

W. T. Middlebrook

W. T. MIDDLEBROOK

**Report
on
Survey
of
NATIONAL
HIGHER
EDUCATION
in the
Republic
of
Korea**

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U.S. International Cooperation Administration W. T. MIDDLEBROOK

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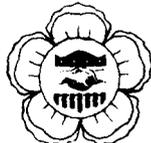
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The United States Operations Mission to Korea

May, 1960

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International Cooperation Administration
UNITED STATES OPERATIONS MISSION TO KOREA

APO 301, San Francisco, California

Letter of Transmittal

May 25, 1960

Dr. Yi, Pyeng Do, Minister of Education
Republic of Korea

Dr. Raymond T. Moyer, Director
United States Operations Mission to Korea

Sirs:

We have the honor of transmitting to you the "Report on the Survey of National Higher Education in Korea" prepared and conducted in accordance with your authorization and instructions. We wish to take this opportunity to express our deep and sincere appreciation to you and your associates, and to the many members of staff of the national institutions of higher education in Korea for the guidance, assistance and hospitality which has been so generously accorded us and our associates throughout the study.

Walter A. Anderson
Walter A. Anderson*

William T. Middlebrook
William T. Middlebrook

Co-directors of the study

*Dr. Anderson replaced Dr. George D. Stoddard who was not able to actively participate due to his assumption of new responsibilities as Executive Vice President and Chancellor of New York University.

Preface

The membership and the primary areas of responsibility of the Survey Group jointly responsible for this study are as follows:

Administration, Organization and Physical Plant

Dr. Richard H. Lindeman, Research Associate, Bureau of Institutional Research, University of Minnesota

Mr. William T. Middlebrook, Vice President Emeritus, Business Administration, University of Minnesota

Agricultural Sciences

Dr. Mason H. Campbell, Dean Emeritus, College of Agriculture, University of Rhode Island

Engineering and Science

Dr. Elmer C. Easton, Dean, College of Engineering, Rutgers University

Health Sciences

Dr. Jean A. Curran, Senior Consultant, Bingham Associates Fund, Boston, Former President, Long Island College of Medicine

Humanities and Social Sciences

Dr. Chester W. Wood, Professor and Director of Student Personnel, University of Minnesota, Duluth

Teacher Education

Dr. Walter A. Anderson, Dean, School of Education, New York University

The following members of the United States Technical Advisory Staff in Korea have worked closely with the members of the survey group. Their active participation has been particularly helpful in the study:

Administration, Organization and Physical Plant

Dr. Burnice Jarman, United States Operations Mission,
Division of Education

Dr. Arthur E. Schneider, University of Minnesota, Chief
Advisor in Korea

Agricultural Sciences

Mr. Roy Bridgford, University of Minnesota, Chief Advisor
in Agriculture

Engineering and Science

Mr. William Weems, United States Operations Mission, Di-
vision of Resources and Development

Health Sciences

Dr. N. L. Gault, Jr., University of Minnesota, Chief
Advisor in Medicine

Teacher Education

Dr. Willard E. Coslin, Home Staff Coordinator, George
Peabody College for Teachers

The survey included these national universities, colleges,
and normal schools:

National Universities

Chonnam at Kwangju
Chonpuk at Chonju
Kyungpuk at Taegu
Pusan at Pusan
Seoul at Seoul

National Colleges

Chunchon Agricultural at Chunchon
Pusan Fisheries at Pusan
Kongju Teachers at Kongju
Kwangju Teachers at Kwangju
Pusan Teachers at Pusan

Normal Schools

Andong	Kongju
Cheju	Kusan
Chinju	Kwangju
Chongju	Mokpo
Chonju	Pusan
Chunchon	Seoul
Chungju	Sunchon
Inchon	Taegu
Kangnung	Taejon

During the period under United States military government, beginning late in 1945, educational aid was provided under the auspices of the U. S. Army. Beginning on January 1, 1947 the U. S. Economic Cooperation Administration was given this responsibility. In that year the Educational and Informational Survey Mission appointed jointly by the United States Departments of State and War decried the interruptions in public higher education by student-faculty strikes, urged "the development of over-all policies relating to the maintenance of the highest feasible educational standards and the expansion of higher education only to the degree warranted by resources, facilities and personnel" and noted with approval the formation of Seoul National University.

In 1950 after the Communist invasion, the Economic Cooperation Administration's educational responsibilities were absorbed in the program of the United Nations Command. Later the principal United States and United Nations organizations, including the U. S. Army, all became associated with educational aid.

The United Nations Korean Reconstruction Agency (UNKRA) was created in 1950 and assumed responsibility for rehabilitation in the educational field in 1952. In that same year the UNESCO-UNKRA Educational Planning Mission to Korea reviewed in more detail the progress and problems of higher education. This Mission urged changes in over-all control and the possible groupings of colleges and recommended a Korean mission to study the requirement of graduates in the several fields, the number and location of needed colleges, possible merging of colleges and relatively broader and sounder entrance qualifications. It also recommended repair and rehabilitation of university and college buildings with priority to normal colleges, Seoul National University and the technical and scientific colleges; endorsed a recommendation of a United Nations Food and Agriculture Organization mission that the SNU College of Agriculture be developed as adequate to provide needed agricultural graduates; suggested aid priority to agriculture, science, engineering and medicine; urged the desirability of overseas fellowships for members of the teaching staffs of national medical, dental and pharmacy colleges; and made many other recommendations which even today have a familiar ring. The development and strengthening of public higher education during the past eight years are rooted in this report.

UNKRA and the U. S. Foreign Operations Administration (FOA), created in 1953, shared educational assistance until late in 1955 when UNKRA turned over its educational activities to the International Cooperation Administration (ICA), successor to FCA. ICA since that time has been providing material and technical assistance in classroom construction, vocational training, teacher education and higher education. This broad program has

been implemented in part in higher education by the ICA-University of Minnesota contract for staff improvement and equipment aid to Seoul National University in agriculture, engineering, medicine, nursing and, more recently, public administration, by the ICA-George Peabody College for Teachers contract for similar assistance to teacher training institutions, and by the ICA-Washington University contract for assistance to Yonsei and Korea Universities in business administration.

Early in 1959 Dr. George D. Stoddard, Executive Vice President, New York University, reviewed progress under the contracts with the three American institutions, surveyed the colleges of Seoul National University, examined other public and some of the private institutions, and made many recommendations on organization, programs and plant of remarkable clarity and insight when one considers that his tour of duty covered only some 60 working days. His recommendation "to bring a team to Korea to make an intensive survey of Seoul National University in a setting that takes account of the whole system of higher education" is responsible for this present study. The original plan called for his participation. It is regrettable that his new duties prevented his service. Subsequent developments in Korea somewhat reoriented the study. It seemed desirable to study all national higher education in which, of course, Seoul National University has a leading role.

During October, November and December, 1959, Messrs. Middlebrook and Lindeman, in consultation with the Ministry of Education, the United States Operations Mission staff in Education, and officials of Seoul National University, detailed the general plan of the survey, designed the forms for procurement of basic data relative to organization, administration, the academic programs and physical plant, and analyzed and summarized the data which were provided by the universities and colleges. In January and February the academic program specialists arrived. Each specialist studied the basic data which had been collected and summarized for his field; visited the several campuses; interviewed the university and college officials in his particular field; attended class sessions; surveyed class, laboratory and related facilities; and visited and conferred with officials in some private universities and related institutions. He then presented his findings for group review and approval. The recommendations in this report, therefore, represent the best judgments of the whole survey group.

The survey group regrets that space does not permit a recording of the long list of devoted Korean administrators and educators who have contributed to this study in a cooperative and constructive manner, unsurpassed in its experience.

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ADMINISTRATION, ORGANIZATION AND PHYSICAL PLANT

Higher Education in Korea

Public Higher Education

The pamphlet "Survey of Education in Korea," published by the Ministry of Education, Republic of Korea, dated September, 1959, reports that 25,166 students receive instruction in (1) five nationally supported universities with 33 constituent colleges, (2) five nationally supported colleges, consisting of three teachers colleges, one agricultural college and one fisheries college, and (3) two nationally supported junior colleges. This pamphlet also reports that 10,952 students are receiving instruction in 18 nationally supported normal schools, 3,383 students are receiving instruction in one university with three constituent colleges and four other colleges supported by public agencies other than the national government.

Private Higher Education

This pamphlet also reports that 37,300 students are receiving instruction in 45 privately supported institutions--12 universities, 25 colleges and 8 junior colleges.

Organization and Controls of Ministry of Education

Organization

Responsibility for all nationally supported education--elementary, secondary and higher--is vested in the Ministry of Education. The Minister is assisted by a Vice Minister and seven chiefs of bureaus, among whom is the Chief of the Bureau of Higher Education. The Minister also has an advisory group designated as the Central Board of Education consisting of 30 members. This Board has, among others, a subcommittee of six on higher education which at present consists of one public school member and five private university and college presidents. The Board meets approximately twice a year. Below the Ministerial organization each university has a president as the chief administrative officer, which presidents appear to have central administrative responsibilities in varying degrees within their institutions. These presidents, as well as deans of constituent colleges in the universities, are nominated by the Minister of Education to constituent faculties and if approved by the faculties by secret ballot are recommended to the President of the Republic for final approval.

Controls

The Minister of Education exercises the following main controls over the activities and operation of nationally supported institutions of higher education:

1. The number of students which may be enrolled in departments, colleges and universities through the establishment of upper authorization limits.
2. The number of faculty members in each academic rank which may be employed in each department, college and university.
3. The appointment and promotion of individual academic staff members--the President of the Republic as well as the Minister must approve all academic appointments of professorial rank.
4. The appointment of all presidents (six-year term) and college deans (four-year term)--nominations are by the Minister subject to secret vote of confirmation by the faculty concerned and approval of the President of the Republic.
5. The specification of minimum building and land spaces for the establishment of institutions of higher education.
6. The establishment of both governmental and parent tuition and fee levels.
7. National appropriations through recommendation to the Minister of Finance and the Assembly for each constituent and separate college as well as separate appropriations for administration, conference and other expense in each college.

Advantages and Disadvantages of
Existing Organization and Controls

Advantages

Among others, these major advantages of the present plan of organization and controls may be cited:

1. General governmental responsibility is centered in one important major department of government, namely, the Ministry of Education.

2. This centralization permits:

- a. A central review of budgets and influential support of appropriations.
- b. The central setting of standards for the establishment of institutions of higher education, both public and private.
- c. The establishment of standards of staff and space in public institutions.
- d. The control of expansions within the national institutions.
- e. The control of student enrollment in national institutions through student enrollment authorization limits.

Disadvantages

Without detracting in any way from the above cited advantages there do appear to be important inadequacies and shortcomings in the existing plan of organization and controls:

1. The plan does not identify clearly and provide adequately for the higher level of administrative responsibility which nationally supported--as opposed to private--higher education should command in the public interest.
2. The plan does not permit the high level continuous supervision required for the leadership, the guidance, and the coordination of nationally supported institutions of higher education.
3. The plan involving term appointments subject to faculty secret ballot approval of administrative officers does not vest in those officers within their institutions the freedom, the permanence and the authority essential for strong and vigorous leadership.
4. The plan involving fixed rules and regulations covering student quotas, faculty quotas, faculty appointment, promotions and ranks, building spaces, land areas, and involving fixed appropriations to colleges within the universities does not provide institutional officers the degree of freedom and flexibility which is essential to economical and effective operation, for the reason that operating conditions do change and do vary from term to term.

5. The plan does not recognize to the full extent feasible in a democratic society the desirability of removing education from the vagaries of partisan politics.
6. The plan does not enlist to the fullest extent possible the public interest and support of those engaged in agriculture, forestry, commerce, industry, transportation, communication and finance, as well as those engaged in education.

Proposed Organization and Controls

These disadvantages do suggest that there is an opportunity, even the need and desirability, for some changes in organization and controls which would be beneficial to public higher education, although obviously some desirable changes could be accomplished within the existing framework. The basic objectives of more intensive leadership and guidance, of improved coordination, of greater flexibility in the interest of more economical and effective operation, and better public understanding and support could perhaps be more readily achieved by adopting an organizational and control pattern common in the United States and elsewhere but somewhat novel in public higher education in Korea.

The Survey Group recommends that:

1. There be established in the Ministry of Education under the general direction of the Minister a Board of Regents vested with the authority and charged with the responsibility of management of all nationally supported universities, colleges and normal schools.

The management, as here used, contemplates determination on a high policy level of matters relating to organization, finance, quotas, administrative procedures, and staff appointments, promotions and removals for cause. The accomplishment of policy decisions in these areas would become the operating day-to-day responsibility of university, college and school administrative officers.

2. The Board of Regents be composed of 12 members, selected from the general citizenship outside of the national government service in the general fields of education, business and the professions and representative, so far as feasible, of the several provincial geographical areas.

The purpose here is to enlist the interest, support, counsel and guidance of distinguished public-spirited citizens on a policy-making level who will bring to public higher education experience and judgment acquired in the various callings and who work and reside in the several provinces. Public higher education should and does serve education, business, finance and all the professions on a national basis.

3. The term of office of members of the Board of Regents be six years, except, however, that on inception four members be appointed for terms of two years, four for four-year terms, and four for the usual six-year term.

The purpose here is two-fold. The term should be long enough to insure continuity of policy and at the same time to make the Board responsive to public interest and needs.

4. Members of the Board of Regents be appointed on nomination of the Minister of Education and the President of the Republic, subject to confirmation by the Assembly.

This is a public body, exercising a public function and the membership should be acceptable to both the executive and legislative branches of government. In the preparation of his nominations it is suggested that the Minister seek the advice and counsel of representative organizations and associations, both lay and professional.

5. The Regents serve without compensation but be reimbursed for travel expenses.

Service on this Board is not employment, but public service. Expenses of rendering the public service should, however, be provided.

6. The Board of Regents elect a chairman and a vice chairman from its membership and establish the bylaws for the transaction of its business, which bylaws should include provision for monthly meetings.

Within the framework of government, the Board should be given a wide latitude of freedom. The importance and volume of business to be transacted indicate monthly meetings, as a minimum.

7. The Chief of the Bureau of Higher Education in the Ministry of Education be ex officio secretary of the Board of Regents.

This provision would provide liaison between the activities of the Board and the responsible Ministry.

Internal Organization of Universities and Colleges

Three general types of internal administrative organization and control exist in the national higher educational institutions of Korea. Outwardly all institutions appear to be very much alike. Position titles are similar, if not identical, and organizational units correspond in name and functions. In actual operation, however, they differ widely. The three types are:

1. The centralized type.

In the centralized type the administrative control is vested in the president as the chief executive officer and the central responsibility is shared by the president in varying degrees with the academic dean, the business officer and the college deans. Two national universities are of this type.

2. The semi-centralized type.

In this type, usually because some college units are on removed campuses, the administrative control is somewhat decentralized. Two national universities are presently in this category but are moving toward more complete centralization.

3. The decentralized type.

In this type very little administrative control rests with the central administrative officers. It is almost exclusively exercised by the deans of the colleges. Seoul National University is in this category. The reasons for this decentralization are rather obvious. When originally organized, this university was composed of fourteen units in some eight separate locations. Even today its units are still on eight separate campuses. It has not been centralized either administratively or geographically. This university is in the main a federation of colleges under the name of a university. The disadvantages of this degree of decentralization are many. Central leadership is weakened; colleges tend to become self-contained and self-centered; general arts and science courses are duplicated in many colleges; students are denied the presumed university advantages of transfer and of wide course electives; central functions, services, reports and records are duplicated in the colleges; costs become excessive; and limited resources are unnecessarily wasted.

The Survey Group favors the centralized type of internal organization and wishes to encourage those universities moving in this direction. However, there should be caution against over-centralization. The chief executive should share his responsibilities with the deans of the colleges as well as his immediate academic and business associates. College deans and department heads should be selected as participants in administration and not as honorary recipients of an award for faithful and long service.

The form of internal organization which is recommended is intended to be of the centralized type and attempts to reverse the common failing in many universities of too many people reporting directly to the president. It also perpetuates the various councils now present in the national universities on an advisory basis.

The Survey Group recommends a centralized type of internal organization as follows:

1. Universities

A. Office of the President - President

B. Office of Academic Administration - Vice President or Dean

(1) Academic Section - Chief

Procedures, records and reports--as opposed to control--
re: (1) Entrance requirements and examinations,
(2) Selection and admission, (3) Attendance, progress,
and graduation, (4) Curricular and course offerings,
(5) Student class and laboratory assignments, (6) Staff
teaching and research assignments, (7) Room assignments
and utilization, (8) Tuition, fee and deposit
assessments.

(2) Student Section - Chief

Procedures, records and reports re: (1) Advising and
counselling, (2) Scholarships, (3) Discipline,
(4) Student organizations, activities and publications,
(5) Graduate placement and follow-up.

(3) Libraries - Director

All libraries of the university should be under the
general supervision of a Director of University Libraries--
a trained librarian. Books should be centrally
accessioned for general availability. Trained
librarians are an important need in all national
universities. Each specialist has emphasized this
need in his area.

(4) General supervision of such other all-university
academic activities as Health Services, Museums,
Press--publications, Institutional Research on
organization and operation, Student unions--social
phase, Concerts and Lectures--all-university.

C. Office of Business Administration - Vice President or Director

(1) Finance Section - Chief

Procedures, records and reports re: (1) Budget
administration, (2) Accounting, (3) Audits,
(4) Cashiers (collections and payments),
(5) Trusts and investments.

(2) General Affairs Section - Chief

Procedures, records and reports re: (1) Purchase and
stores, (2) Inventories, (3) Non-academic personnel and
personnel records, (4) Employment, (5) Insurance and
retirements, (6) Auxiliary enterprises (dormitories,
food services, bookstores, etc.).

(3) Plant Section - Chief

Procedures, records and reports re: (1) Custodial services, (2) Building and grounds maintenance, operation and repairs, (3) New construction, (4) Protection and safety (guard service), (5) Motor pool.

D. All-University Councils - Advisory to the President.

(1) Administrative Council

Composition - President, Chairman, Vice Presidents, and Deans of the colleges.

Functions - Academic and business administration problems of an all-university character, such as budgets and academic personnel.

(2) Faculty Council

Composition - President, Chairman, Professors and Associate professors, and ex officio, members of Administrative Council.

Functions - Academic problems of an all-university character, such as admissions, student counselling and discipline, curricula and course offerings, academic staff benefits.

(3) Parents Council

Composition - President of Parents Association, Chairman, officers of college Parents Association and members of university staff.

Functions - Parent Association budget and student related educational policies.

(4) Council on non-academic personnel

Composition - Director of Business Administration, Chairman, and members of university administrative staff.

Functions - Policies re employment, training, job classification, pay, promotions, leaves, benefits and grievances of members of non-academic staff.

E. Office of Alumni and Public Relations - Director

F. Constituent Colleges - Dean

(1) Departments - Head

2. Colleges

Colleges within universities

In general, the deans of constituent colleges should depend on and not duplicate the organization and functions of the university offices of academic and business administration. The office of the dean of the college, staffed with competent non-academic assistance, should accomplish the limited student, budget, and other academic and business records and reports essential for college administration in a university organization.

Independent colleges outside universities

Independent colleges not part of a university should follow the general pattern of organization and functions of the university. The organizational subdivisions, however, and the size of the administrative staff should be reasonably related to the task of the college as compared with the university. The chief executive officer of those colleges should have the title of Dean.

Academic and Administrative Personnel
Appointments, Promotions, and Terms

In higher education, like all education, nothing beyond the name is static. Subject matter changes; methods of instruction change; new research fields emerge and old emphases change; and student enrollments increase and shift between the fields. In short, higher education is one of the most dynamic of social institutions, and its success is best insured by high degrees of independence, stability and flexibility. The teaching and research staff must be free to seek and express the truth as they view it, unfettered by current social and political attitudes. In like manner the presidents, the deans and other administration officers must enjoy a reasonable degree of independence, stability and flexibility if their tasks of institutional leadership are to be effectively and economically accomplished.

In Korean national higher education, members of the academic staff above the rank of instructor have the independence of indefinite tenure but the series of approvals required for original appointment are open to the accusation that partisan political attitudes are given undue emphasis as contrasted with the personal competence essential to teaching and research. Administrative officers, on the other hand, are appointed for limited terms and the method of selection involving secret ballot approval of those in the units for which they are responsible seriously impairs the independence and freedom which they should have for vigorous and strong leadership.

The terms of appointment and methods of selection and promotions of academic and administrative staffs under present regulations and practice may be summarized as follows:

<u>Staff Positions</u>	<u>Term</u>	<u>Approval Procedure</u>
1. Professors, Associate Professors, Assistant Professors	Indefinite	1. Dean, 2. President, 3. Faculty by secret ballot, 4. Minister, 5. President of Republic
2. Instructors and Teaching Assistants	Indefinite	1. Dean, 2. President, 3. Reported to Minister
3. President	6 years	1. Minister nominates with or without consultation, 2. Faculty by secret ballot, 3. Minister, 4. President of Republic
4. Dean of Academic Affairs	2 years	1. President may appoint and report to Ministry. (Incumbent already approved as Professor)
5. Business Manager	Indefinite Tenure	1. President nominates, 2. Minister, 3. President of Republic

<u>Staff Positions</u>	<u>Term</u>	<u>Approval Procedure</u>
6. Dean of College	4 years	1. President nominates, 2. College faculty (above instructor rank) by secret ballot, 3. Minister, 4. President of Republic
7. Non-academic staff Grades 1, 2 and 3	Indefinite	1. President, 2. Minister, 3. President of Republic
8. Below grade 3	Indefinite	1. Dean, 2. President

The present method of faculty approval or disapproval by secret vote of administrative and academic appointments and promotions is not a desirable practice in the national universities and colleges of Korea. It places with the faculty a high degree of authority without corresponding administrative responsibility. It is in a sense irresponsible, for no reasons for a vote need be given. It seriously hampers and weakens administrative initiative and leadership for the next secret vote is always in mind. It is liable to delay or even to block the appointment or promotion of specially gifted younger members of the staff. It tends to emphasize the status quo and in this respect is unsuitable to a developing and expanding system of national higher education. The basic purpose of the practice is to insure friendly and cooperative effort. It is our judgment that this objective can be achieved more advantageously through formal consultation with committees of the faculty supplemented, if desired or indicated, by informal consultation with individual members of staff.

If the Board of Regents for Higher Education, proposed elsewhere in this report, is established in the Ministry of Education, the President of the Republic and the Minister of Education could well delegate to that Board their responsibilities for academic and administrative staff appointments and promotions, with the reservation, however, that the appointment of all presidents of national universities and colleges must have their prior approval. The present term of a president is six years. This is an adequate period for demonstration of administrative ability and leadership. If the consultation procedure is substituted for the secret ballot and the president is eligible for reappointment, then no further

change is suggested. The appointment terms of the dean of academic affairs, the deans of the colleges and department heads should be as long as that of the president. No other changes in terms are suggested.

The Survey Group recommends that present terms of appointment and present methods of selection and promotion of academic and administrative staffs be continued except as follows:

1. That a plan of consultation with formally established faculty committees be substituted for the existing secret voting procedure in the appointment and promotion of academic and administrative staff members.
2. That the President of the Republic and the Minister of Education delegate to the proposed Board of Regents for National Higher Education the appointment and promotion of academic and administrative staff members with the reservation that the appointment of all national university and college presidents shall have their prior approval.
3. That the appointment terms of the deans of academic affairs, the deans of the colleges and heads of college departments be six years with the privilege of reappointment.
4. That regulations be amended to provide that teaching assistants be given annual appointments, that instructors be given annual or not more than two-year appointments, and that assistant professors acquire indefinite tenure only after satisfactory university full-time service for not less than five years of which not less than three years shall be in the rank of assistant professor.

Academic Staff Pay

Data were requested and provided relative to the income of members of the academic staff from salary for regular duties, for overtime and for graduate school service, and from outside sources for teaching in other institutions and for consultation services. The data covering income from all sources except outside service appeared accurate and complete. These data were analyzed and summarized by college and by university to show for each of the four academic ranks, the lowest, highest and average salary incomes. Three of the larger private institutions in

Seoul provided similar salary information. With the exception of one private institution which insists on real full-time service and pays higher average salaries and one public university where either outside service opportunities were less or not approved, the incomes by academic ranks were approximately equivalent in the several institutions. In terms of university income, it would appear, therefore, that the academic staff was relatively fairly compensated. This is not a sound conclusion, though, if individuals are not properly ranked in terms of their training, experience and responsibilities. There is evidence that some are under-ranked and hence somewhat under-compensated.

The practice of allowing full-time members of staff additional pay for over-time and graduate school services and permitting outside regular continuing employment is of doubtful soundness for it leaves the impression that the regularly assigned duties do not constitute a full-time teaching and research load. This is not, however, necessarily a correct appraisal, for unquestionably these are, rather, devices to supplement regular salaries too low to meet acceptable living costs. Obviously this overloading adversely affects the performance of regular assigned duties. The only solution is a general improvement of academic salaries. With such an improvement there should be a re-examination of ranks and teaching and research assignments.

The extent of the required upward salary revision can perhaps best be measured by the existing salary levels at the private institution which insists on real full-time service. On this basis the objective should be an increase of the average full professorial salary level by 50% and the other three ranks, 40%.

