenditures on behalf of Committee on Post-High School Education		
Salaries and wages	11,576.04	
Fees	7,393.25	
Materials and Supplies	1,691.39	
Traveling Expenses	3,702.79	
Administrative Charges	4,675.59	<u>29,039.06</u>
Balance		\$ 20,960.94