The Survey Group recommends that:

1. As rapidly as resources permit, the average salary level of full-time professors be increased approximately 50% and the average levels of the other three academic ranks approximately 40%.
2. Added salary payments for over-time and graduate school service be discontinued during the regular academic year and upon attainment of the above salary improvement objective, full-time members of staff not be allowed to accept outside regular teaching and research employment.

Budget Requests and Procedures

Each national university and college annually prepares a national appropriation budget request. This budget is prepared by the several colleges, is cleared through the university administration and is then considered by the Minister of Education, the Minister of Finance and finally by the National Assembly. The appropriations are made through the Ministry of Education not to the university but to the several colleges.

Each university and college also prepares a budget plan for the use of the parents tuition and fee income. This plan, prepared by the university administration in consultation with the colleges, is submitted to a Parents Association Committee variously membered in the several institutions. Upon approval the plan involving allotments to the colleges, to administration, to physical plant and to other purposes becomes effective and is reported to the Minister of Education.

Government tuition and fees and institutional income from sales and services do not appear in either budget, for both are remitted to the national treasury and have the financial effect of partially offsetting the national appropriations.

Each university and college, therefore, operates under two budget plans. Neither the Assembly, which provides the appropriations, nor the Parents Association, which is concerned with the parents tuition and fees, has available to them a single complete budget plan. Both groups need complete budgets for sound judgments.

The national appropriations to the colleges instead of the university as a whole, the requirement that appropriations must revert to the national treasury if not used for college purposes, and the departmental table of authorized personnel tied to an authorized student enrollment, coupled with other less important factors create an inflexible educational environment which is not conducive to good instruction, good research or good administration. Staff members encourage students to enter and remain in fields which do not make the best use of their personal qualifications in an effort to reach authorized student enrollments and thus protect their positions. Transfers between departments and between colleges become so difficult that few students even attempt them. Colleges with fixed appropriations are unwilling to spend their resources for the instruction of students enrolled in other colleges. As a result curricula, courses, staff and equipment are duplicated, resources are wasted, and thus one of the basic

purposes of a university of consolidating subject fields and making them available to all students in the university, regardless of the college of enrollment, is lost. Modern research often requires departmental and college cooperation which is not fostered by this type of isolation. Strong and effective central university administration is likewise thwarted for the colleges have and hold the resources without regard to constantly shifting instructional loads and research objectives.

The availability of parent tuition and fees which may be freely budgeted does not wholly solve these problems, but in a few of the universities strong leadership has used this income to accomplish some degree of flexibility.

The proposals which follow are closely related to and in major part dependent on an acceptance of the recommendations made elsewhere that there be an over-all coordinating and directing board in the Ministry of Education and that strong central administration in the universities be fostered through changes in existing personnel practices.

The Survey Group recommends that:

1. Each university annually prepare a single, complete budget which should include estimates of all expected income from (1) government tuition and fees, (2) parents tuition and fees, (3) institutional sales and services, and (4) any other source available for institutional purposes, and which should also set forth in detail planned expenditures for staff, supplies, expense, equipment and other purposes.
2. Each university be permitted to retain government tuition and fees and institutional income from sales and services in partial support of the annual operating budget.
3. The university request for national appropriations be the difference between planned expenditures and estimated income.
4. While the budget request should be in detail, the appropriation, when determined, be made in one combined sum to the university for administrative allocation to the colleges, departments, and activities.

5. The responsibility for economical and effective use of the appropriation so made be placed with the university administration under the general supervision of the proposed Board with the requirement that a full and detailed financial accounting be annually made to the Ministry, the Assembly, the Parents Association and the general public.

Student Entrance Examinations, Quotas and Transfers

The present plan of entrance examinations does not insure the selection of the ablest young men and women applying for admission to the national universities and colleges. Furthermore, the existing system of departmental student quotas and related staff quotas tend to deprive the student, once admitted, of transferring to a different field of study as his aptitudes develop and his interests change.

Each national university and college prepares and gives its own entrance examination and some constituent colleges add supplementary examinations for admission to their fields of study. These examinations are usually given by each university on different dates. Unless each applicant takes all examinations, there is no assurance that the ablest students will be admitted. This does impose a real hardship on the applicant; if he does not take all the examinations, he could select the most highly competitive ones and fail even though his ability were higher than some accepted. Furthermore, little if any weight is given in the admission process to the applicant's high school record.

A common national university entrance examination which would include segments specific to the several fields of study, coupled with some weight to the high school record should give more assurance that the ablest students are being accepted.

Each department is authorized by the Ministry of Education to accept a maximum number of students--the student quota. Likewise, a given number of academic staff members is authorized for that student quota. Quite understandably, staff members resist any student transfers which drop enrollments below the quotas and thus threaten the security of their positions. They also are encouraged to continue students who are not making satisfactory progress because of lack of ability or interest, for by doing so they provide tuition income for the payment of salaries and other costs in their departments. This is a most unfortunate situation. Student aptitudes and interests often change after

admission and it is in the public interest that these aptitudes and interests coincide with the field of study to the maximum extent possible. Student and staff quotas on a college basis would aid in the solution of this problem of student transfers and appropriations to the university instead of the college, as recommended elsewhere, might help in removing the incentive to retain students whose academic performances do not warrant continuance.

The Survey Group recommends that:

1. A common national university entrance examination be developed which would embrace segments specific to the several fields of study.
2. The common entrance examination so developed, together with appropriate recognition of the high school record, be the basis of admission to national universities and colleges.
3. Student and staff quotas be on a college or university rather than on a departmental basis.
4. Transfers between colleges and departments be permitted, even encouraged, upon demonstration that the transfer is justified and arises from changed student aptitudes and interests.

Student Activities, Health and Counselling

The social, club and athletic activities of students enrolled in the national universities and colleges are conducted by a student organization known as the Student Defense Corps. In its name the organization gives prominence to nationalistic and patriotic attitudes but there are no activities or affiliations of a military character. Each student in each college pays a student defense corps fee. The fee supports student activities including a student newspaper. In the universities the fee is used in part for all-university activities. Both college and university activities are conducted under administrative and faculty direction, yet there are within the program excellent opportunities for expression in self-government. Although women students pay the fee, their participation is reported to be very limited.

In three of the national universities provision is made through payment of a special fee for periodic health examinations and medical and hospital care. The plan should be extended to all universities, for beyond its health and welfare aspects it does provide some protection of the public investment in the students.

Counselling of students in relation to the institutional academic program is general. This service is rendered through the assignment of students to individual members of staff. Social and vocational counselling through tests and interviews on a professional basis is, however, extremely limited. This phase of counselling needs attention in the future and will assume a new importance as changes in policy and practice allow the student more freedom in matching his personal aptitudes and desires to academic offerings subsequent to his original admission.

Job placement and follow-up of graduates is now the responsibility of departmental advisors with limited cooperation of central administrative personnel whose regular duties often prevent adequate attention to these functions. Consequently, attention to individual graduates is widely variable and often lacking; continuing liaison with employers is not generally maintained; and there is too little relationship between the vocational counselling and job placement functions. Improved placement services would contribute markedly to effective utilization of college and university graduates.

The Survey Group recommends that:

1. The student activity program be continued.
2. The health service program of periodic physical examinations and medical and hospital care be provided in all national universities and colleges.
3. Social and vocational counselling be provided on a professional basis.
4. A staff member, either academic or trained non-academic, be designated placement officer on a part-time basis in each college, with coordination of placement services the responsibility of the academic dean.

Financial Program and Resources

National higher education is in need of a soundly conceived financial program. Examination of the income and the expenditure of colleges and universities reveals a wide variety of financial practices, often conflicting and inconsistent, but invariably almost completely expedient in character. This is not surprising, viewed in the light of the size of the task undertaken and the limited resources available. Tuition and fee payments, high in relation to private institutions and presumably assessed and needed for operating purposes have been used for new construction and major rehabilitation. At the same time, operating needs for better salary levels, staff improvement, plant maintenance, books and equipment have not been met.

In some measure government policy and practice has complicated and added to the financial problems and difficulties of these institutions. Separate building appropriations have not been provided; supervision of support organization funds has been restricted to reporting; review of building needs and projects, financed from other than appropriations, has been very limited; national appropriations have not taken account of the total operating budget nor do they bear any identifiable relationship to the student body, actual or authorized, to be served; student tuition levels, high for public institutions and closely approaching those of private institutions, have been authorized; and, finally, incentives for good management have been restricted by fiscal requirements for return to the national treasury of unused salary allotments, of a portion of tuition and fee payments and of institutional income.

Throughout this report the need for more funds for salaries, for equipment, for buildings and for building maintenance is emphasized. These needs obviously can only be met over a period of years. It is, however, essential, even imperative, that a financial plan of meeting them be developed. Such a plan should segregate and provide for operating and capital funds; should give proper relative emphasis to staff, maintenance, equipment and physical facilities, and should incorporate policies and objectives for the decade ahead which cover such matters as individual institutional responsibilities and specialties, student enrollments and tuition levels, staff needs, assignments and salaries, desirable research and public services, and plant maintenance and expansion.

The Survey Group recommends that:

1. A long range program be developed which allocates to each institution its instructional, research and public service responsibilities, which projects financial resources needed for operating and capital purposes and which is designed to permit and insure that national higher education serves the national welfare.
2. Capital (new construction and major rehabilitation) and operating resources be separately budgeted.
3. In the use of available resources the relative emphasis be, in general: (1) staff and staff improvement, (2) building and equipment (including books) maintenance and rehabilitation, (3) new equipment and books, and (4) new buildings.

Non-Academic Staff--Selection and Training

In the national universities the non-academic staff is now composed chiefly of buildings and grounds skilled and unskilled workers, and a limited number of office, hospital, farm, and library workers. The situation is not unlike that which existed 30 or 40 years ago in American universities. There, however, a marked change has taken place and before too long a similar change will occur in Korea. It is not too early to plan for it.

In the United States the reasons for new emphasis on the quality of the non-academic staff lies in large measure on the advances in technology, the needs of expanded research and, above all else, on the conviction that it is uneconomical and wasteful to use the time of scholars and highly trained and paid academic staff for work which can be well accomplished by people trained and paid on a lower level. This conviction has resulted in the recruitment and training of medical, dental laboratory and other technical assistants, together with the upgrading of all non-academic staff through careful central selection, testing, in-service training and equitable pay recognition. The end is not yet in sight for the economy of the change is generally recognized.

American universities, particularly the publicly supported ones, actively seek opportunities on and off the campus for the employment of students. This is in keeping with their public purpose of making higher education available so far as possible to all capable of profiting from it, regardless of economic background. Surprisingly few students in the national universities

have employment on the campus and there is no noticeable effort to seek opportunities for them off the campus. A concerted effort to do both would have the added advantage of lending the prestige of the university to the dignity of labor--skilled, unskilled, or technical.

The Survey Group recommends that:

1. Each national university assign to one or more individuals in the general affairs section of the business office responsibility for the selection, testing and in-service training of members of the non-academic staff.
2. Students be given preference in university employment, wherever feasible.
3. Each national university, through its business office, actively seek off-campus employment opportunities for students.

Accounting and Auditing

The observations and recommendations which follow are obviously general in character and do not apply without exception to all national universities and colleges. They are intended to describe the common practices and suggest desirable objectives.

The National Government appropriations are made to colleges including separate allotments to Administration, Entertainment and Attached Activities. Accounts are kept on this basis without sub-accounts for college departments and the several offices of administration. Physical Plant costs are included in college and administrative expenditures without separate identification, except in the case of new construction.

The national universities and colleges collect both government and parent tuitions and fees and remit the government portion to the national treasury. Operating income from sales and services is also remitted to the national treasury. Appropriations and parent tuition constitute, therefore, the two main sources of support for educational operations.

Separate and parallel accounting systems are maintained for government appropriations and parents tuition and fees. The concept of fund accounting is not followed. Reports, like the accounts, are made separately to the Ministry of Education and the Parents Associations.

Income and expenditures for such auxiliary enterprises as dormitories and food service are too often mingled with college and university educational accounts. Too many food services are concessioned with little or no charge for plant and services.

The classification of accounts--faculty salaries, non-academic salaries, communication, travel, etc.--are reasonably uniform and satisfactory.

Generally two separate bank accounts--one in the Bank of Korea covering government appropriations, and one in a commercial bank covering parents tuition--are maintained. In one institution the parents fund allocations for supplies and expense are transferred to the colleges and deposited in the names of the deans. There is little or no uniformity in the plan of signatures for withdrawal from these bank accounts, nor is there a well organized plan of internal audit of cash handling and business procedures.

In some universities central accounting and budget control records are duplicated in college offices. This practice is wasteful and unnecessary with proper central records and reports. There are, of course, some exceptions. Hospital patient charges and payments is one illustration.

The Survey Group recommends that:

1. The accounting records be expanded to include income and expenditures of departments, offices, and activities within the colleges and within other major administrative divisions, such as Administration and Physical Plant.
2. Accounting and budget control records be maintained only in one central office and a system of budget records and reports be established for college administrative purposes.
3. Subsidiary cost records be maintained which will record individual building operating and repair and maintenance costs.
4. One accounting system be maintained for all income and expenditures through the use of fund designations to identify sources of funds--known commonly as fund accounting.

Fund 1--National Appropriation Fund 2--Parents Ass'n.

	<u>Total</u>	<u>Fund 1</u>	<u>Fund 2</u>
Law School	1,000,000	400,000	600,000

5. Dormitories, food service and other enterprises auxiliary to the educational operation be separately budgeted and accounted.
6. All funds from all sources for university purposes be cleared through the university treasury, be deposited only in the name of the university and be withdrawn only on signature of the duly authorized officer or officers.
7. One or more individuals in the office of the business manager be assigned the responsibility of auditing cash handling agencies and of instructing departments in business procedures.
8. All national universities and colleges annually publish financial reports covering all assets and liabilities and all income and expenditures--from all sources and for all purposes.
9. To enhance diligence in student fee collections, government tuition and fees remain with the institution, with proper recognition in the level of national appropriations.

Purchases, Storerooms and Inventory

The basic requirements for economical and effective purchasing to meet the complex and varied needs of higher educational institutions include the following:

1. A complete and detailed budget with supply and expense allotments to individual departments and activities.

This generally limits approvals prior to bids and purchasing to the signing of the covering requisition and certification of availability of funds.

2. The centralization of the purchasing function in a single office in each institution.

This reduces the number of people purchasing, permits employment of highly skilled personnel, centralizes responsibility, makes possible quantity buying through consolidation of requisition orders, allows establishment of standards of quality and services and generally results in economies through enhancement of buying power. Many devices are available to meet specialized emergency needs and blanket orders may be used for periodical delivery needs.

3. A general storeroom and a physical plant storeroom.

In these storerooms can be stored available for current use items generally and commonly used in the institution. Prompt deliveries can be made to using departments. The storerooms may also be used as receiving and inspection centers for supplies and equipment not stocked. These storerooms are an important aid to quantity and economical buying and to reducing significantly inventories in college and departmental stock rooms.

4. A complete equipment inventory together with the establishment of the principle of university ownership as opposed to college or departmental ownership.

An inventory is an essential guide to purchasing and the principle of university ownership insures that equipment, surplus in one college or department, is available to others without financial involvement.

5. A central repair shop for scientific equipment.

In such a central shop skilled personnel can repair and rehabilitate equipment, thus avoiding the need for early replacement.

In widely varying degrees the national universities and colleges meet these requirements. None meets them all.

The Survey Group recommends that:

1. Each institution provide budget allotments for supplies, expense and equipment to each department and activity.
2. The purchasing function be centralized in one office in each institution.
3. General and physical plant storerooms be established.
4. An equipment inventory be maintained and that the principle of university ownership be established.
5. Each institution with extensive scientific equipment establish a central repair shop.

Physical Plant

The buildings and grounds of a university establish and constitute the physical environment within which the academic program of the institution must function. This physical environment takes on a new and added significance as soon as it is realized how large a portion of available funds these buildings and grounds require and how the level of these costs, both capital and operating, are determined by building and campus planning, by methods of operation and by the extent of plant utilization. It is then clear that inadequate planning, ineffective operation and low utilization can adversely affect the whole academic program through an unjustifiable diversion of funds to these purposes.

It is quite understandable and not surprising that, in this period of rapid expansion, the objective has been "shelter" either new or old rehabilitated, with too little regard to careful educational planning, to proper locations and relationships and to the need for economical maintenance and operation through good organization and sound operating practices. Improved operation can be initiated and new construction and rehabilitation can now be undertaken with careful planning and with due regard for need. The expedient solutions occasioned by past emergencies should not be viewed as inevitable for the indefinite future. These universities will continue to serve the nation for a long period. There should be no hesitation to establish long-range objectives in campus planning and to insure that future building conforms to that plan. Only in this way will the physical plant of the future adequately and economically serve the educational program.

The specific observations and recommendations on physical plant are presented under the headings of:

1. Building inventories and utilization.
2. Building and grounds operation.
3. Building planning.
4. Campus planning.

Building Inventory and Utilization

Physical plant facilities in the five national universities consist of over 350 buildings, ranging in size from less than 100 square feet to over 100,000 square feet of gross area and distributed over 17 separate campuses. Buildings vary in age from less than one year to nearly 60; in utilities provided, from none at all to complete provision of heat, electricity, water and gas; in cost of new construction from \$1.50 to \$6.00 per gross square foot; in type of utilization, from concessioned barber shops to administrative offices; and in extent of over-all utilization, from less than 5% to more than 80%. Such variation is to be expected in view of the nature and recency of origin of the national university system as described elsewhere in this report. Of greater significance than this accounting of variability is a comparison of the typical and the desirable in terms of the above factors and identification of specific areas of deficiency. To that end a brief but more detailed account of the character, adequacy, and utilization of the above physical plant facilities is given in the following sections.

Character of Plant. Physical plants at the four national universities outside of Seoul are, in general, relatively new, the majority of buildings having been constructed during the past 10 years. Exceptions are on the medical campuses of Pusan and Kyungpuk, on the Agriculture campus at Kyungpuk and on the agricultural and engineering campuses of Chonpuk. Ages of buildings at these sites as well as those at Seoul average over 20 years. At four of the five national universities, three-fourths or more of the plants are of permanent construction, i.e., brick or concrete exterior with concrete floor slabs. In contrast, two-thirds of the buildings at the Chonpuk Iri campus, where about 40% of its student enrollment is accommodated, are of non-permanent light or heavy wood frame construction.

When buildings are of a permanent construction type and receive proper maintenance, replacement or major rehabilitation is necessitated more often by educational obsolescence than by physical deterioration. Many of the older but permanently constructed buildings on the medical and engineering campuses of Seoul National University have been rehabilitated through outside assistance. Further rehabilitation at Seoul would be unwise at the present time in view of certain administrative, organizational, and campus development considerations expressed elsewhere in this report. Due to similar considerations no immediate new construction is recommended at the Chonpuk University Iri campus where the combination of age and non-permanence would suggest replacement or major rehabilitation of physical facilities.

Although provision of utilities varies widely among institutions some generalizations are possible. Only at Seoul National University is heat supplied to a major portion of classroom and laboratory buildings; heat is supplied to less than a third of the buildings at other institutions. Electricity, on the other hand, is almost universally supplied whereas provision of water varies from over 80% of classrooms and laboratories at Pusan and Seoul universities to less than 10% at Chonpuk. Neither is gas by any means universally provided. None is provided at Chonnam, Chonpuk or Pusan, and less than 20% of the classroom and laboratories at Kyungpuk are supplied. In the interest of effective teaching and efficient learning the Survey Group believes that heat and electricity should be supplied to all instructional and research buildings and that water should be furnished in all teaching and research laboratories, with provision of gas to these facilities as needed.

About 50% of new construction (completed in 1955 or later) is permanent but varies considerably in quality from building to building and from campus to campus. Although cost figures available are judged somewhat unreliable, there appears to be much greater than normal variation, even for buildings of the same type on the same campus. The general relationship between assignable area (area within individual rooms, excluding corridors, stairways, mechanical equipment rooms, etc.) and gross area (all area included within principal outside faces of exterior walls) is good, the notable exception being the main building at Pusan, where a ratio of 50% reflects the amount of area consumed by the impressive but unnecessarily spacious central stairway. Only about one-fifth of the newly constructed buildings are supplied with heat although most are furnished with electricity. The most striking generalization about new buildings is the apparent lack of standard planning or construction procedures. The Survey Group believes that the adoption of such procedures would result in greater economy and more productive use of available building funds.

Adequacy of Plant. Although it is difficult for the Survey Group to prescribe exact standards of available space which will be entirely appropriate for Korean national universities, it is reasonable and necessary to utilize certain guidelines. The following ranges (in square feet per student enrolled) represent the basis for evaluating existing space availability: total university, 100-110; instruction and research, 65-75; classrooms, 12-15; laboratories, 24-28; libraries, 6-10; and offices (per full-time-equivalent staff member), 110-130. It should be emphasized that these figures apply to the total university and not to individual colleges. Laboratory space for sciences and engineering, for example, should be much higher.

Relative to the above figures some general observations on adequacy of space are: Kyungpuk and Pusan have only about half of the suggested total area per student enrolled (these institutions have only about two-thirds of the unit area considered necessary for total instruction and research programs with the most notable deficiencies in unit laboratory area); Chonnam and Chonpuk have excessive amounts of classroom space, more than twice the necessary unit area; Chonnam University is somewhat but not seriously lacking in library space, as is Pusan, where construction of the projected new library will correct this deficiency; Chonnam and Seoul have office space considerably in excess of that required. With total resources limited and the expectation that future enrollments will continually rise, it is important that present facilities be related to projected future needs.

The Survey Group recommends that:

1. Careful and detailed inventories and utilization studies of existing physical plants as well as predictions of student enrollments and future space needs be undertaken by national universities and the Ministry of Education.
2. Contingent upon the outcome of the above studies, no increase in the total amount of institutional space be undertaken at Chonpuk, Chonnam or Seoul National Universities.
3. After utilization of laboratory space is improved, as suggested elsewhere in this report, additional laboratory area be provided at Kyungpuk and Pusan National Universities.

Utilization of Facilities. Suggested percentage space allocations for various university functions are: instruction and research, 70%; public service, 5%; general administration, 3.5%; plant operation, 3.5%; student services, 2%; institutional services, 14%; and non-institutional services, 2%. National universities follow a relatively consistent pattern in terms of percentage distribution. Space devoted to instruction and research is relatively high, whereas that for public service, plant operation, and particularly for institutional services, is relatively low. The Survey Group believes that this distribution may reflect the tendency of national universities to over-emphasize instruction and research activities with the resultant failure to understand and fulfill public and institutional service obligations which should accrue to national higher educational institutions.

Over-all utilization intensity is ordinarily expressed in terms of the ratio between the actual and maximum possible student station hours of use based on a 44-hour working week. Reasonable standards are: classrooms, 27-30%; laboratories, 15-20%. National universities appear to use existing classroom space with appropriate intensity with the following exceptions: Chonbuk College of Liberal Arts and Sciences, where utilization is less than half of that considered desirable; the Kyungbuk College of Liberal Arts and Sciences; and the Pusan Graduate School. Laboratories are not in general well utilized, particularly at Pusan Engineering and Medicine, and Seoul Engineering, where utilization is less than half of that considered desirable. Failure to utilize laboratories to a sufficient extent may reflect the lack of emphasis on practical experience for students. This may in part result from a dearth of sufficient student equipment but also seems to indicate deficiencies in instructional program planning, particularly in the science field.

The Survey Group recommends that:

1. Cooperative studies be undertaken by national universities and the Ministry of Education to determine whether present emphasis on public services (such as extension teaching, public concerts, exhibits, and lectures, surveys, testing and laboratory analysis available to the public) and institutional services (such as equipment repair, printing, photography, and storage on an all-university basis) is consistent with the role of national higher education in Korea. In terms of space allocation figures it appears to the Survey Group that these functions are now seriously de-emphasized.
2. Before new construction or major rehabilitation is undertaken, laboratory utilization at all national universities be brought up to desirable levels.

Buildings and Grounds Operation

In most national universities plant custodial service is the responsibility of one section of the business office and plant maintenance and new construction that of another section. All plant functions should be consolidated and their importance is such that a separate section concerned with all phases is justified.

The general levels of both custodial and maintenance services are low. Improvement can be expected (1) if there is better initial selection of personnel, (2) if there is a program of in-service training for both skilled and unskilled staffs, (3) if a central shop for all skilled trades is established with a conveniently located storeroom carrying supplies, materials and parts regularly needed, and (5) if a job order system is installed which describes the task, estimates time and materials required and makes provision for reporting the actual resulting costs.

Except for new construction costs, which often appear inaccurate and incomplete, there are not readily available records of total plant costs nor of individual building or job costs. This is a serious handicap to budget making and to management generally, for wasteful policies and practices cannot be identified and changed.

The Survey Group recommends that in each university:

1. All phases of plant construction and operation be consolidated in a physical plant section of the business office.
2. All physical plant personnel be centrally selected and tested and be given in-service training.
3. A central shop for carpenters, plumbers, electricians and the other trades be established with a conveniently located storeroom of plant supplies, materials and parts.
4. There be established a job order system which will describe the job to be done and the personnel and materials required and which will also record the actual resulting costs.
5. The physical plant section provide adequate supervision and inspection of custodial, maintenance and construction services.
6. The accounting records--general and cost--provide information on (1) total plant costs, (2) grounds costs, (3) building costs, and (4) major repair and rehabilitation projects, as well as new construction.

Building Planning

University buildings should be architecturally attractive, functional for educational purposes, and designed and constructed for economical operation. The statement of these objectives is not difficult; the accomplishment of them is. Educational buildings are functional only when a maximum of enclosed space is available for classrooms, laboratories and offices, and when these classrooms and laboratories are tailored to class sizes of the colleges or departments to be housed in the building. As a general rule, the best plans devote not more than one-third of the floor area to such purposes as stairways, halls, toilets and building service areas. Building custodial and maintenance costs loom large in all university budgets. It is, therefore, of real importance to design well and use the right materials for floors, walls, roofs, windows and the utility services if operating costs are to be kept at a minimum.

Few, if any, of the new buildings on national university campuses meet these standards. The preliminary educational and plant planning has not been adequate and in some cases overemphasis has been placed on architectural attractiveness to the detriment of the functional and operating aspects.

Elsewhere in this report the advantages of the concept of university ownership of equipment as opposed to college and departmental ownership have been cited. In part, at least, this same concept of university ownership is desirable in building planning. Expansion of student enrollments and the demand for and cost of buildings has of necessity invalidated the old idea that all facilities in a given building should be for the exclusive use of a particular department or college. In planning and in operation, general class and lecture space should be available for university-wide use; laboratory space should be shared where feasible; and shared office space is often beneficial in removing those artificial walls which tend to follow college and departmental organizational lines. The planning of any new buildings should take account of university as well as college and department needs.

In short, useful and economical buildings are the result of careful and factually supported preliminary planning by those familiar with university needs, by those who will be the principal users and by those who must operate and maintain them. In many institutions special planning committees for each building, representative of these interests, have been found most productive.

The Survey Group recommends that:

1. New buildings not be constructed nor major rehabilitation undertaken until a thorough and detailed study has demonstrated the educational need of the proposed facility.
2. Upon determination of the need, the planning, preliminary to the detailed plans and specifications by the architect, be the responsibility of a special committee, appointed by the president of the university, composed of representatives from the offices of academic and business affairs and from the department or college which is to be the principal user.
3. In planning the building, special attention be given to a recognition of university as well as college or departmental documented educational needs; to the objectives of maximum space for classrooms, laboratories, office and other assignable educational purposes; to the desirability of fitting rooms to estimated class and laboratory sizes, and to the necessity of a building of design and materials which will insure, so far as possible, economical maintenance and operation.

Campus Planning

In sound university campus planning these are some of the major guiding principles: All colleges and supporting units should be on a single campus; related instructional units should be grouped and centrally placed in conformity with student traffic and established class intervals; general purpose units such as the library, auditorium and student center should also be centrally located; and service units such as shops and storehouses, housing, and recreational areas and facilities should be on the periphery. This kind of planning necessitates the collection, interpretation and projection of such basic educational data as enrollments, curricula and course offerings, student traffic flow between departments, schools and colleges, and sound organizational grouping of instructional and administrative units. Haphazard and unplanned campus development not only impedes the instructional process but adds materially to the total cost of operation through unnecessary duplication of staff, course offerings and interdepartmental services. In short, one of the basic purposes of a university is unrealized when constituent colleges are on different campuses or so badly related that students of one college or department may not avail themselves of the instructional offerings or services of other colleges, departments, or units.

Two exceptions to the principle of construction on a single campus are common. If the university is not located in a populous metropolitan area the constituent college of medicine with its attached hospital is often on a separate campus conveniently accessible for hospital and out-patients who are needed for clinical training purposes. Contrary-wise, if the university is in the metropolitan area, the colleges of agriculture, veterinary medicine and forestry are usually in rural areas where land for livestock and experimental crops is available.

The expansion of public higher education in Korea since World War II is probably without parallel in the educational history of any nation. With the exception of three teachers colleges, one fisheries college, one agricultural college and the normal schools, which at present are perhaps doubtfully classed as higher education, all other national higher educational units have been organizationally grouped in five national universities. However, the already existing locations of certain constituent units, together with the exigencies of rapid expansion, have not permitted the most desirable groupings on and within the several campuses. It seems appropriate, therefore, to review the present situation of each university and to do some sound planning for the future. The planning should also give attention to the future status of those colleges and schools now outside the university system.

Seoul National University. Seoul National University, when established in 1946, included Keijo Imperial University with its school and three colleges, and ten other colleges in some eight separate locations. Since that date the Graduate School and the Colleges of Fine Arts and Music have been added and the university now consists of the Graduate School and twelve constituent colleges on eight separate campuses. This university is so widely scattered that it cannot function as a university should. In large measure it is in effect a loose grouping of colleges and a university in name only. Its administration is highly decentralized; course offerings are widely duplicated--particularly the College of Liberal Arts and Sciences, which should serve other colleges in the arts and the social and natural sciences, is badly fragmentized and dispersed; and, finally, the resultant added operating cost from this decentralization and duplication is exceedingly high. The objective to be sought here is clear. With the exception of Engineering, where the investment in facilities is high, and Agriculture, where open land is a necessity, all units should be brought together on the central campus. Further construction should be discontinued at those removed locations and every opportunity should be taken to acquire needed additional land through purchase or exchange. For example, negotiations should be undertaken without delay with the

Ministry of Commerce and Industry to exchange university land and facilities at Chung Rang Ri and/or Chongahmdong for the central laboratory land and facilities of that Ministry lying near the Law School and Liberal Arts. Elsewhere in this report the removal of the College of Veterinary Medicine to Suwon is recommended. Such a move will also aid in the ultimate realization of the desired central campus development.

The Survey Group recommends that:

1. With the exception of Agriculture, Veterinary Medicine and Engineering, all units of Seoul National University be located on the central campus as rapidly as funds and circumstances permit.
2. College of Veterinary Medicine be relocated to the Suwon campus.
3. Central Laboratory land and facilities of the Ministry of Commerce and Industry lying near Law and Liberal Arts be secured through exchange for university removed campus land and facilities.
4. Additional opportunities for sale or exchange of university land and facilities be sought to accomplish recommended centralization.
5. New construction and major rehabilitation be discontinued for all units recommended for transfer to the central campus.

Chonnam National University. The colleges of Agriculture, Engineering, Law and Liberal Arts of Chonnam National University are located on the main campus. Veterinary Medicine--now at Dong Mung--and Commerce--now at Mokpo are in the process of transfer to that campus. The College of Medicine is at Hak Dong and should remain in that location, which is convenient for the essential clinical, hospital and out-patients. Elsewhere in this report the inclusion of the Kwangju Teachers College in the university is recommended.

The Survey Group recommends that:

1. The Dong Mung and Mokpo campuses be sold or otherwise disposed of.

2. The College of Medicine continue at Hak Dong.
3. New construction and major rehabilitation be limited to the main and Hak Dong campuses.
4. In future planning the establishment of the plant of the Kwangju Teachers College on the main campus be a long-range objective.

Chonpuk National University. The colleges of Commerce, Law and Liberal Arts of Chonpuk National University are located on the main campus in Chonju. The colleges of Agriculture and Engineering are on separate campuses, a few minutes apart, in Iri. The buildings at Iri are old and poorly adapted and the acreage available is inadequate, particularly for agriculture. Both colleges should be relocated to the main campus in Chonju. If the land needed for agricultural purposes should prove to be insufficient, additional adjoining acreage is available for purchase. This proposed move should strengthen the curricula of both colleges, eliminate course duplications and generally result in improved and economical operation.

Elsewhere in this report it is recommended that the Chonju Normal School be upgraded and eventually become a part of the university.

The Survey Group recommends that:

1. The colleges of agriculture and engineering be relocated to the main campus in Chonju as soon as available funds permit provided the study proposed elsewhere is favorable.
2. In future planning the upgraded Chonju Normal School become the College of Education of the Chonpuk National University and in the long-range campus planning be relocated to the main campus.
3. New construction and major rehabilitation be limited to the main campus unless the above study recommends otherwise.

Kyungpuk National University. The colleges of Agriculture, Education, Law and Liberal Arts are located on the main campus. The College of Medicine has a downtown location accessible to patients. This university is well integrated. Its colleges serve one another and course duplications are at a minimum. No recommendations for changes in campus planning are offered.

Pusan National University. The colleges of Commerce, Engineering, Law and Liberal Arts and the Department of Pharmacy of Pusan National University are located on the main campus at Tongnae. The College of Medicine has a convenient downtown location. Serious questions are raised in this report concerning the future of Pharmacy. If it is to be continued, it should be associated with Medicine on that campus. The Pusan Teachers College should become the College of Education of Pusan National University.

The Survey Group recommends that:

1. The Pusan Teachers College in future planning be the College of Education of Pusan National University and in long-range campus planning be relocated on the main campus.
2. New construction and major rehabilitation be limited to the main and medical campuses.

Calendar for Academic Year

The academic calendar presently prescribed by law for national universities is:

First Semester:	opens	April 1
	examinations	July 13
	closes	July 20
	instructional days	92
	between semesters	
	vacation	July 21-August 31
Second Semester:	opens	September 1
	vacation	December 21- January 31
	examinations	February 21
	closes	February 28
	instructional days	114
	between semesters	
	vacation	March 1-March 31

Total instructional days - 206

Criticisms of this calendar, arising from various sources are: the January vacation interrupts the second semester program of studies; course examinations must be given shortly after an extended vacation period; semesters are not equal in instructional time and difficulty would arise in shifting courses from the

second to the first semester; vacation periods are either of insufficient length or are too fragmented to permit effective staff improvement programs, student field experiences, and other professional and student vacation activities.

The Survey Group has consulted Korean administrators and American educational advisors and has developed a plan which holds the total number of instructional days constant but equalizes semesters and permits an uninterrupted instructional sequence.

The Survey Group recommends that serious consideration be given to the adoption of the following calendar in all national universities:

First Semester:	opens	March 1
	examinations	June 23
	closes	July 1
	instructional days	103
	between semesters	
	vacation	July 2-August 20
Second Semester:	opens	August 21
	examinations	December 19
	closes	December 24
	instructional days	103
	between semesters	
	vacation	December 25- February 28

Total instructional days - 206

Auxiliary Enterprises--Housing, Food Service, and Bookstores

Auxiliary enterprises include such educational supporting activities as housing, feeding, bookstores and the like. The national universities and colleges serve regions beyond their immediate localities. Usually dormitory accommodations beyond those locally available are needed. Food service is essential for the noon-day meal and in case there are dormitories, for these residents. Bookstores for sales of new and second-hand books and often for book rentals are desirable to keep student costs down.

Some universities have dormitories; others do not. Some operate their own food service units and some concession them with nominal or no rental and without due regard to diet and quality standards. Few operate bookstores even though this activity constitutes an excellent opportunity to assist particularly the needy student.

Where these enterprises are operated by the institution, the accounts do not reveal actual income and all costs. Ideally these activities should be self-supporting, even producing a margin for improvements and expansion. If not self-supporting, the accounts should reveal the extent and source of the subsidy. The supervision of these activities which are essentially business in character are not always centralized in the business office.

The Survey Group recommends that:

1. High priority be given to bookstores and to housing where adequate local facilities do not reasonably permit the institution to serve its region.
2. Not concessioned, but institutionally owned and operated, food facilities be available for noon service and for all meals if there are dormitories.
3. All income and expenditures of housing, feeding and other auxiliary enterprises be separately recorded in the accounts.
4. To the extent deemed feasible these enterprises be self-supporting, and if not self-supporting, the accounts should reveal the source and extent of the subsidy.
5. The responsibility for the supervision of these auxiliary enterprises be placed with a staff member of the business office.

Major Needs in Order of Priority

1. The establishment of a Board of Regents in the Ministry of Education charged with the responsibility of management on a high level policy basis of national universities and colleges.
2. The establishment of a general pattern of centralized organization.

3. The substitution of a consultation method for the existing secret ballot procedure in the appointment and promotion of members of the administrative and academic staffs together with certain changes in the term appointments of deans and department heads.
4. The improvement of academic salaries.
5. Budget preparation procedures including the retention of institutional income.
6. Establishment of a staff improvement program--both Korean foreign study and U. S. advisor assistance--in the general field of administration, organization and physical plant.
7. Provision of common entrance examinations, quotas on a college or university basis instead of departmental, together with improved student transfer freedom.
8. Provision of health services and social and vocational counselling on a professional basis.
9. Long-range program which allocates to each institution its instructional, research and public service responsibilities which projects resources needed for operating and capital purposes.
10. Improved selection and in-service training of non-academic staff.
11. Improved building operation and maintenance procedures, building planning and campus consolidation without new construction or major rehabilitation on removed campuses, subject to centralization.
12. Improved accounting and auditing procedures for budget and management purposes.
13. Centralization of purchasing procedures and provision of storehouses and establishment of principle of university ownership of equipment.
14. Adoption of revised academic calendar.
15. Provision of housing, feeding, bookstore and other auxiliary enterprise services where needed, together with accounting procedures for recording income, expenditures and subsidies, if any.

AGRICULTURAL SCIENCES

Agriculture

Agricultural Education

The 1953 UNESCO-UNKRA report, "Rebuilding Education in the Republic of Korea," p. 161, makes the following statement pertaining to agricultural colleges:

"It is considered as highly desirable to have the college and the national agricultural experiment station combined or as closely related as possible. The number of students should probably be less than a thousand."

In contrast to this recommendation the 1959 Ministry of Education pamphlet, "Survey of Education in Korea," gives the approved total quota as 8140 and the actual enrollment as 6075 students. These are divided as follows:

	<u>Quota</u>	<u>Enrollment</u>
National	3940	3038
Public	2840	1991
Private	<u>1360</u>	<u>1046</u>
Total	8140	6075

The total number of graduates is not given. A study of the national colleges indicates that the number of graduates is about one-sixth of the actual enrollment. On this basis there are about 1000 graduates in agriculture per year.

Data are not available to show the number of graduates who secure employment in their fields of training. Interviews indicate that the supply is greatly in excess of the demand.

With quotas totaling 8 times and the enrollment 6 times that recommended in 1953 it is unrealistic to believe that enrollments can be reduced in keeping with the 1953 proposal. At the same time, it is evident that this country can train the required number of students in the five national colleges.

The Survey Group recommends that:

1. The four-year undergraduate instruction in agriculture be confined to the present Colleges of Agriculture at the national universities and the National College of Agriculture at Chunchon.
2. The total enrollment quotas at these colleges be held at the present level until such time as the demand approaches the number of graduates each year.
3. The above mentioned colleges of agriculture be strengthened to improve the level of instruction.

Instruction, Research and Extension

At the present time the educational program in agriculture is separated except for voluntary cooperation from the principal branches of research and extension, which come under the Institute of Agriculture. Because of this separation college faculties have limited opportunities both to carry on research and to pass their findings on to the farmer who would profit from them. Under this arrangement trained personnel, being widely dispersed, cannot be used to the maximum advantage and there is unwarranted duplication of expensive facilities and equipment. Korea can ill afford to continue on this basis.

The educational program is the responsibility of the Ministry of Education, whereas the research and extension programs, centered in the Institute of Agriculture, come under the Ministry of Agriculture. This division of responsibility cannot be justified as an argument for continued separation. The educational research and extension work in agriculture should be brought together in the national colleges of agriculture. This can be done with the Minister of Education retaining supervision of the educational program and the Minister of Agriculture, through the Institute of Agriculture, continuing to have responsibility for research and extension.

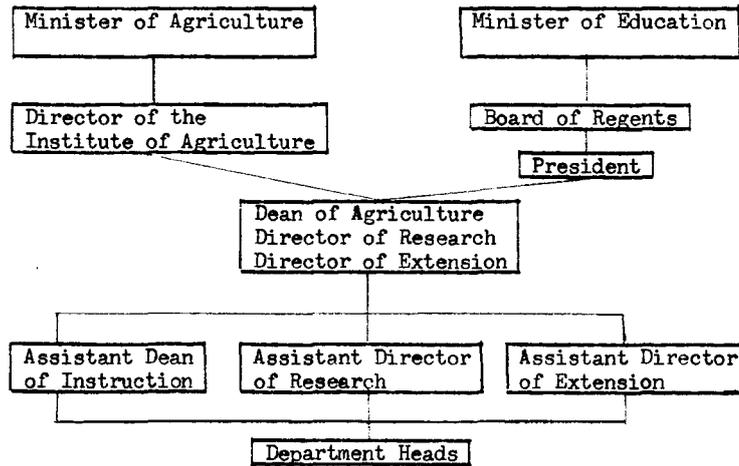
Cooperation should be developed between the various colleges to prevent duplication and to insure free exchange of information. Complete teaching, research, and extension programs should not be developed in all colleges. The principle of area specialization should be adopted with certain strong departments developed in each of the colleges at the national universities. Selection of these departments should be correlated with the type of agriculture predominant in the area.

The Survey Group recommends that:

1. Agricultural instruction, research and extension be consolidated and centered in the national colleges of agriculture.
2. A system of cooperation between colleges be developed for a free exchange of information.

Administration

A combination of the instruction, research, and extension programs in the colleges of agriculture will require changes in the present system of administration. The Survey Group has recommended that the administration of the national universities be placed under a Board of Regents with power to recommend appointments of presidents. The presidents, in turn, should be delegated the power to appoint the deans of these colleges. In addition to responsibility for direction of instruction each dean of agriculture should be designated as the Director of Research, or Director of the Experiment Station, and Director of Extension. His responsibilities as director of research and extension should be to the Director of the Institute of Agriculture under the Minister of Agriculture. This type of administration is illustrated in the following diagram.



The responsibility for directing all three programs should be vested in one person. With this authority, he can correlate all programs to obtain the maximum use of facilities, equipment and faculty. He may or may not have an assistant under him for each branch of work depending upon the work load to be handled. This type of operation will require a strong administrator whose term of office should be for an indefinite period if he performs his duties satisfactorily. Therefore, the current limitation of a four-year term for a dean should be changed and the dean and assistant deans and directors should serve for at least six years, as elsewhere recommended, but preferably for indefinite periods. This continuity is especially important for effective administration of research and extension programs.

Funds for support of the instructional program should be allocated through the Ministry of Education. Budget requests for research and extension should be submitted to the Director of the Institute of Agriculture and funds for support of these two programs should be allocated to the colleges. Accounting for expenditure of these funds should be made to their respective sources of origin.

It is recommended elsewhere in this report that all income be retained by the universities. Income related to research and extension programs should also be retained and used in their support and improvement.

The Survey Group recommends that:

1. The president of each university be authorized, on a consultative basis, to recommend appointment of one person, for at least six years but preferably for an indefinite term, with the titles of Dean, Director of Research and Director of Extension.
2. The Dean report to the President, who in turn should report to the Minister of Education, on all matters pertaining to instruction and that as Director of Research and Extension the dean consult with and report to both the President and the Director of the Institute of Agriculture.
3. The Dean and Director be authorized to assign teaching, research and extension work to each staff member.

4. Budget proposals and appropriations for the instructional program be channeled through the Ministry of Education. The Minister of Agriculture through the Institute of Agriculture should receive budget requests and allocate funds for research and extension.

Faculty and Instructional Program

Thirty staff members from the College of Agriculture at Suwon have been to the United States for training. Eleven others are currently abroad and several more will go in the future. Nine specialists from the United States have worked with the staff. Thus, these staff members have a considerable advantage in training over those of the other colleges. Only five staff members from the other four colleges have been to the United States for training. However, several have been trained in Japan. In general, the training has been in Korean universities. It will be important, therefore, to give particular attention to further training of faculty, with preference being given to faculty members from colleges which have not benefited from the assistance program.

Further training of young faculty members is highly important for the advancement of agriculture in Korea. At present the colleges are not prepared to give this advanced training. Therefore, provision should be made to send some faculty members abroad. In most cases those who have the Master of Science degree in this country should have priority so as to spend the minimum number of years abroad, although there may be justification for some at the lower level.

Certain phases of staff training and instructional program improvement may best be accomplished through the assistance of specialists in areas of maximum importance to the total program of agricultural education. Such advisory assistance should be provided only when the staff, equipment and facilities are developed sufficiently for the aid to be effective. Specialists should render assistance in all of the colleges.

Training programs should be developed to utilize the faculty members who have been to the United States for advanced training. This can be done by developing short courses of one or two weeks duration to be offered during vacation periods and to be attended by interested faculty members from all colleges. For example, there is one well-trained plant pathologist in the country. His

training and experience should be available for the training of others interested in the field. The best of this short course group could then be selected for further training in the United States.

Present regulations requiring faculty members to teach 10 hours per week should be changed. The combined instruction, research and extension program will require an increased faculty in each college. The dean, in consultation with department heads, should be authorized to assign part-time teaching and part-time research or extension duties to faculty members. This would permit faculty members to teach subjects in their specialized fields only and to devote the balance of their time to research or extension. This should result in a better use of trained personnel and should improve instruction for the students would then come in contact with the more highly trained specialists. The research and extension programs would also be benefited.

In general, too much emphasis is placed on the lecture method. This is due to the lack of proper laboratory facilities and the shortage of textbooks in the Korean language. Thus the students learn what they have been given in lectures but they do not know how to apply it in practice. Although there is a trend toward more practical application, the opportunities are limited. Further improvement can be realized by providing proper space, well equipped laboratories, more field operations, and by rearranging schedules to use these laboratories more intensively.

Curricula are quite specific. Students must select their majors before entering college. There is little opportunity for them to change after they have completed the first-year general program. Approximately one-half of their total course work or two-thirds of the last three years must be in a specific department. This type of program is too specialized for all students. To prepare students for extension, teaching and community development, broad educational training is essential. To accomplish this it would be much more logical to admit all students to the first year general program and at the end of that year to permit them either to select their field of specialization or to elect a general agricultural curriculum. As a part of this general agricultural curriculum arrangements should be made for students to take courses in education, psychology, sociology, and the like in preparation for teaching or extension work.

Class sizes are generally satisfactory. Most large classes reported are lectures. To utilize faculty efficiently it is advisable to have large lecture sections, provided they are broken down into smaller groups for discussion and laboratory. Lectures should be held to the one-hour period and should be scheduled for two or more days of the week.

Curricula have been reported with many courses of one or two credits. This requires students to carry up to ten courses during a semester. It is generally agreed that the student does not realize as much benefit from such a schedule as he would from a more concentrated program consisting of fewer courses. Some colleges have started to develop more courses of three or four credits. All colleges should move in this direction. The present requirement of 160 credits for graduation is too high. This requirement should be reduced to 140 credits with the student being required to do more laboratory work or being assigned more outside reading.

The colleges located at the national universities award a Bachelor of Science degree in agriculture. They should continue to offer students an opportunity to major in special fields of work. At the same time, they should develop a general agricultural curriculum for those students who need or desire this kind of training.

The Chunchon National Agricultural College awards a Bachelor of Agriculture degree. Since it is not associated with a university it will not be possible to develop specialized training comparable to the university connected colleges. For this reason this college should encourage its students to take a more general program with a lesser degree of specialization.

The Survey Group recommends that:

1. Priority be given to further training of faculty members, selected on the basis of age, of proficiency in English and of special needs in the improvement of agriculture by:
 - a. Sending well qualified young men to the United States, or other countries, for both Master of Science and Ph.D. level training.
 - b. Bringing specialists to Korea with preference to the more important fields and to those fields where there are well-trained faculty with whom they may work.

- c. Developing short course training programs for faculty members of all colleges, using those people who have been trained in the United States.
2. The dean be authorized, in consultation with department heads, to assign part-time teaching and part-time research or extension duties to faculty members.
3. More laboratory and field exercises be developed, closely related to the lectures and textbooks, which the students must perform to obtain a practical working knowledge of agriculture.
4. Students be permitted to complete a first year general program before selecting their special field of work for the last three years.
5. A general agricultural curriculum option be developed and made available to students along with options in specialized fields of work.
6. More three or four credit hour courses be offered in place of one or two credit courses to reduce the number of course offerings and to permit more concentrated student loads.
7. The requirement for graduation be reduced from 160 to 140 credits.
8. The Bachelor of Science degrees be granted only at the colleges associated with universities and that the Bachelor of Agriculture degree be granted only at the Chunchon National Agricultural College.

Students and Scholarships

Student attendance and discipline do not appear to be problems in the colleges of agriculture. Administrators of these colleges are to be congratulated upon their success in building a spirit of consistently good class attendance among the students.

As more general curricula are developed in the colleges the students should become aware of the value of a broad education. Inclusion of liberal studies with basic sciences should be valuable to them in their contacts with other people. Those who wish to teach should take the required education courses to qualify them for a teaching certificate.

Students are permitted to remain in college for six years without periodic checks on scholarship. All student scholastic records should be reviewed at the end of each semester. Those failing to achieve a specified grade-point ratio should be placed on probation. Students who go on probation more than twice should be dismissed. Such a procedure will keep students more alert and will also permit the faculty to concentrate on the training of the better students.

Student dormitories and food service are not available on any campus except at Suwon. Other universities are urged to seek these facilities. This should lead to a much better student spirit and provide a closer contact between the faculty and students.

Scholarships are generally awarded on the basis of scholastic standing and financial need. This is a sound basis for such awards. The number of scholarships varies among the colleges with some awarding relatively few. More aid of this nature should be available. Commercial agricultural organizations are a possible source of scholarship aid which has not been utilized in any college. College administrators should be encouraged to work more closely with these organizations and interest them in providing scholarship aid.

The Survey Group recommends that:

1. Students be encouraged to broaden their education by the election of more courses in the liberal arts and social sciences.
2. Academic standards be raised by reviewing grades at the end of each semester and by placing students on probation who fail to attain and maintain a stipulated grade-point ratio which ratio should be established on a graduated and rising scale from the freshman to the senior year. Students who go on probation for low scholarship more than twice should be dismissed.
3. Student dormitories and food service be provided on each campus.
4. Scholarship funds be sought from commercial agricultural organizations.

Graduate Program

Graduate work at the Master degree level is offered by the four colleges of agriculture at the national universities. Two students are working for the Ph.D. at Chonpuk and one has applied for Ph.D. work at Kyungpuk.

A graduate program in agriculture must rely heavily upon such natural sciences as chemistry, physics, botany, zoology, entomology and bacteriology in the production fields and upon such social sciences as sociology, psychology and economics in the marketing and rural social fields. Ordinarily these are not offered in a college of agriculture at a level satisfactory for graduate training. Such courses should be available through departments in the other colleges of the university. Currently there is not sufficient cooperation between colleges of the universities to enable graduate students to take courses of the type mentioned.

Graduate work in agriculture should be confined to those departments which have strong faculties and well developed research programs. Graduate work beyond the Master degree level should not be considered until such time as a program can be developed on a high level. At the present time, no college of agriculture at the national universities has staff, equipment, or a research program which justify graduate study at the Ph.D. level.

The Survey Group recommends that:

1. Graduate work in agriculture be limited to the four colleges associated with the national universities.
2. Graduate work be limited to the Master degree level until such time as the physical and social sciences are sufficiently advanced within a university to justify graduate work at the Ph.D. level.
3. Only those departments which are appropriately staffed and well equipped and which have well developed research programs be permitted to accept graduate students.

Equipment and Supplies

The college located at Suwon has reasonably well equipped laboratories for instructional work but funds are lacking for the necessary operating supplies and labor. The other colleges are very poorly equipped and have little in the way of supplies to develop a good program of instruction. Funds are urgently needed to bring these institutions up to a reasonable standard.

A consolidated program in instruction, research and extension will require some additional equipment. Attention should be given to properly equipping those departments which are to develop research programs. When this equipment is purchased it should be understood that expensive items must serve the whole college and not just an individual department. The departments need to develop cooperative working arrangements so that the maximum amount of equipment can be secured with the available funds.

The livestock departments at Suwon and at one other selected college should have additional livestock and funds to properly care for the animals. Low level care of livestock used in student training or research should not be permitted.

The Survey Group recommends that:

1. Additional funds be sought to insure the availability of adequate equipment for the conduct of high level instruction and research in all colleges
2. Equipment needs be carefully studied with a view to purchasing only single items of special equipment and that such items be made available for use by all departments.
3. Livestock and supplies for their maintenance be furnished to those colleges which are to develop strong livestock departments.

Libraries

Libraries of all colleges are meager. About half of the volumes are in Japanese which few of the present students can read. There has been an increase in the number of English textbooks, but most students are limited in their ability to use them. There is a definite lack of Korean textbooks.

Attention should be given to translation of good textbooks into Korean and to writing original textbooks in Korean. When faculty are qualified and desire to prepare such textbooks they should be assigned the task as part of their regular duties.

Funds should be made available for publication. This need is of such importance that aid should be sought from all sources including interested foundations.

Where colleges are on the university campus, the main library should be the principal repository and should handle all acquisitions. Such libraries should be under the supervision of a properly trained librarian.

Some libraries have reported a lack of stack room space. In such cases consideration should be given to the removal of old and seldom-used books to a less accessible place to make room for currently needed material.

The Survey Group recommends that:

1. The main library of a centralized university serve all colleges.
2. The library be under the supervision of a trained librarian.
3. Stack room space be made available by removing books which are seldom used to storage areas.
4. An adequate library budget be established for the acquisition of current books and periodicals.
5. Foundation aid be sought to support the translation, preparation and publication of Korean textbooks.

Buildings and Land

The colleges of agriculture of Chonnam and Kyungpuk universities are located on the main campus. The Seoul National University College of Agriculture is located at Suwon and must remain there where land is available. This location is, of course, a rather serious disadvantage. At Chonpuk National University the agricultural college is located at Iri some 20 miles away from the main campus. Elsewhere in this report a study looking toward consolidation is recommended. No university affiliation appears feasible for the Chunchon National College of Agriculture.

The research emphasis in the several colleges could well take account of the principal agricultural products of the areas in which the colleges are located. For example, since 90% of the apples are produced in the Taegu area, the tree fruit work should be developed at Kyungpuk University. The largest textile center is in Taegu and 30% of the silk is produced in that area. This would justify the development of sericulture at Kyungpuk. The largest rice producing valley is adjacent to Chonju and the rice breeding station is located

nearby. Thus, the college at Chonbuk University may well be designated as a center for rice culture research. The most significant advances in forestry research have been made at Suwon which should be the center for this work. Such work as agricultural economics, rural sociology and teacher training could be most successfully developed at those colleges where strong supporting departments are available.

Even those colleges which are not assigned specialized research and instruction will need qualified staff in each field to insure that students have an opportunity for a broad education. Such colleges can also be used on a cooperative basis for research, testing and demonstration. Such use is important in relation to extension work.

These facts must be carefully considered when planning for future buildings and land acquisition. Priority should be given to proper quarters for those departments which are designated as centers for certain fields of work. This may require new structures or adjustment of space in present buildings. For example, Kyungbuk University is erecting a building for veterinary medicine. If veterinary training is discontinued at this institution, as recommended elsewhere in this report, the new building could serve the departments of horticulture and sericulture. Such use, however, would have the disadvantage of placing these departments some distance from the agricultural center. Thus, it may be found more desirable to utilize this building for some other purpose and to erect a new building to house these departments nearer other agricultural activities.

New buildings should be constructed at Chonbuk University to house agriculture. This is necessary whether the college remains at Iri or is moved to Chonju. Careful planning should precede the erection of any of these buildings to insure particularly that the research programs to be developed at this institution are properly housed.

Plans are being made for the erection of a new agricultural building at Chonnam University. A portion of this building is being planned for veterinary medicine. That space will not be satisfactory for a veterinary college. Therefore, the building should be planned to serve agriculture. If a veterinary college is to be developed on this campus it should have a completely new set of buildings.

At least one new building should be erected for agriculture at Kyungpuk University. This should replace the old buildings currently used by agricultural chemistry.

The partially completed building at the Chunchon National College of Agriculture should be finished. This will serve for classroom instruction. In due time a building should be erected for laboratory purposes. The library should be housed nearer the center of student activities.

Additional land will be required at each of the colleges associated with the national universities. The amount and type of land required will depend upon the principal fields of research and instruction to be undertaken by each college.

The proposed new buildings and land acquisitions can only be acquired as a part of a long-range program. For this reason the government of Korea should assume principal responsibility for these facilities.

The Survey Group recommends that:

1. Development of specialized subject matter departments in the different colleges be made in relation to the type of agriculture in the locality, the supporting sciences in other colleges of the university and a proper and reasonable distribution of work between all colleges.

The following proposals are made as a basis for further study by the deans of the several colleges:

Animal Science - One department at Suwon and another at Chonnam or Chonpuk. The latter should be associated with a veterinary college at one of these institutions.

Agricultural Chemistry - With present facilities this should be continued at Suwon even though there is the disadvantage of separation from the science departments of Seoul National University. Future requirements may prove it advisable to develop another department in one of the other colleges located on the same campus with strong science departments.

Agronomy - Center the rice production work at Chonpuk. Upland crops should be at the same place. If found more advantageous, both can be centered at Suwon.

Horticulture - Tree fruits should be located at Kyungbuk.

Horticulture - Small fruits, vegetables and flowers should be located at Suwon.

Sericulture - Locate at Kyungbuk.

Forestry - Continue and strengthen this work at Suwon.

Agricultural Engineering - This work should be continued at Suwon at present but more emphasis should be put on development of farm machinery which will be immediately useful to the farmers. In the near future agricultural engineering should be developed at a university where agriculture and engineering can conveniently offer a combined program. Chonnam University is proposed for this program.

Agricultural Economics - Develop this program in a college located at the university having the strongest conveniently located departments of economics and business.

Rural Sociology - This program has received little attention up to this time. It should be developed in an agricultural college located on a campus where sociology and community development programs are strong.

Agricultural Teacher Training - This requires both broad training in agriculture and teacher education training. This may best be developed at Kyungbuk.

Plant Pathology and Entomology - This has been a neglected field of training in Korea, but it is vitally important where much of the food production comes from plant life. At present this program should be developed at Suwon where the best-trained staff are located. This will be somewhat disadvantageous because there is no close association with the required basic sciences. Therefore, a second department of training and research should be developed in the future at one of the other universities where the biological and physical sciences are strong and reasonably accessible.

2. Specialized instructional programs be discontinued at the Chunchon National College of Agriculture and that a general agricultural curriculum be developed for all students. This institution should not undertake research, but rather should serve as a testing and demonstration unit in connection with the research findings of other colleges. In this way background information will be provided for the extension program.
3. The government of Korea assume principal responsibility for provision of the required buildings and land for the instructional, research and extension programs assigned to each college.

Veterinary Medicine

There is only one recognized national college of veterinary medicine, which college is located at Seoul National University. Three colleges of agriculture, however, have veterinary departments with complete curricula for veterinary training. In addition, veterinary training is offered in a number of provincial colleges and universities.

More than 1000 students are enrolled in veterinary medicine with close to 300 being graduated annually. Surveys indicate employment for approximately 1000 veterinarians. Based on a 10% turnover there should be opportunities for only 100 graduates per year.

Two veterinary colleges are sufficient to produce these 100 graduates. One of these should be located in the northern and one in the southern part of the country.

Veterinary colleges should be located on campuses in close association with colleges of agriculture. They should develop their own instructional programs. The research and extension phases, however, should be a part of the research and extension services of the college of agriculture

Concentration of facilities, equipment and staff at two locations should result in a more economical and efficient handling of the national veterinary program. The program should be developed with the primary objective of maximum assistance to the farmers and the relationship of livestock products to public health should always be in mind.

Staff training will be essential to develop outstanding programs at two veterinary colleges. Closely associated with this will be the bringing of specialists to this country to help develop sound programs of instruction, research and extension. Equipment needs will rank next in priority in any aid program. This order of priority is indicated on the assumption that proper building facilities will be furnished by the Korean government.

Teaching methods should include the maximum possible of practical laboratory and field training.

Class sizes should not be a problem if student quotas are properly related to the number of graduates required in the profession.

The Survey Group recommends that:

1. There be only two veterinary colleges.
2. The veterinary college of Seoul National University be moved to Suwon and located on the campus with agriculture where a strong livestock department is recommended.
3. A veterinary college be developed at one of the southern national universities where livestock instruction and research is emphasized. Either Chonnam or Chonpuk University would appear to be a good location.
4. Buildings be provided which are well adapted to the requirements of veterinary instruction and research.
5. Livestock facilities and different kinds of livestock be provided at each of the two universities to meet the needs of both the veterinary colleges and the livestock departments.
6. The quota of students be such as will insure 60 graduates from the college of Seoul National University and 40 graduates from the college located at Chonnam or Chonpuk.
7. The same academic standards involving student probation and dismissal as recommended for agriculture be established.

8. The agricultural colleges in universities without veterinary colleges have on their faculties only the number of veterinarians needed to teach in the general curriculum and to provide extension assistance.
9. Library needs be met as a part of the main library of the institution.
10. Any technical assistance funds available be used for staff training, for the bringing of specialists and for the purchase of equipment, with the expectation that building facilities will be furnished by the government.

Marine Biology and Fisheries

There is one Fisheries College located at Pusan. Although this College was founded in 1941 its program was interrupted by use of the facilities for army purposes. The buildings are in very poor condition and equipment for instruction is almost totally lacking.

The present quota of students is 1040 with a current enrollment of 863. Applications are short of the quota and, therefore, it is not possible to be selective in admissions. Only about 70% of the graduates find employment in fields related to fisheries. Few of these actually take up fishing as an occupation. There are 13 high schools giving training in fishing operations.

Sea food is important in the diet of the Korean people. It is the basis for an important industry of the country. The industry showed a decline after the liberation and the Korean War but is currently increasing in annual output. Leadership in this field should be in the hands of well-trained personnel.

The faculty consists of two professors, five associate professors, six assistant professors and 19 instructors. Three members have been in the United States for training, and others have been trained in Japan. Most members of staff are graduates of the Fisheries College.

There are five departments of instruction. The course offerings listed would seem to indicate an opportunity for good training. However, it is difficult to believe that high level training is possible without basic sciences and without better equipped laboratories. Pusan University is located some 10 miles from the Fisheries College. Thus, it is not feasible for students to take their science courses at the University.

The Fisheries Experiment Station, located about five miles from the College, is under the Marine Division of the Ministry of Commerce and Industry. Although the Station was not visited, it is safe to assume that there is duplication of equipment and little correlation of research between the two institutions.

To insure the maximum of progress with available funds, there should be a definite working relationship between the instructional and research programs. In order to realize the best undergraduate and graduate programs of instruction there must be an opportunity for students to take their basic science work in the departments of science of a university. This College should be located on the campus of a university. Pusan National University is the logical one.

The Survey Group recommends that:

1. The present College of Fisheries be discontinued.
2. A College of Marine Biology and Fisheries be developed as a part of Pusan National University.
3. Curricula be developed which will require students in this proposed college to take their basic sciences in the science departments of the university.
4. A cooperative program be developed between the proposed College of Marine Biology and Fisheries and the Fisheries Experiment Station. In order to insure this cooperation the two programs might well be merged, with one person responsible for the administration of both the instructional and research programs.
5. The present student quota be reduced by approximately 50% which lowered quota should be adequate for some years to come.
6. The undergraduate program be upgraded and that the student laboratories be adequately equipped.
7. Graduate training be discontinued until such time as the undergraduate program and staff training have been improved and the need for graduate work is clearer.

8. The naval architecture work be transferred to the College of Engineering and that a fishing vessels construction program be developed, both as recommended in the engineering section of this report.

Rural Leaders Training Center

The UNESCO-UNKRA report, "Assistance to Education in Korea," August, 1955, Section IX, describes the development of a Fundamental Education Center at Suwon. The center was established on the College of Agriculture campus. The purpose was to develop field and demonstration projects to be carried on in area villages. The report states, "It is anticipated that when the program has been fully developed the center will be taken over and the work continued by the Agricultural College, Seoul National University."

The original name "Fundamental Education Center" was changed to Rural Leaders Training Center. UNESCO assumed the operational responsibility for the Center in January, 1957. Support was also provided by the Ministry of Education. In September, 1959, the full responsibility for the management and maintenance of the Center was assumed by the Ministry of Education.

The Center offers a full two-year course providing practical training in leadership, in organization, in the techniques of scientific farming, and in fundamental research projects relating to rural communities. The principal areas emphasized are: fundamental education, home economics, agriculture, audio-visual aids, health education and social surveys. Students in the Center must be high school graduates.

The work, as outlined above, is almost entirely within the scope of the extension service in agriculture and home economics. One exception is health education. It is questionable whether students can be adequately trained for this type of work in a two-year period. A four-year program would permit much greater breadth of training and should produce more mature students capable of doing this kind of work on a satisfactory basis.

If the proposed program for attaching agricultural extension work to the colleges of agriculture is accepted it would appear appropriate and desirable to transfer responsibility for this rural leaders training program to the agricultural colleges. Training the rural leaders would then become a responsibility of the college

and the conduct of the community program would be the responsibility of the extension service. The research work would then be conducted by the college. This would be in keeping with the research and extension programs as developed in the United States. It would also prevent duplication of effort and possible conflict in field operations.

The Survey Group recommends that:

1. The Rural Leaders Training Center become a part of the College of Agriculture at Suwon.
2. The instructional program be expanded from two to four years.
3. The operational functions of the Rural Leaders program in the various communities become a part of the extension service in the College of Agriculture.
4. The research phase of the program become the responsibility of the college.

Major Needs in Agricultural Sciences in Order of Priority

1. The consolidation of instruction, research and extension in the National Colleges of Agriculture.
2. Use of a specialist, who is familiar with administration of the three programs in a college of agriculture in the United States, to work with and advise the deans and directors of the colleges in the formulation of the combined program.
3. Professional improvement of faculty to be accomplished by sending faculty members abroad and by bringing specialists to this country. The following suggested priorities for participant training are given by fields of work for the several colleges:

<u>College Department</u>	<u>University</u>	<u>Number</u>
Animal Science	Chonnam or Chonpuk	3
Agronomy (rice)	Chonpuk	2
Horticulture (tree fruit)	Kyungpuk	3

3. (Continued)

<u>College Department</u>	<u>University</u>	<u>Number</u>
Sericulture	Kyungpuk	2
Agricultural Engineering	Chonnam	3
Agricultural Economics	To be determined	3
Rural Sociology	To be determined	1
Teacher Training	Kyungpuk	1
Plant Pathology	To be later determined	3
Entomology	To be later determined	3
Veterinary	Chonnam or Chonpuk	4
Other as study shows need		<u>12</u>
Total		40

The number of years required per participant should vary from one to four. The average should be at least one and a half.

Specialists. Careful study should be given to the fields requiring trained specialists. The time of their arrival should be in keeping with the progress made in the particular field by any college. They should be brought in when they can be most helpful. Consideration should be given to the question of whether the specialist should spend all this time at one college or divide it between two or more. The number of specialists required per year may well be from three to five.

4. Equipment and Library Materials.

Seoul National University College of Agriculture at Suwon has been reasonably well supplied with equipment. It does need further library assistance. Priority should now be given to the colleges in the other universities. The primary need is to properly equip student laboratories. The next most important one is equipment for research in the particular fields of concentration. There is little or no equipment at these colleges. The need for more textbooks and periodicals is great. It is estimated that the cost for needed equipment and library materials would be \$250,000.

5. Buildings.

a. Agriculture.

Buildings for the College at Chonpuk are most urgently needed. When the location of the college is decided there should be a completely new set of buildings. This cost may well be 650,000,000 Hwan or \$1,000,000.

The college at Chonnam has one reasonably good building. Another building to house undergraduate and research laboratories is urgently needed. This would cost at least 325,000,000 Hwan or \$500,000.

A decision on the use of the new building for veterinary medicine of Kyungpuk will be a factor in building requirements for agriculture. At least one new building should be erected at the Agricultural Center. The cost would be about 325,000,000 Hwan, or \$500,000, if the veterinary science building is used for some other purpose. If the building is used for agriculture purposes the cost would be about one-half as great.

The building under construction at the National Agricultural College at Chunchon should be completed. An additional building should be erected for laboratories and space should be provided for the library. The total cost would be approximately 130,000,000 Hwan or \$200,000.

b. Veterinary.

If the Veterinary College of Seoul National University is moved to Suwon a new set of buildings will be required. The estimated cost is 487,500,000 Hwan or \$750,000. The net cost would, of course, be less for the present buildings have value.

The establishment of a college at Chonnam or Chonpuk will require a new set of buildings at the decided location. This cost is estimated at approximately 487,500,000 Hwan or \$750,000.

Priority should be given to the buildings at Suwon.

5. Buildings. (continued)

c. Fisheries.

If part of the Fisheries College is relocated and becomes the College of Marine Biology and Fisheries of Pusan National University, additional facilities will be necessary. The cost may be from 325,000,000 Hwan or \$500,000, to 487,500,000 Hwan or \$750,000, depending on whether some existing facilities on the campus are available for use. The value of the present buildings should partially offset this cost.

6. Land.

All colleges except Chunchon will require more land for the development of the proposed research program. The extent of the need and the cost will require detailed further study.

ENGINEERING AND SCIENCE

Specifications for an Educational System

Any plan for a system of science and engineering education for Korea must begin with specific answers to the following questions:

1. For what year should the system be designed?
2. In the design year, how many engineering and science graduates per year will the country need, and what will be their distribution by field and by degree?
3. To what extent must these graduates be self-sufficient and independent of further formal education outside the university?
4. What functions will the graduates be expected to perform (a) immediately after graduation, (b) later in their careers?
5. To what extent will the educational system be required to provide services other than instruction, for example, fundamental research?

In the short time available the Survey Group cannot establish these necessary design specifications with any degree of certainty. They can, however, make certain assumptions and indicate the steps which must be taken to obtain more valid specifications.

Design Date

As a matter of convenience let us arbitrarily plan a system which is to be adequate for the year 1970. It should be understood, of course, that conditions will be changing constantly and that planning for the further development of the system must be carried on continuously.

Number and Types of Graduates

The question of the quantity and diversity of the annual output of engineers and scientists in 1970 requires a comprehensive survey of Korean industry coupled with a careful projection of estimated growth. To illustrate the technique, this report contains a rough estimate based on a very limited knowledge of the Korean economy.

Numbers of Engineers

Table 1 shows the Survey Group's estimate for Korea in 1970. This estimate is a necessary compromise between what is desirable and what is feasible. The figures are based on the following assumptions:

1. The college-age population of the Republic of Korea will increase 50% by 1970, and the total population will be approximately 30,000,000.
2. Approximately 50% of the working force will be engaged in non-agricultural pursuits by 1970. (In the United States the figure is 87%.)
3. The number of Bachelor of Science degrees per year will be approximately one-fifth of the total number of undergraduates (compared with approximately one-sixth for the United States).
4. Opportunities for engineering training in industry will be less in Korea in 1970 than in the United States during 1960. This will require more instruction in the current state of the art in the Korean undergraduate program and will thus require graduate work for those who will need further education in engineering science.
5. Technical Institutes will be established to produce technicians who can aid the engineers.
6. The industrialization of the Republic of Korea will grow as the government now hopes that it will.

It must be emphasized that if the above conditions do not materialize, the following estimate may be much too high. Industry must expand very considerably to absorb the indicated number of graduates.

Table 1

Engineering Degree Data

	<u>ROK</u> <u>1970</u>
Population per B. S. degree per year	12,000*
Population per M. S. degree per year	75,000*
Population per Ph.D. degree per year	595,000*
B. S. degrees granted per year	2,500
M. S. degrees granted per year	400
Ph.D. degrees granted per year	50
Number of undergraduates	12,500
B. S. holders enrolled for M. S.	800
M. S. holders enrolled for Ph.D.	250
Total undergraduates plus graduates	13,550

*U. S. figures: B.S., 4,480; M.S., 25,200; Ph.D., 238,000.

The current engineering enrollment is approximately 8,000 (not including the "auditors" in some private colleges). Table 1 indicates that the current enrollment could increase to 13,550 by 1970 if the industrialization of Korea grows as anticipated.

The national colleges of engineering have already indicated their plans to expand their authorized enrollment approximately 38% by 1970. In the opinion of the Survey Group, this proposed expansion is reasonable if accompanied by an appreciable growth of industrialization, and if the current practice of enrolling "auditors" in the private colleges is discontinued.

Types of Engineers

The necessary types of engineers will vary with the state of the economy. A comprehensive nation-wide study is necessary to obtain a reliable forecast of the needs in different fields. A rough estimate of undergraduate distribution by the Survey Group is shown in Table 2 where corresponding American figures are given for comparison. It will be noted that this table includes four fields which are not covered in Korean national engineering colleges at present, namely agricultural engineering, ceramic engineering, industrial engineering and sanitary engineering. (A small amount of instruction in sanitary engineering is now offered in connection with civil engineering. Some work labelled agricultural engineering is taught in colleges of agriculture.) It is suggested that the Republic of Korea study the advisability of establishing curricula in these fields. It should be noted also that it may not be necessary to have separate departments for each of the curricula. For example, naval architecture and aeronautical engineering are now administered by one department at Seoul National University. Similarly, ceramic and metallurgical engineering might be offered by a single department. Sanitary engineering and civil engineering might be offered by a single department. Some instruction in marine engineering might be offered as an option in naval architecture. It is assumed that electronic engineering will be combined with electrical engineering.

It should also be pointed out that if the engineering curricula are revised so as to become broader and more basic, the significance of controlling the distribution will decrease. With broader, more basic education an engineer can switch from one field to another. This point is discussed in more detail later in this report.

The proposal for a curriculum in industrial engineering should receive special attention. At present there is great criticism of the poor quality and the lack of uniformity of Korean manufactured products. If the country is to attain a share of the world's market, it must improve the quality and lower the cost of its products. Well educated industrial engineers can aid the nation in this regard.

Table 2

Proposed 1970 Distribution
of Annual Undergraduate Engineering Degrees
According to Field

<u>Field</u>	Percent of Total		B.S. Degrees per year
	<u>USA 1959</u>	<u>ROK 1970</u>	<u>ROK 1970</u>
Aeronautical Engineering	4.06	0.6	15
Agricultural Engineering	1.29	1	25
Ceramic Engineering	0.46	1	25
Chemical Engineering	8.19	9	225
Civil Engineering	14.15	16	400
Electrical Engineering	28.30	25	625
Industrial Engineering	6.02	5	125
Mechanical Engineering	25.21	24	600
Metallurgical Engineering	1.89	3	75
Mining Engineering	0.63	4	100
Naval Arch. & Marine Engineering	0.76	1.6	40
Sanitary Engineering	0.03	1	25
Textile Engineering	0.28	3.5	88
Other	8.73	5.3	132
Total	100.00	100.0	2500

Graduate Student Distribution

Table 3 presents the Survey Group's rough estimate of the desirable distribution of graduate engineering students by 1970 in Korea. It will be noted that nuclear engineering appears as a graduate program and that it was not included among the undergraduate curricula. This arrangement is not arbitrary but is based on long studies which have been conducted in the United States by the American Society for Engineering Education in cooperation with the U. S. Atomic Energy Commission. It is generally agreed that at present it is impossible to identify a "nuclear engineer." Most of the work involved in the design and construction of nuclear reactors is done by the standard types of engineers. However, these engineers must be aware of the effects of nuclear reactions on the various phases of their design operations. Hence, it is considered desirable to educate engineers in the standard undergraduate fields and then to give them some graduate training involving nuclear reactions. This graduate training is classified as instruction in nuclear engineering.

Seoul National University started an undergraduate curriculum in nuclear engineering in April, 1959. One factor in the decision to offer this work at the undergraduate level is the need for technicians as well as engineers. Recognizing the absence of any source of technicians for the nuclear field, the faculty decided to conduct a training program somewhat between the levels for the technician and the engineer. If Korea can provide technical institutes as well as colleges of engineering it may prove advisable to move education in nuclear engineering to the graduate level.

Note that not all undergraduate fields are covered by the suggested graduate distribution for 1970. The remaining areas may be added at a later date.

Table 3

Proposed 1970 Distribution
of Graduate Engineering Students
According to Field

ROK 1970

<u>Field</u>	<u>Students Enrolled</u>	<u>Degrees per Year</u>	
		<u>M.S.</u>	<u>Ph.D.</u>
Chemical Engineering	149	47	11
Civil Engineering	149	62	5
Electrical Engineering	293	114	13
Industrial Engineering	42	21	0
Mechanical Engineering	258	104	10
Metallurgical Engineering	57	16	5
Naval Arch. & Marine Engineering	26	13	0
Nuclear Engineering	62	16	6
Sanitary Engineering	14	7	0
Total	1050	400	50

The Basic Sciences and Architecture

The Survey Group feels on very uncertain ground when attempting to forecast the need for scientists and architects. However, it ventures the rough estimate for chemists, mathematicians, physicists and architects shown in Table 4. Again, the need for reliable forecasts of this type is emphasized. The estimates for chemistry, mathematics and physics are based on the assumption that graduates in these fields will be eligible for teaching positions in the secondary schools by virtue of taking an additional year of study in pedagogy.

Table 4
Proposed 1970 Distribution
of Science and Architecture Degrees and Enrollments
According to Field

<u>Field</u>	<u>Degrees per year</u>			<u>Enrollment</u>	
	<u>B.S.</u>	<u>M.S.</u>	<u>Ph.D.</u>	<u>Undergrad.</u>	<u>Grad.</u>
Architecture	100	20	0	500	40
Chemistry	210	50	10	1050	150
Mathematics	210	50	10	1050	150
Physics	350	90	15	1750	255

Imperative Need for Survey

It must be emphasized that the figures presented in Tables 1-4 are the Survey Group's rough estimates made without benefit of reliable data on economic trends in Korea. The figures are presented here primarily to illustrate the type of information which must be obtained if the nation's educational system is to be developed in an orderly and logical manner.

It is imperative that the Republic of Korea conduct a nationwide survey to determine its projected needs for engineers, architects and scientists. This survey might be directed by some central agency such as the Ministry of Education or the Korean Federation of Engineers, and it should involve the active participation of all major industries, all colleges, and all ministries responsible for the economic development of the country. Arrangements

should be made to repeat the survey at regular intervals in order to take into account the changes which will occur. In the United States studies to determine the projected demand for engineers are conducted regularly by the Engineers Joint Council and the Engineering Manpower Commission. Complete information regarding these studies may be obtained from the Engineers Joint Council, 33 West 39th Street, New York 18, New York.

The goals set for 1970 must reflect what is feasible as well as desirable. As time goes on it is to be hoped that the gap between the desirable and the feasible will close.

Desired Competencies of Engineers

The most important contribution which an engineer makes to society is his creation of solutions to novel problems. Of secondary importance is his application of known techniques to solve standard types of problems.

If a nation is to move ahead industrially, its engineers must be able to create original solutions to the novel problems which are imposed by the peculiar economy of that nation. Only in this way can the nation's industry compete in the world's markets. If the engineers are capable only of applying recognized techniques, the national economy must of necessity lag behind that of the nations whose engineers created the recognized techniques.

It is, of course, necessary for engineers to be familiar with current practice. Many day-to-day needs of a country are most efficiently met by applying well established techniques. Hence, it is important that an engineer's education include instruction in current practice. However, the method of providing such instruction will vary with the state of a country's economy. For example, in the United States where the economy is highly industrialized many of the major industries provide formal training programs for the young college graduates. Industry and the colleges form a partnership. The colleges concentrate on providing sound education in those unchanging principles which form the basis for future professional growth while industry provides the necessary training in current practice. In a country like Korea where industry has not yet reached the point where it can train large numbers of young engineers the colleges must assume much of the burden of instruction in current practice as well as in fundamental principles.

Furthermore, in the absence of trained technicians, the young Korean engineer must perform certain sub-professional tasks which would be assigned to technicians in the United States. This situation requires more "practical" courses on techniques in Korea than would be desirable in Europe or the United States. Before Korean engineers can develop to the maximum of their potential the country must provide for the training of many technicians.

There are three major steps which a college must take in order to develop the creative talents of its students. These are: (1) teach the unchanging scientific, economic and social principles which have determined the behavior of men and machines in the past and which will determine their behavior in the future, (2) require that every student acquire a knowledge of the basic principles in a wide range of scientific and engineering fields, (3) provide the student with adequate laboratory facilities with which he may question theories and learn to seek answers for himself. Modern engineering developments frequently require the simultaneous application of principles which in the past have been associated with separate fields of engineering. For example, the design of equipment in an automated factory may involve principles of hydraulics, electronics, thermodynamics, mechanisms, structures, metallurgy, heat transfer, etc. Specific portions of the equipment might be designed by narrowly educated technicians but the general design can be handled only by a competent engineer with a broad, basic education. A team of narrow specialists, each competent in a single field, cannot achieve an integrated design by pooling their isolated competencies. A complex system can come into being only when the responsible engineers are aware of all of the governing principles.

The Republic of Korea, like every other country which hopes to extend its industrialization, must broaden its engineering curricula and make them more basic. At the same time, Korea must recognize its present need to teach current engineering practice in its colleges. Clearly, the two present objectives conflict. It is not possible in four years to give simultaneously a broad basic education and training in current practice.

For the next few years it is probable that the Korean undergraduate engineering curricula will have to be relatively weak in the engineering sciences and relatively strong in courses descriptive of current practice. This means that the country must provide additional instruction at the graduate level in order to develop the necessary competency in the basic principles of a wide variety of sciences.

As time goes on, an effort should be made to have industry assume more of the burden for practical training so that the undergraduate college curricula can be strengthened by more basic and more diversified courses.

At the same time the country should develop Technical Institutes for the training of technicians. These technicians can do much to release engineers for their primary creative function.

In addition to technical competence, every engineer must be educated to take his place as a citizen in a free society. To attain such a goal, each engineering curriculum must contain three types of courses: (1) the humanities, social sciences and basic natural sciences which should form the common heritage of all educated men, (2) the engineering sciences which form the basis for the practice of engineering in all fields, (3) engineering analysis, design and systems relating to a particular field. The social sciences should certainly include economics since much of the engineer's work is concerned with the economical design and operation of systems. The basic sciences include mathematics, physics and chemistry. The common engineering sciences include, but are not limited to, mechanics, properties of materials, fluid mechanics, thermodynamics, electrical theory, transfer and rate mechanisms.

A broad engineering education as outlined above is good education for life in general and is useful to the man who may never practice engineering. It is truly a liberal education for the culture of the twentieth century.

Desired Competencies of Scientists

The primary function of the chemist, mathematician and physicist is to discover and develop the natural laws which govern the physical behavior of the universe. The mere fact of such discovery in itself is important since it adds to man's knowledge and hence to the meaning of his life.

From an economic standpoint these natural laws are important because they are the tools which engineers use to create the machines and products of industrialization. It is therefore essential that the work of the scientists be published and widely disseminated so that others may quickly become aware of new developments.

The education of the scientist, like that of the engineer, must include ample opportunity for laboratory work and for independent research. It is essential to develop in the student an inquiring mind which will accept no authority as final and which will constantly probe the frontiers of knowledge. Graduate work is essential for those students who will become the nation's leaders in science.

Desired Competencies of Architects

The primary function of an architect should be to provide a building of maximum utility at minimum cost. The appearance of the building should reflect the culture of the people whom it is to serve.

To achieve esthetic designs appropriate to Korean culture, the Korean architect must exercise creative talent and must not blindly copy styles which have been developed elsewhere.

To achieve maximum utility at minimum cost the architect must be thoroughly educated in every aspect of economics. This must include the economics of construction methods, construction materials, methods of financing and methods of supervising construction.

Recent graduates of Korean departments of architecture have been criticized on the following counts: (1) their working drawings are not done carefully and completely, (2) they do not spend enough time in the field in direct supervision of the construction work, (3) their designs are wasteful of materials and not well fitted to the needs of the user, (4) their designs seem to be dictated more by external appearance than by internal utility. The education of future architects must eliminate these faults.

The Necessary Research Function

A nation's educational system has three essential functions, namely: (1) dissemination of knowledge through instruction, (2) adding to man's knowledge through research, (3) storing of knowledge through adequate libraries.

There are numerous reasons, beyond the basic one of gaining knowledge, for making research an integral part of the operation of colleges in Korea. Among these are the following: (1) a research program supported by the government and industry would provide an opportunity for the professional development of the faculty while permitting them to remain on the campus as full-time

members of the academic community, (2) a professor who conducts research can incorporate his research findings in his courses and can thus give better instruction, (3) a professor who conducts research always gains prestige in the eyes of his students and thus gains their closer attention, (4) the presence of a research program on the campus stimulates the curiosity of the students and inspires them to independent thinking, (5) a research program makes possible jobs on the campus for students, (6) a research program makes possible thesis projects for graduate students while also offering them opportunities for part-time employment, (7) a research program benefits the nation by providing new knowledge as a basis for more industry and by occasionally solving specific problems of national interest, (8) a faculty composed of men who divide their time between teaching and research is necessarily larger than a faculty of teachers alone and hence enables the institution to have experts in many different fields.

The Survey Group wishes to urge strongly that the Republic of Korea provide support for research in the colleges. It may be considered good practice to have the research and instructional programs approximately equal in terms of manpower requirements. Administratively the research and instructional programs should be under the jurisdiction of the dean of the college so that he may integrate their activities. Obviously, for the greatest benefit to be gained, the research program should be related to the fields of instruction.

Libraries.

The library in a Korean college should serve three major functions: (1) to store the accumulated knowledge of mankind, (2) to provide reference books and journals for use by the faculty and students, (3) to provide a place in which students may study. The third function is especially important in areas where students may have poor facilities for studying at home.

A collection of books and periodicals by itself is of limited value. It is necessary that prospective users be able to find and secure the material which they need. This means that each library should be operated by trained librarians who will control the cataloging and who will provide reference service.

Korean college libraries must be greatly expanded, more adequately housed, and staffed by trained librarians before the country's educational system can realize its potential for service. There must certainly be definite budgetary provision for annual expenditures for books and periodicals. It is especially important that library budgets be continuous and sufficiently large to maintain complete files of the major scientific and engineering periodicals.

The Present Situation in Korea

Science and engineering education in Korea must not be evaluated in terms of its present status but rather in terms of its rate of progress. Only a few years ago the colleges of the Republic of Korea were almost destroyed. Approximately two-thirds of the buildings were damaged, equipment was destroyed or carried away, library collections were scattered.

Today there is evidence of great activity in the construction of college buildings. Much has been accomplished to house the nation's institutions of higher learning.

Of much more importance than buildings is the faculty. Under the long Japanese domination education in science and engineering was denied to most Koreans. As a result there were relatively few qualified teachers available to staff the colleges when the country was liberated. The education of college teachers has been a real "bootstrap operation." Much encouraging progress has been made.

The Survey Group regrets to report that in its opinion no engineering curriculum in any of the institutions which were visited could meet American standards for accreditation at present. The reasons for this conclusion are: (1) the faculties are weak in formal education, research experience and industrial experience, (2) the library collections are inadequate, especially in scientific and engineering periodicals, (3) laboratories are poorly equipped and are poorly utilized in those cases where equipment is available, (4) academic standards are too low, virtually every admitted student who can pay the fees is assured a degree, (5) there is no assurance that a student will be required to pass courses of high level as a prerequisite for graduation, (6) there is virtually no research under way (despite comments to the contrary which indicate a lack of understanding of the meaning of research). Similar remarks apply to the programs in mathematics, chemistry and physics.

Among colleges of engineering there is a noticeable difference between that at the Seoul National University and those at the other institutions which were visited. Here the effect of the ICA assistance program is clearly evident. Many of the faculty members have received advanced education abroad. A substantial amount of laboratory equipment has been received, and more is on order. Adequate space has been provided to house the equipment for undergraduate instruction. Plans have been made to use the equipment effectively in undergraduate instruction. A good basic library collection has been provided.

It seems reasonable to believe that if the present rate of progress continues, the College of Engineering at Seoul National University will attain minimum acceptable standards in several curricula in the near future. Unfortunately, no early emergence into acceptable status is indicated in any of the other national departments of science or engineering which were visited unless there are increases in support.

As of September, 1959, the authorized enrollment of engineering students was as follows:

National Colleges and Universities	3,640
Public colleges and universities	440
Private colleges and universities	<u>6,020</u>
Total	10,100

In addition to this official enrollment, some of the private institutions also have an unofficial enrollment of "auditors." These auditors actually take complete programs and obtain degrees. The actual official current enrollment is probably about 8,000. The national colleges and universities have indicated plans to increase their authorized engineering enrollment about 38% to a total of 4,980 by 1970. No total figures on projected authorized enrollment for the other institutions are available to the Survey Group.

A study of employment conditions indicates that, with the possible exception of those at Seoul National University, most current graduates in science and engineering are having difficulty in finding employment in their fields. There appear to be two reasons for this situation: (1) the quantity of graduates is too high for the current state of the economy, (2) the quality of the graduates is too low.

It is probable that the country at present would be better served by fewer science and engineering departments doing work of higher quality. However, this report must look ahead to possible future needs.

There is some confusion among Korean engineering colleges regarding the proper identification of curricula. For example, some curricula called "Chemical Engineering" are in reality "Applied Chemistry" and contain very little that can be identified as engineering. Similar situations exist between architecture and

architectural engineering, and between textile engineering and textile chemistry. The Ministry of Education or the Korean Federation of Engineers should take steps to insure that only engineering programs are labelled engineering.

Designing an Educational System

As stated previously, the first step to be taken is a comprehensive survey of all industries and governmental agencies to obtain an estimate of the number and type of engineers and scientists who will be needed in the years ahead. This survey should be continued annually. In order to indicate the design procedure to be followed thereafter, let it be assumed that such a survey has been conducted and that the figures shown in Tables 1-4 are to be used as goals for 1970. (A survey made by the Ministry of Reconstruction--EDC--covering supply and demand for the next three years is a step in the right direction. This survey, dated December, 1959, is soon to be released.)

Obviously, there are many ways in which the desired number of graduates can be produced. If necessary, the entire enrollment could be accommodated in one huge college of engineering and science. Conversely, the enrollment could be divided among a large number of small colleges. The desired increase in enrollment could be obtained by expanding the private institutions only, by expanding the public institutions only, or by expanding both types.

It would seem wise for the Ministry of Education to assemble representatives from all public and private institutions to discuss the results of the survey and to reach a voluntary decision regarding the distribution of future enrollments. Such a meeting would have to consider items such as the following:

1. The education of any type of engineer must include basic sciences such as mathematics, chemistry and physics, plus a distribution of engineering sciences such as mechanics, properties of materials, fluid mechanics, thermodynamics, electrical theory, transfer and rate mechanisms. Each of these common subjects should be taught by experts in the various fields. Generally this means that there should be strong departments of mathematics, chemistry, physics, civil engineering, electrical engineering and mechanical engineering before there can be a strong program in any single engineering field. There can be little justification in offering only a single engineering curriculum at a given college.

2. Every engineering curriculum should contain a required core of subjects in the humanities and social sciences. This common core should continue throughout all four years of the undergraduate program. It is desirable that these subjects be taught by men who are experts in them.
3. It is not economical for a college or for the nation as a whole to operate a large number of curricula with small numbers of students in each. As a rough design criterion it may be decided that no curriculum should be duplicated unless there are at least 15 students in the senior class at each college which offers the work.
4. Some engineering curricula require unusually expensive laboratory equipment. The number of such curricula should be kept to a minimum regardless of the desire of some institutions to have the expensive equipment for prestige reasons.
5. The necessary number of graduate students is relatively small. For economy, these students should be concentrated at a relatively few institutions. However, graduate work must be considered an essential part of every engineering program. A strong engineering college requires careful integration of the three basic elements of undergraduate instruction, graduate instruction and research. This implies that the total number of engineering colleges should be small.

Table 2 indicates that there may be need for 25 or fewer engineers per year in the fields of aeronautical, agricultural, ceramic and sanitary engineering. If these figures are verified by the recommended survey, it is probable that not more than one college in the country need offer a curriculum in any one of these fields. The agricultural engineering program should logically be placed at a university which has both a college of engineering and a college of agriculture on the same campus.

Pursuing the line of reasoning that no curriculum should be duplicated unless there can be at least 15 students in each senior class, and assuming that a more reasonable figure might be 20 students, it is possible to determine from Table 2 the maximum number of undergraduate engineering sections which can be justified in a given curriculum. (A section is a group of students enrolled in a curriculum. At a given college there might be several sections in the same curriculum. The class is divided into sections in order to keep lecture and laboratory groups small enough to permit individual instruction.) The maximum number of sections for each

curriculum is shown in Table 5. In addition to the total number of sections, this table shows a possible distribution among the five national universities and the other institutions. This distribution is based on the arbitrary assumption that the national universities will carry approximately 46% of the total educational load in 1970.

Applying the same reasoning to science and architecture gives Table 6 from the figures of Table 4.

Table 5

Proposed 1970 Maximum Numbers
of Undergraduate Engineering Sections, by Field

<u>Field</u>	<u>Maximum Number of Sections</u>		
	<u>Total</u>	<u>National</u>	<u>Other</u>
Aeronautical Engineering	1	1	
Agricultural Engineering	1	1	
Ceramic Engineering	1	1	
Chemical Engineering	11	5	6
Civil Engineering	20	8	12
Electrical Engineering	31	13	18
Industrial Engineering	6	4	2
Mechanical Engineering	30	12	18
Metallurgical Engineering	4	2	2
Mining Engineering	5	2	3
Naval Arch. & Marine Engineering	2	2	
Sanitary Engineering	1	1	
Textile Engineering	4	3	1
Other	6	2	4
Total	123	57	66

Table 6

Proposed 1970 Maximum Numbers of Undergraduate Sections
in Science and Architecture, by Field

<u>Field</u>	<u>Maximum Number of Sections</u>		
	<u>Total</u>	<u>National</u>	<u>Other</u>
Architecture	5	3	2
Chemistry	10	5	5
Mathematics	10	5	5
Physics	18	8	10

Clearly, there are many ways of distributing the sections among the nation's colleges. The best distribution requires study by the Korean people. The Survey Group suggests one possible distribution for the national universities as shown in Table 7. While this is a possible distribution, it must be clearly understood that it may not necessarily be the best. No attempt will be made here to indicate a distribution among the various other institutions.

Note also that Table 7 assigns engineering to four of the five national universities. The Survey Group is doubtful of the need for four national colleges of engineering by 1970. It seems clear that there will be need for one large engineering college in the Seoul area, one smaller college in the Pusan area, and another in the southwest. Probably from the standpoint of ease of transportation and accessibility to industry, the southwestern college should be in the vicinity of Iri. One really strong college in that area might meet all of the needs of the southwest by 1970. The survey which has already been mentioned might study the relative merits of one large college in the southwest or two smaller colleges at Chonpuk and Chonnam. It is necessary to face the fact that colleges are already in existence at Chonpuk (Iri) and Chonnam (Kwangju).

Table 7

Possible 1970 Distribution
of Undergraduate Engineering, Science and Architecture Sections
in the National Universities, by Field and Institution

<u>Field</u>	<u>Chonbuk</u>	<u>Chonnam</u>	<u>Pusan</u>	<u>Kyungbuk</u>	<u>Seoul</u>
Aeronautical Eng.					1
Agricultural Eng.		1			
Ceramic Eng.			1		
Chemical Eng.	1		2		2
Civil Eng.	1	1	2		4
Electrical Eng.	3	2	3		5
Industrial Eng.	1		1		2
Mechanical Eng.	2	1	4		5
Metallurgical Eng.			1		1
Mining Eng.		1			1
Naval Arch. & Marine Eng.			1		1
Sanitary Eng.					1
Textile Eng.		1	1		1
Other Engineering			1		1
Architecture		1	1		1
Chemistry	1	1	1	1	1
Mathematics	1	1	1	1	1
Physics	1	1	2	2	2

A study of the advisable distribution of graduate students must take into account the fact that graduate work is much more tailored to the individual student than is undergraduate instruction. This is especially true of the research work which is always required for the Doctorate and which is strongly recommended for the Master's degree in Korea. The student-teacher ratio is also much lower for graduate than for undergraduate work.

Much of the research equipment needed for good graduate instruction is very expensive and should not be duplicated unless absolutely necessary.

The Survey Group would suggest a distribution of graduate work such as that shown in Table 8 for 1970. Ultimately all of the national universities which feature engineering and science should have programs of research, graduate instruction and undergraduate instruction all thoroughly integrated. The suggested distribution is a step toward this objective. Note that graduate work is not suggested for all fields by 1970. Advanced work leading to the Doctorate is limited to Seoul in this early period but should be extended later to other institutions.

Table 8
Possible 1970 Distribution of Graduate Work
in the National Universities by Field and Institution

Field	Chonbuk		Chonnam		Pusan		Kyungbuk		Seoul	
	M.S.	Ph.D.	M.S.	Ph.D.	M.S.	Ph.D.	M.S.	Ph.D.	M.S.	Ph.D.
Aeronautical Eng.	.	.	.	.	.	.	.	.	.	.
Agricultural Eng.	.	.	.	.	.	.	.	.	.	.
Ceramic Eng.	.	.	.	.	.	.	.	.	.	.
Chemical Eng.	.	.	.	.	X	.	.	.	X	X
Civil Eng.	.	.	.	.	X	.	.	.	X	X
Electrical Eng.	X	.	X	.	X	.	.	.	X	X
Industrial Eng.	.	.	.	.	.	.	.	.	X	.
Mechanical Eng.	X	.	.	.	X	.	.	.	X	X
Metallurgical Eng.	.	.	.	.	.	.	.	.	X	X
Mining Eng.	.	.	.	.	.	.	.	.	.	.
Naval Arch. & Marine Eng.	.	.	.	.	.	.	.	.	X	.
Nuclear Eng.	.	.	.	.	.	.	.	.	X	X
Sanitary Eng.	.	.	.	.	.	.	.	.	.	.
Textile Eng.	.	.	.	.	.	.	.	.	.	.
Architecture	.	.	.	.	.	.	.	.	X	.
Chemistry	X	.	X	.	X	.	X	.	X	X
Mathematics	X	.	X	.	X	.	X	.	X	X
Physics	X	.	X	.	X	.	X	.	X	X

General Proposals

Staff, Facilities and Program

Faculty. Without any doubt Korea's major need in the field of education for engineering and science is for faculty members with better education and more professional experience. The situation could scarcely be otherwise in view of the limited opportunities for education available to Korean people during the past 50 years.

At Seoul National University an appreciable number of faculty members have received training abroad with ICA assistance. At the other national and private institutions relatively few of the staff have had any education outside of Korea.

There is immediate need for improving the education of the faculties outside of Seoul and for providing professional experience for all faculties including that at Seoul.

If possible, selected members of the science and engineering faculties at the institutions other than Seoul should be sent to Europe or the United States for advanced education and professional training. If study abroad is not feasible, these selected persons should be sent to Seoul National University to study under those members of the Seoul faculty who have had training abroad. (It would be desirable to send a minimum of 30 faculty members from the national universities abroad for at least 60 man years of study during the next three years. It might be well to give priority for such training to faculty members from Pusan National University.)

Arrangements should be made with the more advanced industries and governmental laboratories in Korea to provide professional experience for faculty members from all institutions. Perhaps each institution could provide leaves of absence of at least one semester so that faculty members might work in the best industrial and governmental facilities. Work for such persons should be specifically planned so as to provide the most effective professional experience.

Opportunities should be provided for consulting work throughout the regular academic year. A man's effectiveness as a teacher can be increased if he is permitted to keep abreast of current activities through consulting. Of course, some restrictions must be applied to limit the amount of such outside work so as not to interfere with academic duties. A good working rule is to limit

consulting work to the equivalent of one day per week and to require that this work be scheduled so as not to interfere with the normal teaching assignment. Each staff member should be required to devote a full working week to duties at the university, after which he may consult to the extent of one day per week.

The Survey Group recommends that:

1. A minimum of 30 faculty members from the science and engineering departments of the national universities other than Seoul be sent abroad for at least 60 man years of advanced study and professional training.
2. Arrangements be made with Korean industries and governmental laboratories to provide professional experience for faculty members of all colleges.
3. Opportunities be provided for consulting work during the academic year.

Libraries. Perhaps second in importance to the faculty is the library. Especially at this critical time in Korea when faculty members are generally inexperienced and when limited opportunities for professional experience exist, the library assumes great significance.

None of the institutions which were visited has an adequate collection of books and periodicals for science and engineering. The library at the College of Engineering at Seoul National University has by far the best collection due to ICA assistance. Even here, however, there is danger that the collection may quickly become obsolete unless more adequate support is provided.

There is immediate need for the acquisition of modern textbooks and for back copies of the major journals. There is further need for the providing of a regular annual library budget large enough to maintain all journal subscriptions and to keep the reference collections up to date.

There is virtually no reference service available anywhere. The need for trained librarians is acute.

There is also need for an organized system of inter-library loans so that the resources of all libraries in Korea may become generally available at all universities.

A rough estimate indicates that the science and engineering libraries of the national universities require an immediate expenditure of about \$180,000 for books and periodicals plus annual appropriations of about \$18,000 for the next 10 years to establish reasonably adequate collections.

The Survey Group recommends that:

1. Acquisition of modern textbooks and back copies of the major journals be undertaken immediately.
2. A more adequate annual library budget be provided.
3. Trained librarians be provided so that reference and other library services can be made available.
4. An organized system of inter-library loans be initiated.

Facilities for Undergraduate Instruction. With the exception of the College of Engineering at Seoul National University, none of the institutions which were visited has laboratory space or equipment adequate for sound undergraduate instruction in engineering or science. Through ICA assistance the Seoul College of Engineering has received (or will soon receive) enough equipment to meet the minimum needs of the undergraduates. It can be said without exaggeration that in every other national college suitable equipment is virtually non-existent. In these institutions there is need for every type of equipment normally associated with instruction in engineering and science.

In most of the colleges the major source of funds for the purchase of equipment is the laboratory fees paid by the students. There is urgent need for a substantial governmental appropriation to provide the basic equipment immediately.

In most of the colleges except the Seoul College of Engineering the space provided for the laboratories is inadequate for the work which should be done. There is need for experienced advisors to assist with the designing of the physical plant.

In order to give four of the national universities the minimum essential equipment for undergraduate instruction in science and engineering, there is need for an immediate expenditure of about \$2,500,000 plus annual expenditures of about \$150,000 for the next 10 years. Note that a substantial annual budget for equipment will be necessary at all times in order to keep the laboratories up to

date. Equipment in this amount, although representing the barest minimum needed, would crowd existing space beyond the limit. Obviously, no institution should order equipment for which it does not have adequate space. It is probable that the national universities other than Seoul would need at least 160,000 square feet of additional laboratory space to house the equipment. A suggested distribution is indicated in Table 7. The Pusan National University might well be given a high priority in this development program.

The Survey Group recommends that:

1. Minimum essential science and engineering equipment for undergraduate instruction be provided the three national universities outside of Seoul.
2. Annual budget provision be made for maintenance, replacements and modernization.
3. Adequate building space be provided for housing and use of proposed equipment.

Facilities for Graduate Work and Research. None of the institutions visited has space or equipment adequate for high caliber graduate instruction and the necessary accompanying research although some work can be done with existing facilities. Attention should be paid to this problem when planning new buildings. Suitable equipment should be secured as soon as the necessary facilities for undergraduate instruction have been provided. It would not be very meaningful at this point to attempt to estimate the cost of the needed equipment. Much new construction is needed before the equipment can be used. A very crude estimate shows that four national universities will need about 80,000 square feet of additional assignable laboratory space beyond that mentioned above for undergraduate facilities in order to carry out the programs shown in Table 8.

The Survey Group recommends that:

Adequate space and equipment for graduate instruction and research be provided after undergraduate instructional needs have been met.

Research Programs. There is need to develop strong research programs in engineering and science at each of the national universities.

The Survey Group recommends that:

Strong research programs in engineering and science be developed at each of the national universities.

Curriculum Organization. The typical engineering or science curriculum in Korea is supposed to consist of 160 credits. This compares with approximately 140 credits in similar American programs. In many cases the Korean student is required to take a total of 176 credits out of which he must pass 160 to graduate. The Korean student may carry 10 to 12 different courses per semester in comparison with 5 or 6 courses in a comparable American program.

There is nothing inherently wrong with requiring 12 different courses per semester. It is possible, for example, that the twelve courses may cover exactly the same subject matter as the 6 courses in an American program. Each Korean course may include only half the material in an American course. Hence, if the Korean courses are properly integrated, they could be the equivalent of their American counterparts. Unfortunately, there are practices in Korea which tend to overload and confuse the students. Consider only two examples of such activities.

First, some departments circumvent the university's regulations regarding maximum loads by changing the amount of credit assigned to a course. For example, if a program already contains the maximum number of credits allowed by the university and the department wishes to force its students to take two additional credits, the department will arbitrarily give two less credits to an existing course in order to squeeze in the new one. There will be no change in course content or number of class hours per week, simply an arbitrary change in the credit assigned to the course. The result is to overload the student. Another result is to render all academic regulations meaningless.

Second, it is common practice to permit a student to repeat a failed course while taking advanced courses for which the failed course should have been a prerequisite. The result is bad for two reasons; it overloads the student who is already in academic difficulty and it places him in advanced courses for which he is not prepared.

The Survey Group recommends that:

1. Each college establish and firmly enforce rules regarding maximum and minimum course and credit loads, and that each course be assigned a fixed amount of credits.
2. Consideration be given to combining some of the many one and two-credit courses to insure better coordination of subject matter.

Prerequisites and Required Courses. One weakness which is evident in all Korean curricula in engineering and science is the general absence of stated prerequisites. A good curriculum will progress steadily from elementary to advanced subject matter. Each succeeding course will require a knowledge of material taught in certain preceding courses. The student will not be permitted to undertake the advanced course until he has passed the prerequisite courses. The prerequisites for each course will be published in the college bulletin and the dean will enforce compliance with the stated regulations. No substitutions for required courses will be permitted. In only one of the Korean colleges which were visited were there any stated prerequisites. In some cases the existence of prerequisites is implied by numbering successive terms of a course by the same title. However, in virtually all cases the student can evade the prerequisite. If he fails the basic course he may start the advanced course and repeat his failure either with or following the advanced course. In many cases he is not required to repeat the failed course. He may simply elect some easier subject in order to make up enough credits to graduate. In other cases he is given repeated re-examinations until he passes.

The Survey Group recommends that:

1. Prerequisites for advanced courses be established and published in the college course bulletin.
2. The student be not permitted to undertake an advanced course until he has passed the prerequisite courses.
3. No substitutions for required courses be permitted.

Related National Proposals

National Survey. Mention was made earlier in this report of the imperative need for a national survey to determine the demand for and supply of engineers, architects and scientists. The survey should be established on a continuing basis so that changes may be detected and trends defined. (The study made last year by the Ministry of Reconstruction--EDC--and soon to be released is a step in this direction.)

The initial survey should consider also the most effective number and location of the necessary national departments of engineering, architecture and science. For example, the survey might consider whether or not the nation's immediate needs for engineers can be met by only three national colleges of engineering located at Seoul, Pusan, and the vicinity of Iri. If only three such colleges are considered to be necessary, what should be done in the southwest where there are colleges at Iri and Kwangju? What should be done in the future about the engineering programs which have been started under non-engineering titles at Kyungpuk (despite the refusal of the Ministry of Education to approve such work) and which the Survey Group has recommended be discontinued for the present?

The Survey Group recommends that:

1. The Republic of Korea conduct a nation-wide survey to determine its projected needs for engineers, architects, and scientists.

This survey might be directed by some central agency such as the Ministry of Education or the Korean Federation of Engineers, and it should involve the active participation of all major industries, all colleges and all ministries responsible for the economic development of the country.

2. The survey be established on a continuing basis so that changes may be detected and trends identified.

Master Plan. After the national survey has been completed, a master plan should be created to direct the development of science and engineering education in each of the national universities in the years ahead. This master plan might be prepared by the Ministry of Education after a thorough discussion with representatives of all national, public and private institutions. Obviously, the national universities cannot ignore the effect of the other institutions on the supply of graduates. It is highly desirable to reach some agreement regarding the role which each type of institution is to play in the nation's education program.

Previous sections of this report (such as Table 7) suggest the form which the master plan might take.

The Survey Group recommends that:

After the national survey recommended elsewhere has been completed, a master plan be evolved to guide the future development of science and engineering education in each of the national universities.

Licensing and Accrediting. There is need for the engineers in Korea to exercise more control over the status of their profession. This control should involve two phases: (a) protection of the public through the strengthening of the laws limiting the practice of engineering to those who possess certain stated qualifications, and (b) accreditation of curricula of engineering in a manner such as to raise the quality of engineering education. These two phases are closely related. For example, it would be desirable to require that no person be permitted to apply for a license to practice engineering unless he is a graduate of an accredited engineering curriculum. If such a regulation is considered to be too severe at this early stage of development, a distinction of lesser degree can be made between graduates of accredited and non-accredited curricula.

For example, a law might be passed establishing a National Board of Engineering Examiners. An applicant for a license to practice engineering would have to submit an application to this Board and would have to (a) present evidence of graduation from an accredited engineering curriculum plus four years of engineering experience suitable to the Board, or graduation from a non-accredited engineering curriculum plus seven years of suitable engineering experience, and (b) pass a rigid examination in his field of engineering. A person approved by the Board and licensed to practice engineering would be legally permitted to call himself a Professional Engineer. The law should specifically prohibit other persons from calling themselves engineers, and there should be provision for penalties to be imposed for the illegal use of the title.

The operation of the National Board of Engineering Examiners should be conducted by a governmental agency with adequate financial support to enforce the law. However, the engineers themselves should draft the law and press for its adoption in a form suitable to them.

There is merit in having the accreditation of curricula carried out by the engineering profession independent of the government. Perhaps a National Committee on Engineering Accreditation could be formed. This committee could consist of equal numbers of engineering educators and practising engineers representing all of the fields of engineering in which there are curricula in the nation's colleges and universities. Each member of the committee might serve for a period of five years except that initial appointments would be for varying periods so that one-fifth of the committee would be replaced each year. Perhaps 25 persons would be sufficient to constitute the committee in its early stages. Appointment to the committee could be made by the Korean Federation of Engineers on the basis of recommendations from the various professional engineering societies and engineering colleges.

If the committee were established it should offer to inspect curricula upon the invitation of the various colleges. It would be advisable to operate only in response to an invitation from a college. After receiving an invitation the committee should request detailed information regarding the institution and the curricula to be inspected. When this information had been studied, the committee should send a team consisting of a chairman plus two observers for each curriculum. One of the observers should be an educator and the other a practising engineer. After completing its inspection the visiting team should submit a report with recommendations to the full committee. The committee should then take action to accredit or not to accredit. Note that curricula should be accredited, not colleges. In a given college one curriculum might be accredited and another rejected.

Each year the National Committee on Engineering Accreditation should publish a list of accredited curricula. This list can be used by the National Board of Engineering Examiners and by the general public.

As the fields of chemistry, mathematics and physics grow in professional maturity and in numbers of practitioners, similar programs of accreditation may be considered for them. Information on such programs and on accreditation in general may be obtained from the Middle States Association, 10 Park Row, New York, New York.

The practice of architecture can be similarly protected by strengthening the laws and establishing a suitable board of examiners. Korean engineers and architects should agree on acceptable definitions of engineering and architecture to prevent future disputes. Much can be gained by studying the mistakes which American architects and engineers have made in this connection. Information regarding American jurisdictional problems may be obtained from the National Society of Professional Engineers, 1022 K Street, Washington, D. C.

Obviously, an accreditation program requires the identification of minimum standards for accreditation. This in turn requires a clear definition of what constitutes "engineering" education as distinguished from "science" education or "technical training." Perhaps the most effective way to establish criteria for good engineering education is through a formal organization devoted to the improvement of engineering education. Hence it is suggested that there be formed a Korean Society for Engineering Education patterned somewhat after the American Society for Engineering Education. In the United States the ASEE has worked closely with the accreditation and registration groups to insure a constantly rising level of engineering education.

Perhaps the Korean Federation of Engineers can take the leadership in studying these suggestions and in putting them into effect if approved. Complete information on American practice can be obtained from the following sources:

Registration and Licensing - National Council of Boards of Engineering Examiners, Palmetto State Life Building, Columbia, South Carolina

Accreditation - Engineers Council for Professional Development, 33 West 39th Street, New York 18, New York

Engineering Education - American Society for Engineering Education, University of Illinois, Urbana, Illinois.

The Survey Group recommends that:

1. The Korean Federation of Engineers take the leadership in proposing legislation to strengthen and protect the professional status of the engineer and to raise professional standards.
2. A National Board of Engineering Examiners be established for the purpose of limiting the practice of engineering to those who possess certain stated qualifications.
3. The Korean Federation of Engineers organize a National Committee on Engineering Accreditation for the purpose of raising the quality of engineering education through accreditation of engineering curricula.

4. A board of examiners and an accreditation committee perform similar functions in the field of architecture.

Craftsmen, Technicians, Engineers. There is confusion in Korea at present regarding the function of an engineer. The terms "engineer" and "engineering" are used loosely in relation to widely differing activities. For example, there are technical high schools in Korea, which are roughly equivalent to the vocational high schools of the United States. However, these technical high schools are referred to as "engineering high schools" and "engineering colleges." In the European or American sense there is no engineering whatever in the activities of these schools.

The Survey Group recommends that:

The Korean Federation of Engineers make and publish a study of three levels of American education, namely, the Vocational High School, the Technical Institute, and the Engineering College. Information on these fields may be obtained from:

U. S. Office of Education, Department of Health, Education and Welfare, Washington 25, D. C.

Technical Institute Division, American Society for Engineering Education, University of Illinois, Urgana, Illinois

Engineers Joint Council, 33 West 39th Street, New York 18, New York.

Safety. In all of the universities there is an alarming disregard for safety. Exposed knife switches, exposed gears and belts, broken stair treads, the use of lead wire in place of fuses, the absence of door checks, the absence of operating fume hoods in chemical laboratories are common examples.

The Survey Group recommends that:

The Korean Federation of Engineers begin a campaign to educate all citizens regarding common measures of safety.

Specific University and College Proposals

Seoul National University. This university is widely scattered. The College of Liberal Arts and Sciences is at Seoul. The Department of Physics of the College of Liberal Arts and Sciences is at Chung Rang Ri. The College of Engineering is at Shinkong-duk. Because of the separation, the College of Engineering is forced to operate its own departments of mathematics, chemistry and physics in duplication with those of the College of Liberal Arts and Sciences. Similar problems of duplication exist in the College of Agriculture and the College of Education.

Separation of the various colleges of a university is always costly in terms of duplication of facilities and limitation of educational opportunities. When all colleges are located on one campus there need be only one library for the university and one department in each field of instruction. A student can take advantage of all of the educational services provided by all of the colleges. When the colleges are separated it is necessary to duplicate such things as libraries, laboratories for basic sciences, physical education facilities, etc. Furthermore, the student at a separated college has fewer educational opportunities than his counterpart in a consolidated university.

In general it is advisable to consolidate the various units of a university on one campus. However, under certain circumstances there are advantages in separation which outweigh the disadvantages. For example, if the university is located in the heart of a large city it may be advisable to place its college of agriculture some distance away in order to acquire the necessary farm land. In this case the gain of the farm land offsets both the cost of duplicating some facilities and the limitation of educational opportunities.

When a university is formed by the merger of several existing and scattered colleges (as was the Seoul National University) the problem of consolidation becomes even more difficult. In this case the values gained by consolidation on one campus must be weighed against the cost of abandoning existing buildings and erecting new facilities at the central location. In a few cases it may be possible to sell the existing facilities and thus to gain enough funds to pay a substantial part of the cost of moving. In any case, it is necessary to make a detailed economic study to determine whether or not the consolidation can be justified.

Basic instruction in chemistry and physics is needed in virtually all of the colleges of the university. It is therefore obvious that as long as the colleges remain scattered, the facilities for this basic instruction will have to be repeated in several places. It is equally obvious that somewhere in the university there must be laboratory and library facilities suitable for complete programs of undergraduate instruction, graduate instruction and research for majors in these fields. The following factors indicate that the major work in chemistry and physics should be centered at Shinkong-duk:

1. The engineering and science departments have common need for the same library facilities.
2. The engineers and scientists use similar laboratory equipment so that savings could be effected by the use of a common repair facility with trained technicians.
3. Some of the major laboratories could be used in common by the engineers and scientists (for example, chemists and chemical engineers could use the same laboratories for qualitative analysis, physical chemistry, organic chemistry and electro-chemistry).
4. There are excellent opportunities for the cooperation of engineers and scientists on research projects if the two groups are located on the same campus.
5. Most of the other colleges of the university need only elementary instruction in chemistry and physics whereas the college of engineering (a) needs both elementary and advanced instruction, (b) can make common use of laboratory and library facilities, and (c) can cooperate with the scientists in research.

If the major emphasis on chemistry and physics were centered on the engineering campus, the college at that location might be developed as a strong College of Engineering and Science.

To complicate the problem, the College of Agriculture at Suwon also needs advanced instruction in chemistry as well as elementary instruction in the other sciences. Regardless of whether the major work in chemistry is located at the College of Engineering or the College of Arts and Sciences, some special provision must be made for the separated College of Agriculture.

The College of Education on its separate campus also has need for work in basic sciences beyond the elementary level. As long as the education majors take their advanced science courses at the education campus there will be need for special facilities at that location.

In the opinion of the Survey Group, the College of Engineering at Seoul National University has received enough financial help from ICA to permit it to develop henceforth with aid from the Korean government. To insure that the present rate of progress will be maintained, it might be wise to continue limited advisory services. There will be need for the Korean government to contribute substantial funds to equip the college for graduate instruction and research. The advisors can assist in planning for this development so as to minimize costs while insuring effective education.

The Survey Group recommends that:

1. The College of Engineering of Seoul National University remain at Shinkong-duk and not be transferred to the central campus in Seoul. This recommendation is based on the very large investment in physical plant at the College of Engineering (and at the Atomic Research Institute which is now under construction at the same site).
2. The major programs in chemistry and physics be placed at the College of Engineering and that this college be made the College of Engineering and Science.
3. The university abandon the Chung Rang Ri campus, bring the pre-medical department which is now at Chung Rang Ri to the central campus, and move the Department of Physics into adequate new quarters at Shinkong-duk.
4. The Departments of Physics and Chemistry become integral parts of the College of Engineering and Science and responsible for all instruction in their fields throughout the university.
5. Such other science departments as biology, botany, mathematics, geology, etc., be integral parts of the College of Liberal Arts and Sciences from which central point they should be responsible for all instruction in their fields throughout the university.

Pusan Fisheries College. The naval architecture curriculum, now offered at this college, presents an imposing array of courses including such engineering subjects as metallurgy, strength of materials, thermodynamics, mechanics, electrical engineering, mechanical engineering, hydrodynamics, marine engines, stability and oscillation of ships, hydraulics and hydraulic machines, communication engineering, and atomic engineering.

The naval architecture staff consists of six men, two of whom have the M.S. degree and four, no college degree. It is difficult to see how such a small group can handle such a number and variety of engineering courses in addition to such naval architecture courses as calculation on ships, strength and vibrations of hulls, resistance of hulls, structural design and fishing gear, together with assorted courses like applied mathematics, introduction to fisheries, oceanography, meteorology, seamanship, industrial management, etc.

In a recent request for assistance the description of equipment for naval architecture seemed to indicate that the purpose here is really to train technicians rather than to educate engineers. The proposed facilities would contribute "a student's practice shipyard" consisting of a machine shop, a forge, a casting shop, a lumber shop and an electric shop. There would also be a test basin with a building shipway and dry dock which may be used to repair and construct small vessels. There does appear to be need for instruction in the art of building small fishing vessels. A program of instruction in this area coupled with fishing techniques would appear to justify curricula on a two-year junior college or technical institute level.

A curriculum in college level naval architecture, however, could well be offered at Pusan National University where it is already in the planning stage. This course should meet the needs for naval architecture in the south.

The Survey Group recommends that:

1. The naval architecture work be transferred to the College of Engineering at Pusan National University.
2. A fishing vessels construction program be established and that, associated with fishing techniques, be offered on a junior college or institute level in connection with the University.

Kyungpuk National University. There appears to be no need in the immediate future for a college of engineering at this university. At some future time when Korea has become much more industrialized there may be need for engineering here. The situation should be reviewed after the recommended national survey has been made.

The Survey Group recommends that:

Neither an engineering college nor engineering departments be established at Kyungpuk National University at this time.

Chonbuk National University. This university is now scattered with some units at Chonju and others at Iri. In general it is advisable to consolidate all of the operations of a university on one campus. When colleges are separated it is necessary to duplicate many essential services. For example, the College of Engineering at Iri requires a library and laboratories for chemistry and physics. The College of Liberal Arts and Sciences at Chonju requires the same facilities. When colleges are located on the same campus, students have an opportunity to take advantage of the educational services provided by all of the colleges. The opportunities for the student are much more limited when the colleges are separated.

As noted elsewhere in this report, occasionally there are advantages in separation which outweigh the disadvantages. For example, if a university is located in the heart of a large city it may be advisable to place its college of agriculture some distance away in order to acquire the necessary farm land. An early decision should be reached regarding the advisability of consolidating all of Chonbuk University on one campus.

The Survey Group recommends that:

1. The Ministry of Education appoint a special advisory committee to assist in an appraisal of the advantages and disadvantages of (a) consolidating the entire university at Chonju, (b) consolidating the entire university at Iri, (c) developing present units at Iri and Chonju.
2. No new construction be permitted on either campus until a decision has been reached.

Chonnam National University. Basic courses in mathematics, chemistry and physics are weak and instruction is duplicated in the Colleges of Engineering and Liberal Arts and Sciences. Faculties lack sufficient advanced training to develop and maintain adequate instructional and research programs.

The Survey Group recommends that:

1. Basic instruction in mathematics, chemistry and physics be concentrated in the College of Liberal Arts and Sciences and be greatly strengthened.
2. Duplication of chemistry and physics laboratories between the College of Engineering and the College of Liberal Arts and Sciences be eliminated.
3. Faculty inbreeding and provincialism be avoided through employment of more staff who have received all or part of their educational training in other institutions.

Major Needs in Order of Priority

1. Strengthening of faculty in Chonnam, Chonbuk and Pusan National Universities by provision of at least 60 man years of advanced study abroad for a minimum of 30 faculty members.
2. Professional experience for faculty members of all colleges through arrangement with industries and governmental laboratories.
3. Opportunities for consulting work for faculty during the academic year.
4. A national survey conducted on a continuing basis to determine projected needs for engineers, architects and scientists.
5. Development of a master plan for science and engineering education in each of the national universities.
6. Expansion and improvement of libraries and library services.
7. Undergraduate laboratory equipment together with facilities for housing and utilization.
8. Space and equipment for graduate instruction and research.
9. Research programs in engineering and science.
10. Establishment of a National Board of Engineering Examiners.
11. Establishment of a National Committee on Engineering Accreditation.

HEALTH SCIENCES

Colleges of Medicine

Requirements for Graduates and Training Institutions

In the Republic of Korea medical education is offered by four national universities--Chonnam, Kyungpuk, Pusan and Seoul--and four private universities--Catholic, Ehwa, Soo Do and Yonsei. The course of study leading to a Bachelor of Medicine degree requires six academic years, two being in a premedical course offered in the college of arts and sciences and the four subsequent years in the college of medicine. This Survey has embraced only the four medical colleges in the four national universities. However, visits have been made to the other medical colleges in order to insure some familiarity with the total picture of medical education in Korea.

The national universities require applicants for admission to be graduates of an accredited high school and to declare their intent as to the course of study desired when they apply to take the entrance examination. Each university has its own entrance examination. These examinations are similar in type to that of an American college entrance examination. No aptitude tests, however, are used. The content of these examinations is almost exclusively determined by the faculty of the college of arts and sciences without consultation with the medical college faculty. In effect, the faculties of the colleges of arts and sciences admit students to the colleges of medicine, for the colleges of medicine must accept the students after two years of satisfactory work in undergraduate courses. The course content of these two years is also generally prescribed by the arts and sciences faculties without medical faculty consideration or concurrence.

Currently the eight colleges of medicine in Korea graduate approximately 670 physicians annually. With 7,125 physicians registered in the nation, the physician-population ratio is about 1:3000. However, in the heavily populated areas of this country the physicians are concentrated; it is the rural, less densely populated areas with a total population of 16,000,000 that are without physicians. Redistribution of physicians to serve in the rural health centers, either already established or to be constructed within a year, should help to solve this distribution problem.

The Survey Group recommends that:

No new medical colleges be authorized.

The present number of graduates is adequate. The present locations of the four national colleges of medicine will make available adequate population concentrations to insure clinical material for practical teaching and research provided subsequent recommended hospital administrative procedure changes are adopted. The geographical distribution of the colleges throughout the nation is satisfactory in terms of availability of high quality medical care and medical educational opportunities.

Organization

The deans of the colleges of medicine are directly responsible to the presidents of the universities, who, when necessary, confer with the Ministry. From time to time, as issues arise, procedures that affect the administration of the medical colleges are spelled out by the Ministry through the university presidents. The duties and responsibilities of the deans of the colleges of medicine are not spelled out by law or Ministry regulations. There is some Ministry control in the appointment procedure of the deans. The president of the university nominates; the faculty of the college approves or disapproves; if approved, the Minister of Education recommends to the President of the Republic for final approval. The Ministry does not participate directly in the administration of the medical colleges but on occasion it has failed to accept or obtain the necessary governmental approval of recommended changes in medical education. An example is failure to obtain approval of a recent recommendation that students be considered for admission to the college of medicine only after satisfactory completion of pre-medical training.

The dean annually files with the president the national budget request together with supporting educational data. The president endorses the request to the Minister of Education who, through the Minister of Finance, presents it to the National Assembly.

The superintendents of the attached hospitals are directly responsible to the presidents of the universities and the hospital budgets are separately provided, rather than being included in the budgets of the colleges of medicine. The staffs of the hospitals are composed of faculty members appointed by the Ministry upon nomination of the faculty, dean and president of the university.

The superintendents have no effective control over the staffs of their hospitals. In all instances, however, the superintendents do work closely with the deans of medicine to maintain good patient care, provide teaching facilities, and stimulate research.

Budgetary procedure changes, particularly those relating to the retention of income recommended elsewhere in this report would, if accepted, aid materially in the sound operation of all attached hospitals. These teaching hospitals should be financed on a basis which would provide that half of the beds be free. One of the major deficiencies in medical education in Korea is the lack of hospitalized patients who can be examined and studied by the students under the supervision of the professors. In this culture, as in Western culture, it will undoubtedly be easier to begin using the non-paying patients for teaching and later, as public attitudes change, the paying patients also will be willing to participate in medical education. The training in medicine is, to be sure, one of the most expensive disciplines in higher education, but the operating costs of attached hospitals should not be viewed only as costs of medical education. Rather, they are predominantly costs to be borne by the public for the health care of citizens.

At the present time members of staff of the colleges of medicine in the clinical departments frequently refer patients in the attached hospitals to their own private clinics and hospitals for further care on a pay basis. This results from regulations which do not permit private practice in these hospitals. As a consequence the number of patients available for teaching purposes is seriously reduced, bed occupancy is low, potential income is lost, and the per diem costs of remaining patients is unnecessarily high. Changes in regulations which would permit clinical staff members to care for a reasonable number of private patients would be both educationally and financially advantageous.

The Survey Group recommends that:

1. Superintendents of the attached hospitals be made directly responsible to the deans of the colleges of medicine instead of to the presidents of the universities.
2. Superintendents be given more adequate control of hospital staff appointments, promotions, transfers and removals.

3. At least 50% of the hospital beds be financed for the care of indigent patients.
4. The full-time staffs in the clinical departments of the colleges of medicine be permitted the private practice of medicine in the attached hospitals.

General Relationships

Relationships between colleges of medicine have been friendly and constructive through an unofficial organization of the deans of the eight colleges. Common problems have been discussed but joint planning to solve them has been only moderately successful. The influence of this group on the Minister of Education and other Ministries has not been very effective. This organization and the Korean Hospital Association, although presently unofficial and small in size, should be more active in efforts to influence policies and procedures related to medical education and medical care. The Korean Medical Association should also be more interested and active in supporting good hospitals and good medical education, and in promoting appropriate governmental policies for the improvement of the practice of medicine and of medical care.

Presently there is too little cooperation between colleges of medicine and non-attached hospitals. This unfortunate situation may be due in part to the fact that medical education is under the Minister of Education while public health, hospitals and licensing procedures are the responsibilities of the Minister of Health and Social Affairs. Medical education can and will improve medical care in all hospitals in which medical students are taught and the closer affiliation of private hospitals with colleges of medicine would provide the colleges with the urgently needed increased patient population essential to better practical training.

The general lack of cooperation between the college of medicine and other colleges in the university and even between departments within the college is very noticeable. The interrelationships and interdependence of all fields of knowledge are too obvious to require detailed exposition. This trend of isolation needs to be reversed for it violates the basic objectives of a university.

At present faculty members of one college are hired on a part-time basis by another college. When qualified staff members were in short supply, such a practice was both desirable and commendable, but now with many well qualified physicians and scientists returning from studies abroad, each college should endeavor to maintain a full-time staff in each major department. Some colleges have tended to

appoint only their own graduates as staff members and as a result, their faculties are becoming inbred and somewhat narrowly oriented. This is not yet true of the newer colleges, but, failing to understand its undesirability, they will tend to adopt the practice as soon as their graduates have qualified through advanced studies. Less emphasis should be placed on the college of graduation and more upon demonstrated ability in teaching, research and service.

The Survey Group recommends that:

1. Professional organizations in the health sciences accept greater responsibility for developing and supporting policies and standards to improve the practice of the healing arts in Korea.
2. Medical colleges affiliate with private and other governmental, non-university hospitals for the purpose of extending the services of medical education to these hospitals and of providing more clinical material for practical training.
3. Greater inter-college and inter-departmental cooperation be encouraged both in teaching and research.
4. Faculty appointments stress teaching and research qualifications with lessened emphasis on such other factors as the college of graduation.

Preparation of Students

The current two-year preparation of the student in liberal arts and sciences is satisfactory provided the curriculum is liberalized permitting the student to elect at least one-third of his courses. The prescribed courses should be selected jointly by college of arts and sciences and medical college faculties. Admission to the universities should be to the colleges of arts and sciences and the colleges of medicine should select students for admission to their four-year courses from those who have the best qualifications after completing one and a half semesters of their liberal arts curriculum. The selection should be based on scholastic record, aptitude tests, and personal qualifications for the study of medicine. The admission of students to the colleges of arts and sciences premedical programs would not necessarily be based on medical college quotas because those students not gaining admission to medicine could either reapply the following year after completing more course work or redirect their studies toward another major field. These changes would result in increased interest in premedical students on the part of the college of arts and sciences faculties because a

selected few might be encouraged to continue their academic studies in these colleges rather than to enter medicine. Likewise, the medical faculties, having the opportunity to select their students, would have increased interest in providing sound medical education. This plan would increase the student load for the colleges of arts and sciences.

The effect of the above plan on private institutions would be to encourage the adoption of a similar system leading to the selection of the best qualified students for the study of medicine. Unsuccessful applicants of public university medical colleges would be able to compete for admission to one of the private university medical colleges.

The Survey Group recommends that:

1. The premedical curriculum in liberal arts and sciences be jointly determined by the faculties of the colleges of arts and sciences and medicine.
2. The admission of students to a medical college be the responsibility of the faculty of the medical college.

Students

The national university colleges of medicine report the following enrollments for 1958-59:

<u>University</u>	<u>Enrollment</u>	<u>Authorized Enrollment</u>
Chonnam	472	400
Kyungpuk	375	320
Pusan	285	320
Seoul	558	480

These data reflect a total enrollment of 1690, exceeding an authorized total of 1520, since colleges routinely re-admit students who have failed, classifying them as auditors or irregular admissions. Before a student is failed he usually has the opportunity to write three or four make-up examinations in an effort to continue his studies. This obviously lowers scholastic standards and this common practice has assured students that their progress, though possibly slowed, will eventually lead to the sought-for degree regardless of their aptitudes, interests and competency in handling the prescribed curriculum. In addition, this practice increases the teaching load of the faculty and the requirement for laboratory facilities and supplies.

The continuation of the present number of graduates from colleges of medicine will meet the foreseeable needs of Korea. In order to continue the present enrollment many improvements must be made as enumerated in this report, if the competence of the graduates is to be improved in line with modern scientific medical advances.

The licensure regulations administered by the Minister of Health and Social Affairs do not operate to establish the competence of graduates. The system of testing graduates in only three specialty areas of medicine, the subjects being announced some three months before the examination is given, insures that a great majority of the physicians will pass the examinations and will be licensed. Medical colleges often adjust the senior year curriculum for these three months to provide intensive review courses of the announced subjects and thereby to insure, so far as possible, that a high percentage of its graduates pass. The regulations also provide that candidates for licensure need not be graduates of a medical college.

The Survey Group recommends that:

1. Enrollments in medical colleges be more strictly controlled as to class size, reconciling the class size with faculty and facilities at the disposal of each college.
2. Academic standards be strengthened by faculties to improve and insure the competence of the graduates.
3. Regulations concerning licensure be revised to require that all candidates be graduates of an accredited medical school and satisfactorily pass an examination in basic science subjects as well as in clinical medical subjects--at least internal medicine, general surgery, pediatrics and obstetrics and gynecology.
4. Curriculum time in medical colleges not be allotted to "cramming sessions" in preparation for the licensure examinations.

Academic Staff, Program and Facilities

Staff. The data concerning faculties supplied by the national colleges of medicine are as follows:

	<u>Numbers of Faculty Members</u>			
	<u>Chonnam</u>	<u>Kyungpuk</u>	<u>Pusan</u>	<u>Seoul</u>
Full-time	60	59	32	96
Part-time	<u>1</u>	<u>0</u>	<u>5</u>	<u>32</u>
Total	61	59	37	128
Number having advanced studies abroad	21	14	9	61

From these data it is evident that the Pusan National University College of Medicine is critically short of authorized faculty positions; the group understands that the present table of organization was established when the college was organized and did not include positions for the final two years of the course of study.

As a general rule for a college admitting 75 students annually, each of the six basic science departments should have four or five faculty positions and each of the six or eight clinical departments should have five faculty positions for a total minimum of 70 positions for a four-year college. It is important to remember that this faculty not only teaches medical students but graduate students and nurses and in the future will be involved in teaching the technical training courses in the paramedical fields--laboratory technology, x-ray technicians, and physical therapists.

The Seoul National University College of Medicine has had a substantial number of faculty members trained abroad through an ICA participant training program. The other colleges have had fewer such opportunities and need assistance in financing foreign studies for their faculties. It is not essential that as broad a program as that at Seoul National University be instituted at the other colleges, but at least one faculty member in each department should have had study abroad. These studies need not be in the United States,

if satisfactory training can be secured in a third country at no greater expense. College administrators should consider selection of needed staff from among the large numbers of well-trained and qualified Korean physicians who have studied abroad, financed either personally or by foundations. Not only is this economical but it will provide needed faculty without delay. It will also encourage foundations to continue their support of medical education in Korea.

The median age of the faculties of Chonnam, Kyungpuk and Pusan is significantly lower than that of Seoul. This reflects the youth of the newer colleges and is not necessarily undesirable for the younger men might adopt the essentials of modern scientific medicine more readily than the older men. This age difference is reflected in the rank distribution also; Seoul, with older faculty members, has 57.7% of its full-time faculty appointed as either professor or associate professor. Pusan has only 21.5% of its faculty appointed in these ranks. It would seem that age and years in the lower ranks of assistant professor and instructor are given undue weight in determining rank. Young faculty members with proven competence in their fields should be promoted to ranks commensurate with their abilities in teaching, patient care, and research without strict adherence to age and time in a previous rank.

Salaries in the colleges of medicine are so low that full-time faculty members cannot in justice to their families devote full time to their college responsibilities. The salary improvement recommended elsewhere in this report is fully warranted in the field of medicine.

The information provided by the colleges indicates that 86.6% of the college faculties are on a full-time basis. Actually, however, only the colleges at Pusan and Kyungpuk even approach a full-time basis. One solution to this problem would be to pay additional salaries to those full-time members of staff who agree to give up the private practice of medicine and devote full time to college teaching and research. In general, these presumed full-time members of staff practice in private clinics and hospitals after 5 o'clock. Inasmuch as a major part of their income needed to support their families comes from this private practice, their desire to continue is fully understandable. This problem is further complicated by a common practice of referring patients seen in the attached hospital to private clinics. Obviously such referrals reduce the number of patients available for teaching and research and adversely affect hospital finances by reason of the

resultant low bed occupancy. If full-time members of staff were granted the privilege of private practice in the attached hospitals and remitted a percentage of the fees collected for the use of hospital facilities, this problem of full-time service would be well on the way to solution, provided full-time staff members at the same time were required to discontinue outside private practice.

The teaching loads of the medical faculties are all relatively high except for Chonnam, where the average hours per full time equivalent is 8.3. At Pusan, with an average of 16.9 hours, it is urgent that more faculty members be authorized to lessen the teaching load. Both at Pusan and Chonnam the professors and associate professors carry too great a percentage of the hours. No modern medical college can economically utilize only full-time faculty members; the use of part-time, non-salaried, competent practitioners in the community in teaching clinical medicine is a common practice in the United States. With a fair number of practicing physicians in Korea having had foreign study it seems that colleges should utilize their talents through appointment to the clinical faculty. The opportunity to teach, to keep abreast of medical advances, and to have university affiliation should be, in general, a satisfactory reward and compensation should not be required.

A remarkable amount of research has been accomplished in recent years by the faculties. All have demonstrated a keen interest in research. Much equipment has been furnished the colleges by UNKRA, ICA, China Medical Board and other groups. Financial support of research is limited; the Korean government and its agencies and other Korean sources should begin to support the faculties in this vital program if Korean medicine is to keep pace with modern medicine.

The Survey Group recommends that:

1. Faculty strength be increased to at least 70 positions at Chonnam, Kyungpuk and Pusan if the present enrollment continues.
2. Advanced studies abroad be provided to insure that at least one member of each department has had this advantage of seeing and learning modern teaching methods; approximately 20 man years would be needed.
3. Faculty promotions be made commensurate with the members' demonstrated abilities in teaching, patient care and research without strict adherence to age and time in rank.

4. Faculty salaries be increased.
5. Full-time faculty members be prohibited from practicing medicine in private clinics and hospitals.
6. Clinical department faculty members be permitted the private practice of medicine in the attached hospitals.
7. Colleges utilize the clinical appointment to increase the teaching faculty size without cost to the colleges.
8. Leaders in Korean medicine seek out and encourage medical research financial support, both governmental and private.

Teaching Methods. In the culture of Korea the relationship between teacher and student is akin to that between master and disciple, i.e., the master's pronouncements are indisputable. This tradition was reinforced during the years of Japanese domination because Japanese medicine was influenced by the German "geheimrat" philosophy. The professor is "on a pedestal" where he remains in the picture as the final arbiter of truth, with the relegation of the student to the role of passive, unquestioning listener.

As a consequence, teaching methods have overwhelmingly utilized the lecture and demonstration. The students have had little or no opportunity for practical training. Many reasons have been offered why these methods continue to predominate among the faculties.

If the medical student is to learn fundamental principles applicable to the whole body of medical knowledge, establish habits of reasoned and critical judgment of evidence and experience and develop an ability to use these principles and judgments wisely in solving problems of health and disease, he cannot continue in a passive role. He must be given responsibility in real, day-to-day problems of health and disease. In acquiring basic professional knowledge and establishing essential habits, practical laboratory and clinical experience is paramount.

The clinical teaching of medicine by using the patient in hospitals and in the out-patient clinics as a practical experience for the student is urgently needed in Korean medical colleges. In the United States standards require 10 hospital beds for every student in an entering class; thus, a class of 100 should have at least 1000 beds available for its teaching laboratory. In Korean national medical colleges the ratio varies from 4 beds per student to a 1:1 ratio. Compounding this deficiency is the fact that

less than 50% of these beds are occupied. This situation requires immediate affiliation with acceptable private and governmental hospitals to increase the number of beds available for use in teaching. It also demands greater and more efficient use of out-patient clinics for teaching.

The lack of textbooks and reference material in the Korean language is a major handicap. Until such time as these are available, the principal sources of instructional and research material will be in the English language. This being so, students need to become more proficient in English.

Customs of the Koreans dictate that the professor examine the patient and that the student observe. It is against custom to perform necropsies on the dead. Realizing that customs are deeply rooted and slowly changed, it is realistic to predict that medicine in Korea cannot and will not advance any faster than such customs change. Modern scientific medicine is based on the scientific method in which hypotheses developed from basic facts through inductive processes are tested by experiment or treatment. If the treatment fails and the patient dies, the necropsy demonstrates the cause of death which may indicate an error in judgment on the part of the physician. The physician, if a true scientist, will acknowledge his mistake and attempt to point out other methods by which life could have been sustained. Medicine in Korea today does not have the opportunity for such study; it must have.

Audio-visual techniques in teaching have been adopted by most faculties; movies, slides, flip charts, and blackboards are in common use.

Small group teaching is not used as much as it should be. More seminars and discussion groups of small size permitting student participation are needed.

The Survey Group recommends that:

1. Use of the lecture method of teaching be decreased.
2. Laboratory and clinical clerkship hours be increased, permitting student participation in the exercises.
3. Greater use of materials in English be utilized until texts in Korean are available.

4. The faculties and leaders in medicine in Korea earnestly endeavor to change those customs that prevent the scientific practice of medicine.
5. Audio-visual educational methods be continued and improved.
6. Small group discussions and experimentations be utilized to provide student participation.
7. Affiliation with governmental and private hospitals be sought to provide additional patients for teaching.

Curricula and Course Offerings. The curricula offered by the national university colleges of medicine are fairly standard. One college operates on a quarter basis rather than on a semester basis and hence appears to have a larger number of course offerings. The essential basic sciences are offered in the traditional manner. Courses in the clinical fields are fragmented among the sub-specialty fields of internal medicine and surgery.

A common practice is to fragmentize instruction by scheduling courses over the entire year, in spite of the fact that many of them could be taught more effectively if concentrated in only one semester. Such concentration would also accomplish a reduction in the student course load.

The clinical clerkship should be scheduled to permit assignment for longer periods of time to the major fields. The practice of spending one week on a major service such as pediatrics or surgery does not allow the faculty the opportunity to know the student, teach basic principles of the discipline, or determine if the student has any competence in his work. A one-month assignment to a service without interruption is considered the minimum period essential for good teaching and learning opportunities.

No medical college offers elective courses. All class time is fully scheduled. The students need free time in which to pursue their interests in elective activities, i.e., extra case studies, research, special courses, library reading.

The Survey Group recommends that:

1. Fragmentation of courses be corrected.
2. Clinical clerkships be scheduled permitting a minimum time of one month on each major service.

3. Fragmentation in major services such as internal medicine and surgery be reduced.
4. Free time be scheduled to permit students to pursue elective activities.
5. Elective courses be offered.

Class Sizes. The ideal medical college class size is 75 students with a maximum of 100, including repeaters, auditors, and other non-regular students. A class of 40 is considered to be the smallest class size commensurate with sound economical operation of a medical college. The actual class size should be governed by the available faculty, physical facilities, teaching equipment and clinical material (patients) in each institution.

Due to methods of financing higher education in Korea, administrators admit that large student bodies are sought to provide tuition and fee income to aid in meeting operating costs.

Many subjects offered in medical colleges utilizing lectures and movies can be presented effectively to an entire class. However, laboratory exercises in which the student should participate necessarily must be limited to 4 or 6 students in each group. Likewise, seminars and group discussions can be best conducted in groups of 10 to 15.

Clinical subjects offered by lecture with case presentations can be given to an entire class. Out-patient clinics, bedside teaching, laboratory procedures, and surgical procedures in the operating room should be limited to 4 or 8 students per group.

The Survey Group recommends that:

1. Entering medical college classes be limited to 75 students at all national colleges except Seoul, which college can accept 100. These figures are satisfactory limits only if faculty and facilities are improved as recommended.
2. Small groups of 4 to 8 students be assigned to clinical experiences and laboratory exercises to encourage student participation.

Libraries. Although real advances have been made in the provision of larger, improved and better located quarters for medical libraries, the fact that no provision has been made in the budget for the purchase of reference books and journals, nor for the training and employment of trained medical librarians causes apprehension for the future. The contributions of the China Medical Board to each college and ICA assistance to Seoul have prevented medicine from being isolated from the world literature.

Utilization of medical libraries varies considerably. Some have "open stacks" and others keep all books and journals in padlocked cases. The use of the library facilities by students appears very limited in some colleges.

The Dewey decimal system is being introduced in medical libraries.

The employment of trained librarians and a formal system of accessioning, issuing and returning books and periodicals would greatly improve the functioning of these libraries. A registration of all users, both staff and students, would provide some index of library use.

The Survey Group recommends that:

1. Library facilities be "opened" to students and faculty alike.
2. Trained librarians be hired by each college.
3. Assistance be sought, if necessary, to train librarians in the course offered at Yonsei University.
4. Each college make provision in its budget for the purchase of at least a portion of needed books and journals.

Equipment. This study of the medical colleges revealed many critical shortages of laboratory equipment essential for student teaching. Equipment on hand was often poor in quality or in need of repair. In fact, it was obvious that some laboratories offered very little laboratory work to the students despite adequate room and work tables. Supplies and reagents for student experimentation were scarce.

Microscopes, essential instruments in teaching medicine, were in short supply at all schools; the same instruments were being used for several different courses. At one college the microscopes did not have oil immersion lenses for study of bacteriology so the class used one of the two scopes used by the faculty in their research. Stethoscopes, ophthalmoscopes and otoscopes are not available for student use.

Despite the inadequacies in student laboratory equipment all colleges were able to show much research equipment obtained by various means for faculty use.

The Survey Group recommends that:

1. Needed student laboratory equipment rather than research equipment be given priority in any aid program.
2. Medical colleges actively seek support to provide teaching laboratories with adequate equipment and supplies for student use.

Buildings. The building facilities at the Kyungpuk National University College of Medicine are reasonably adequate. With some additional ICA assistance the buildings at Seoul will also be adequate. The construction of a new kitchen and laundry for the hospital and the provision for offices, classrooms, and laboratories for the School of Public Health are the immediate needs at Seoul.

At Kyungpuk National University the locked wards of the psychiatric service are wooden and are not fireproof. A new water tank and tower is needed.

The situation regarding medical college buildings is most critical at Pusan National University. Here the hospital, limited to 90 beds, is an old wooden building expensive to maintain and use. The out-patient building is a permanent building, as is the new classroom and library building, financed by a gift from a private citizen. The basic science departments are housed in an old wooden building formerly part of the city hospital. A new hospital building providing 350 to 400 beds together with a nurses' dormitory and classrooms is essential.

A new hospital of similar size is required at Chonnam National University where a new out-patient clinic building has just been completed.

At all colleges student housing, recreational and cafeteria facilities are needed. Student locker facilities and lavatories should be provided.

Maintenance of buildings is markedly lacking at all colleges. Buildings less than ten years old at Chonnam have deteriorated badly and without prompt repair will not be usable in another five years.

In any new construction well studied plans should be made to insure functional location of all departments and laboratories to gain maximal use of space and interrelationship of departments so essential to modern medicine.

In all colleges utilities are inadequate. The lack of heating is a severe handicap, making hospitals and laboratories unusable during the winter months. This is a very expensive waste of facilities. Electricity and hot and cold water need to be provided also.

The Survey Group recommends that:

1. Support be sought to construct new hospitals at Pusan and Chonnam.
2. New kitchen and laundry facilities be built at Seoul.
3. New fireproof psychiatric wards and a new water tank and tower be constructed at Kyungpuk.
4. Offices, classrooms and laboratories be provided for the School of Public Health at Seoul.
5. Student housing, recreational and cafeteria facilities be planned for all colleges.
6. Steps be taken to improve maintenance of buildings.
7. Utilities be provided for the colleges the year around.
8. New construction be carefully planned for functional use.

Graduate Education

Graduate and post-graduate medical education requires strengthening in the national universities. Only recognized scientists and physicians should be sponsors of graduate students.

The number of graduate students is often too large as judged by the faculty work load and the clinical opportunities available in the attached hospitals. Many unauthorized graduate students pursue study with the professor's permission, thus further diluting the teaching resources available to undergraduate and authorized graduate students. No post-graduate medical education is made available through the universities. Medical societies, however, do provide limited opportunities through scientific meetings. The College of Medicine at Seoul National University is interested in a post-graduate center which would permit a sharing with physicians in Korea of the training benefits accruing to its faculty under ICA sponsorship. In addition, such a center should make use of recognized scientists from other colleges, thus insuring an inter-university exchange of ideas, information and skills and a cooperation of faculties that heretofore has not existed.

The professional organizations, Korean Medical Association, Korean Hospital Association, and the Medical Schools' Deans Committee, should begin studies and surveys to establish accreditation of hospital programs for internships and residencies. The Minister of Education and the Minister of Health and Social Affairs need not actively participate in this accreditation but they should recognize and support the standards and the approvals of the professional units engaged in this upgrading of medical education. Clearly, in view of the present lack of practical clinical training in the medical colleges, an internship properly designed to give the new physician more responsibility in dealing with the patients is an essential need.

The armed forces of the Republic of Korea induct 85% of physically qualified male medical graduates each year. The Kim Plan provides for deferment of about 10% of the top-ranking graduates to serve internships and residencies. However, the remainder of the graduates enter a three to five-year tour of duty in the armed forces. In general, the military hospitals visited do not offer an acceptable experience in modern medicine for these young physicians, for they do not have career medical officers qualified to carry out such a continuing medical education program as internships and residencies, and they do lack adequate physical facilities and equipment.

The Survey Group recommends that:

1. Graduate medical education in the national universities be upgraded by permitting only recognized scientists to sponsor graduate students, and by limiting strictly the number of students in accord with the faculty and clinical experiences available.
2. A center for continuation study be established at Seoul National University and that medical refresher courses be offered to physicians to advise them of advances in medicine. Cooperation between the faculties of all medical colleges in Korea in presenting courses should provide needed cross-fertilization of ideas among the ablest of the profession.
3. The internship program be rigidly controlled by professional societies by granting approval only to hospitals that provide an acceptable training program.
4. Since a great majority of graduates enter the armed forces for a three to five-year period, professional societies insist on improving the standard of military medicine and hospitals to provide the needed continuation of each physician's medical education. This would have an added advantage of improving medical care of the soldiers, who are entitled to the best which can be offered.

Paramedical Personnel Training

The practice of scientific medicine requires the teamwork of many individuals. In Korea no training programs for technically trained persons in the medical field exist.

The Survey Group recommends that:

Seoul National University, as a needed public service and as rapidly as resources permit, provide courses, not degree programs, for the training of:

- a. Medical technicians
- b. X-ray technicians
- c. Physical therapists

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- d. Occupational therapists
- e. Medical social workers
- f. Medical record librarians.

Major Needs in Medicine in Order of Priority

1. More university hospital patients for clinical teaching and research purposes at lower per diem costs (1) by retaining hospital income, (2) by providing at least 50% free beds, and (3) by allowing full-time faculty private practice of medicine in attached hospitals.
2. Improvement of staff salaries.
3. Redefinition of full-time service.
4. Change in term, responsibility, and authority of superintendents of attached hospitals.
5. Provision of more patients in out-patient clinics and hospitals for teaching and research purposes through affiliation with private and non-university hospitals.
6. Construction of 350 to 400 bed hospitals together with nurses' dormitories and classrooms at Pusan and Chonnam National Universities.
7. Increase of faculty positions at Pusan, Kyungpuk and Chonnam National Universities.
8. Strengthening faculties through appointment of foreign trained Korean physicians and through participant training--approximately 20 man years--in basic sciences and clinical departments.
9. Increased library budgets to provide for trained librarians and for more books and uninterrupted receipt of professional journals.
10. Construction of new kitchen and laundry at Seoul National University Attached Hospital.
11. Installation of unit record system together with standard nomenclature of diagnosis and treatment.

12. Optimal regular class sizes of 75 with maximum of 100 including repeaters, auditors and other irregulars.
13. Revision of curriculum to eliminate fragmentation of courses and to establish lecture, laboratory ratios of one to three in the first two years and one to four in the last two years.
14. Clinical department faculty time assignments of one-third, teaching, one-third, patient care and one-third, research, exclusive of administrative committee assignments and basic science faculty assignments of one-half to teaching and one-half to research.
15. Provision of more equipment and supplies in student laboratories.
16. Improved utilization of laboratories and attached hospitals through provision of heat.
17. Establishment of a continuation study center at Seoul National University to offer refresher courses to practicing physicians.
18. Limitation of the number of graduate students in the health sciences as follows: Seoul, 100; Kyungpuk, 70; Pusan, 70; and Chonnam, 70.

Nursing Education

The survey included the School of Nursing of Seoul National University--a four-year program--and the Technical High Schools of Nursing at Pusan, Kyungpuk, and Chonnam National Universities--three-year programs.

Requirements for Graduates and Training Institutions

Three collegiate schools of nursing--two at private universities and one at Seoul National University--are accredited as units of universities and there are 22 approved technical high schools of nursing. Five additional schools are asking for accreditation. The total enrollment of these schools is 2,688 students. Data published in 1958 indicate that 3,602 nurses have registration certificates from the Minister of Health and Social Affairs. This number represents 1.6 nurses per 10,000 population.

The nursing profession has been gaining in popularity among Korean women in recent years but continues to lack the status and recognition accorded it in Western culture. Nursing duties are limited because of deeply rooted customs observed in most hospitals. Family members of patients usually reside in the hospital with the patient and render the personal care required. The low-level, non-scientific training program of the technical high schools and the immaturity of the graduates does not inspire the confidence of either the patient or the physician.

The trend in Korea is to upgrade nursing education. The three collegiate nursing programs are new and it is envisioned that these graduates will, following graduate work, assume positions of leadership and direction in the other nursing schools of the nation. They will bring training and experience founded on sound basic scientific principles to nursing education. The modern advances in medicine now taking place in Korea demand this.

Currently the number of graduates from all the schools is meeting the demand for nurses. When hospitals and the medical profession adopt more modern medical practices, the demand will exceed the supply. It is, therefore, reasonable to anticipate an expansion of this nursing program in the future.

The Survey Group recommends that:

1. The three collegiate nursing programs continue but no additional degree programs be accredited in other universities until the demand for more nurses with advanced and professional training is clearly indicated.
2. The other schools of nursing continue without present expansion.

Organization

The School of Nursing at Seoul National University is headed by a Director who is directly responsible to the Dean of the College of Medicine. The technical high schools of nursing at the other national universities are supervised by the dean of the college of medicine or by a member of the medical college staff designated by him.

The School of Nursing at Seoul National University, being a collegiate program, is a general responsibility of the Chief of the Division of Higher Education in the Ministry of Education,

whereas the Director of Technical Training of that Ministry is responsible for the high school program. The Ministry of Health and Social Affairs is responsible for approving the clinical nursing programs of all schools. The Ministry of Home Affairs has responsibility through provincial channels for providing food, uniforms and small monthly stipends to the students in the technical high schools.

Inter-institutional relationships are good primarily by reason of the activities of the Korean Nurses Association. Although the need for close cooperation may not be great, it is noted that students of outlying schools do obtain specialized nursing experience in hospitals located in cities where national university nursing schools are operating. University and other hospital nursing programs do not appear to conflict in any way with one another.

The Survey Group recommends that:

1. Full responsibility for nursing education be vested in the Ministry of Education.
2. Each national university school of nursing be headed by a director trained in nursing education and responsible to the dean of the college of medicine.

Preparation of Students

Admission to the collegiate degree program of nursing at Seoul National University is limited to graduates of high schools who pass the university entrance examination. Inasmuch as the graduates of this program must provide nursing leadership, it is essential that applicants be the most capable available. The entrance examination could well be supplemented by appropriate aptitude and vocational interest tests.

Admission to the non-collegiate technical high schools of nursing is limited to applicants between the ages of 17 and 24 who have completed work through the 9th grade and who pass a competitive examination. Some of these technical high schools now require that applicants be high school graduates. This is a desirable trend and should be encouraged. However, in view of the prestige attached to a degree, it is quite possible that these technical high schools, in an effort to attract applicants, will wish to establish degree programs. Additional degree programs are not now needed and in the future should not be established except in those schools of nursing which are parts of universities.

The Survey Group recommends that:

1. Admission procedures to the collegiate program be supplemented by appropriate aptitude and vocational interest tests.
2. Graduation from a high school be a requirement of admission to technical high school courses as rapidly as it is possible to do so without adverse effect on the required number of nursing applicants.

Students

An entering class of 50 is now authorized for the collegiate program in Seoul National University. Less than this number applied this year. There should be promotion to insure an entering class of this size to meet the need for graduates from the collegiate level program. In the light of available staff, facilities, and opportunities for practical training, no increase in this authorized limit is presently indicated.

The schools of nursing at the other national universities are authorized to admit 30 students. The size of staff, the available facilities and the opportunities for practical training at these universities do not as yet warrant an increase in the authorization for entering classes.

The Survey Group recommends that:

Present authorized enrollments in the nursing education programs at national universities be continued at existing levels.

Academic Staff, Program and Facilities

Staff. The only authorized position in the School of Nursing at Seoul National University is that of the Director. Four nurses, however, are on leave enrolled in graduate courses in the United States. These nurses will not return to duty until 1961. If the standard of instruction is to be maintained, substitutes need to be provided. Even with the return of nurses from study abroad the staff of the school will be too small. An undergraduate program of instruction for 200, together with a graduate course normally requires a staff of 18 or 20. It should be kept in mind that the curriculum of a nursing school embraces nursing education, nursing arts, nursing administration and the specialties of medical, surgical,

pediatric, obstetrical, public health and psychiatric nursing. It is neither educationally sound nor feasible to expect the nursing staff of the attached hospital to carry major responsibilities for nursing instruction.

Each of the present three-year nursing education programs in the other national universities, involving approximately 90 students but no graduate programs, should have five full-time members in addition to a director. These staff members should be graduates of a collegiate program with specialized training in one or more areas of nursing. Until high school graduation is required for admission to these programs, an additional qualified staff member should be responsible for instruction in general education courses.

The Survey Group recommends that:

1. All faculty members in collegiate nursing programs be college graduates.
2. Until present staff members studying abroad return, assistance through temporary appointments be given to the faculty of Seoul National University School of Nursing.
3. The staff of the Seoul National University School of Nursing, for present enrollment authorizations, be comprised of 18 to 20 members.
4. The staffs in the other university schools of nursing, for authorized enrollment limits of 90, consist of a director and five members.
5. Until high school graduation is required for admission to the technical high schools of nursing, a qualified staff member be made available for instruction in general education.

Teaching Methods

Lectures and demonstrations are the common teaching methods in the schools of nursing. Although well demonstrated and practiced in the laboratories, the nursing arts can best be taught using patients in the hospitals. There is limited use of audio-visual materials. This phase of instruction could well be expanded. One of the principal difficulties in instruction arises from the lack of texts in Korean and the inability of students to read English texts. The Korean Nurses Association has recognized this problem and is

supporting efforts to prepare basic text material in Korean. With high school graduation as a requirement for admission students should be better prepared to use English reference materials.

Instruction to nurses in medical sciences is given by members of staff of the colleges of medicine. The instruction, however, is not well adapted and generally is of the same type as that given to medical students. Although the nursing students are not equipped to understand this level of teaching, they do pass rather detailed examinations on this lecture material through sheer memory.

The Survey Group recommends that:

1. Practical experience both in laboratories and in hospital wards with patients be increased wherever possible.
2. The use of audio-visual materials be expanded.
3. Basic texts in Korean be prepared and made available.
4. Medical faculty members be urged and assisted to present materials concerning diseases at a level that nursing students may comprehend.

Curricular and Course Offerings. At Seoul National University the nursing curriculum contains many liberal arts subjects. The subjects are presently taught by faculty members of the College of Liberal Arts and Sciences. Inasmuch as the School of Nursing is on the main campus of the university, it would be desirable to permit student nurses to register in regular liberal arts courses without the payment of any additional tuition. This would be in accordance with one of the basic objectives of a university. It would also be desirable to allow and encourage students to make wider use of library materials, participate in student activities and register for courses of interest outside of the nursing field.

The fragmentation of instruction which is noted in the medical field and is also present in the nursing field should be corrected. This means, for example, that instead of scheduling a two-hour course each week throughout the year, the course should be consolidated into one four-hour course and completed in one semester.

General education courses should be continued in the technical high schools of nursing but only until high school graduation is made a requirement for admission to these schools.

The Survey Group recommends that:

1. The liberal arts courses in the nursing program at Seoul National University be taught in the College of Liberal Arts and Sciences.
2. Students be encouraged and be given access to courses in other colleges of interest to them outside of the nursing field.
3. The schedule for nurses allow free time for the use of the library facilities and for participation in general activities.
4. The fragmentation of instruction be corrected.

Class Sizes. The present class sizes of 50 students at Seoul National University and 30 each in the schools at Pusan, Kyungpuk and Chonnam National Universities appear to be satisfactory. Lectures and demonstrations can readily be given to classes of this number. Of course, adequate provision of practical experience does necessitate smaller groups in certain practice and demonstration areas.

The Survey Group recommends that:

1. The present class sizes in the nursing programs of national universities be continued.
2. The classes be broken into smaller sections for practical training and experience in certain areas.

Libraries and Equipment. The library materials for instruction in nursing are extremely limited. Few texts are available in Korean and students are not as yet able with facility to make use of English texts. Encouragement should be given to translations into Korean. In the meantime, the libraries should acquire both texts and journals in English. This should prove to be a good investment for it is quite possible that if high school graduation becomes a requirement students will be better prepared in English and use it with more facility.

Principally through ICA assistance the equipment of the School of Nursing at Seoul National University is good. The schools in the other universities are also reasonably well equipped in the nursing arts laboratories. There is need, however, for additional audio-visual equipment in all of the schools.

The Survey Group recommends that:

1. Encouragement be given to translation of English texts into Korean.
2. In the meantime, more textbooks and journals in English be provided in nursing libraries.
3. Additional audio-visual equipment be provided in all schools.

Buildings. The School of Nursing at Seoul National University has a new education building and a new dormitory is now being constructed. The school at Chonnam National University also has new education buildings, but the dormitory is an old wooden building unsuitable for occupancy. The classrooms, laboratories and dormitory at Pusan University are old frame buildings. The classrooms and laboratories at Kyungpuk are also inadequate, but the dormitory, though old, is satisfactory.

The Survey Group recommends that:

1. New nursing classrooms, laboratories and dormitory facilities be provided as a part of the new hospital recommended for the Pusan National University College of Medicine.
2. New dormitory facilities be constructed as part of the new hospital recommended for Chonnam National University College of Medicine.
3. New nursing classrooms and laboratories be constructed at Kyungpuk National University.

Graduate Education

The School of Nursing at Seoul National University was organized on a collegiate level in January, 1959. There are still many problems to be solved in the upgrading of the course to a collegiate level. As soon as these problems are solved and the course is on a satisfactory collegiate basis, consideration should be given to the establishment of a graduate program. If nursing is to assume its proper role in the health sciences, graduate training for leadership becomes an essential. Korea should have its own program of graduate instruction in nursing. One such graduate program should be adequate to meet the needs of the nation.

There is also real need for post-graduate training short courses in nursing. Several hospitals in Korea are offering such courses. The school at Seoul National University should make its contribution to this phase of nursing education as soon as its faculty is adequate in size to do so. If the proposed continuation center, elsewhere recommended, is established at Seoul National University this facility should offer an ideal place for these short courses.

The Survey Group recommends that:

1. A graduate nursing program be established at Seoul National University but only after the newly organized undergraduate college level program is functioning satisfactorily.
2. Post-graduate short courses in nursing be offered by the faculty at Seoul National University to help the nursing profession keep abreast of new nursing techniques and methods.

Major Needs in Nursing in Order of Priority

1. Continuance of the Seoul National University collegiate nursing program and the technical high schools of nursing at Chonnam, Kyungpuk and Pusan National Universities.
2. Requirement of high school graduation for admission to the technical high schools of nursing.
3. Strengthening of faculties in all schools of nursing.
4. Increased library budgets to provide more reference materials and textbooks, particularly in the Korean language.
5. Construction of classroom and laboratory buildings for the Schools of Nursing at Kyungpuk and Pusan National Universities.
6. Construction of student dormitories for the Schools of Nursing at Chonnam and Pusan National Universities.
7. Provision of audio-visual equipment for all national university schools of nursing.

Dentistry

Requirements for Graduates and Training Institutions

The College of Dentistry at Seoul National University is the only college of dentistry in Korea. In 1959 Chonnam National University began a two-year pre-dental course with plans to admit the first class to a dental program in 1961. No private universities offer dentistry.

Of the 1190 dentists in Korea, one-half received their degrees before 1946. The others are graduated from Seoul National University. Until dental care goes beyond restorative dentistry and includes preventive, which it should, the graduation of 100 dentists annually appears to be adequate. Unfortunately, as in medicine, the distribution of dentists in the nation leaves many rural areas with little or no dental care.

The proposed dental course at Chonnam has little prospect of succeeding. Ten months from now the first freshman class is scheduled to start and there is no authorization from the Minister of Education, no building, no staff, and no teaching equipment. The basic science departments of the College of Medicine do not have enough equipment to offer a good program to the medical students and consequently cannot be expected to assume responsibility for teaching dental students. Since the two-year pre-dental course has been in effect, the enrollment in the College of Dentistry at Seoul has been very low, for the reason that few applicants had completed the prerequisites. This being so, it is entirely feasible for those students at Chonnam who successfully complete their pre-dental course to apply for admission to Seoul National University.

The Survey Group recommends that:

1. The Seoul National University College of Dentistry be the only nationally supported dental college.
2. The students who successfully complete the pre-dental course at Chonnam National University be considered for admission to the College of Dentistry of Seoul National University.

Organization

The governmental controls, both central and local, follow the same pattern as observed at all national universities. The dean of the College of Dentistry is directly responsible to the president of the university.

The fact that dental students need basic medical science courses necessitates cooperation with the College of Medicine. This cooperation has been excellent. The basic science staff of the College of Medicine has provided the needed instruction and the medical laboratories have been used. This should be highly commended and it does typify an important advantage of a university.

The Survey Group recommends that:

The effective joint utilization of staff and physical facilities by the Colleges of Medicine and Dentistry be continued.

Preparation of Students

The most striking change over the past two years has been the introduction of the two-year pre-dental requirement. This is an important step towards improving the quality of students who enter dentistry and it relieves the dental faculty from the necessity of providing general introductory courses in the various sciences. Under present procedures, however, the pre-dental course plan has one important defect. The College of Dentistry surrenders to the College of Liberal Arts and Sciences the right to determine who shall be admitted to dentistry.

The Survey Group recommends that:

1. The two-year pre-dental course continue as a prerequisite for admission.
2. The College of Dentistry be authorized to select the students to be admitted from those applicants who have successfully completed the pre-dental course. Aptitude tests, performance records, and interviews might well be used in this selection.

Students

Dental College enrollment in the four classes at Seoul National University in 1959-60 totals 340: seniors, 120; juniors, 100; sophomores, 100; and freshmen, 20. The small freshman class reflects the result of the change in prerequisite requirements; it is temporary and within four years the class size should be normal again.

The class size is currently too large for the staff and physical facilities available in this college. The nation, however, needs annually the 100 graduates and staff and facility improvements to this end are herein recommended.

Student attrition is said to be 1% to 3% per annum per class. Readmission after academic failure is common.

Military service is required of all Korean males and the Kim Plan provides deferment for 11 graduates each year for completion of internships before entering the service. Adequate opportunities for residencies and graduate work are available.

Scholarships chiefly from governmental funds are available for from 35 to 45 students each year.

Academic Staff, Program and Facilities

Staff. The 41 staff members of this college include 14 who hold authorized positions, the remainder being "special faculty." All have either the Bachelor of Dental Surgery degree from Seoul National University or the Doctor of Dental Surgery degree from an American college. Twelve members have had or are now engaged in advanced study abroad. The faculty is comprised predominantly of young men, all full-time members being 45 years old or younger. Full-time faculty teaching loads are excessive; the 21 full-time staff members teach an average of 14 hours per week. This heavy allotment of time to teaching and the need to supplement income through private practice contribute to a rather meager faculty research output.

Teaching Methods. The chief method of instruction has been the didactic lecture with minor emphasis on practical and laboratory teaching methods. The faculty is aware of this weakness and have studied curricula of 32 American programs as a basis for revising their curriculum. The new program, however, continues to offer too many lectures and too little time for practical training. Audio-visual methods of teaching should be utilized much more. With a larger faculty small groups of students should be scheduled for discussions and seminars.

The Survey Group recommends that:

The curriculum continue to be modified to permit laboratory and practical training as staff size and facilities increase.

Curricula and Course Offerings. The entire dental field taught at this college is telescoped into six major fields: basic science, oral pathology, pedodontics, oral surgery, operative dentistry and prosthetics. There is a special need for peridontia and pedodontics both in teaching and research; these areas should be developed and strengthened in terms of staff and teaching time.

Senior students get practical experience in the clinic where 66 operating spaces are available. With classes of 100 this means that each dental graduate has only 180 hours of practical clinical experience out of the assigned 690 hours. At the University of Minnesota, by comparison, there are 820 hours of practical work as juniors and 800 as seniors.

The Survey Group recommends that:

1. Peridontia and pedodontics be strengthened through additional staff and more instructional time in the curriculum.
2. Practical clinical training equivalent in time to that devoted to lectures be provided in both the junior and senior years.

Class Size. Lectures can be presented to classes of 100 students; laboratory exercises should be designed for groups of 4 to 6 students; effective discussion groups and seminars should be limited to 15 to 25 students; and clinical experience is limited to only one student per operating space. The class size of 100 students is ideal provided the facilities can accommodate this large a class.

The Survey Group recommends that:

The class size in dentistry be 100 and that scheduling provide for the smaller numbers required for laboratory, discussion, and clinical experiences.

Library. The library is comprised of approximately 6,500 books and five American and four Korean dental journals. The librarian has had only limited training and has not been able to organize the library service satisfactorily. These library resources are seriously inadequate for the needs of the college. The new dental building should provide more library working and reading space than the present facility offers.

The Survey Group recommends that:

1. Support for improving the resources of the dental library be sought, particularly continuing support for current dental publications.
2. A trained librarian be employed to organize and supervise the library.

Equipment. Equipment essential to teaching is seriously deficient. The number of operating units available limits the assignment of students for clinical experience. The shortage of laboratory supplies and equipment is also critical.

Research equipment for the faculty and graduate students must be obtained if the faculty is to be productive in research.

The Survey Group recommends that:

Support for procuring both teaching and research equipment be sought.

Building. The present building, although in unusually good condition structurally, needs extensive renovations if it is to continue as the college building. It is reported that there is someone interested in purchasing the building. If this is so it might be advantageous to sell and to construct or renovate an existing building on or adjacent to the Seoul National University medical campus. A new building should provide approximately twice the floor area now available.

The Survey Group recommends that:

The University consider the sale of the present dental building and the relocation of dental facilities on or adjacent to the medical campus.

Graduate Education

The graduate program should continue in dentistry and will be greatly strengthened by new facilities in a new building and by closer cooperation with the basic medical science staff afforded by a relocation of the college. Internships and residencies should be developed to provide more clinical experience for graduates.

Paradental Personnel Training

The Survey Group recommends that:

Training courses for dental hygienists and dental mechanics be designed and offered by the College of Dentistry.

There is a clear need for these kinds of technically trained assistants in the practice of dentistry.

Major Needs in Dentistry in Order of Priority

1. Abandonment of plans for a dental college at Chonnam National University and consideration of pre-dental students for admission to Seoul National University.
2. Authorization of the faculty of the College of Dentistry to select students to be admitted.
3. Increased student clinical training.
4. Sale of present facilities and relocation near the College of Medicine.
5. Library and equipment additions.
6. Training courses for dental hygienists and dental mechanics.

Pharmacy

Requirements for Graduates and Training Institutions

The Minister of Education has authorized only one college of pharmacy in the national universities and that is at Seoul National University. The request for authority to establish such a college at Pusan National University was not granted but the university administration has continued to offer the course in the Department of Pharmacy. There are 13 colleges of pharmacy in Korea. The course is popular and the 1,000 graduates each year exceed the demand. Because of the complex nature of pharmacy in Korea, embracing study of both Oriental or herbal and modern, scientific medicines, it seems urgent that regulations be reviewed and revised to evolve new legal methods for better control of the educational, licensing, manufacturing and selling practices in this field.

With 13 pharmacy colleges in existence in Korea there is need for only one College of Pharmacy in the national university system.

The Survey Group recommends that:

1. All courses of pharmacy in national universities be discontinued except at the College of Pharmacy, Seoul National University.
2. Regulations be reviewed and revised to evolve new legal methods for better control of educational, licensing, manufacturing and selling practices in the pharmacy field.

Organization

As in other colleges, the dean reports directly to the university president and through him to the Minister of Education. The appointment of the dean and faculty members follows the general pattern of faculty approval, presidential approval, approval by the Minister of Education, and final approval by the President of the Republic of Korea.

The departmentalization of the college is adequate with nine departments, each headed by a full-time professor. The dean and the faculty have been given freedom to make needed changes and to adopt new policies designed to improve pharmacy instruction. The relationship with the College of Medicine, particularly with the basic science departments, could be made more effective in research projects of mutual interest.

Preparation of Students

Entrance examinations are the same for the College of Pharmacy as for the whole university with the exception that a special examination in general chemistry is required. The dean has expressed interest in a five-year program in pharmacy which would call for one year of liberal arts education before the student begins the pharmacy course. Two years in the College of Liberal Arts and Sciences would be preferable. Even though graduates from this college are apparently recognized as superior to those of the other pharmacy colleges, further upgrading and better qualified graduates are needed.

The Survey Group recommends that:

At least a one-year, but preferably a two-year liberal arts course be required of all students before they enter the pharmacy college course.

Students

Present enrollment totals 440 (368 men and 72 women) with 109 freshmen, 104 sophomores, 101 juniors, and 126 seniors. Attrition is reported to be 6% but failed students are usually re-admitted.

Advisory and counselling services are meager. Approximately 60 scholarships are awarded annually.

The Survey Group recommends that:

The College of Pharmacy, Seoul National University, continue its present class size of approximately 100 students provided adequate teaching facilities as later recommended are provided.

Academic Staff, Program and Facilities

Staff. All members of the faculty have the Bachelor of Pharmacy degree; one has a Ph.D.; and six have a Master's degree. The table of organization provides 8 professors, 3 associate professors, 3 assistant professors, 5 instructors, 4 visiting instructors and 5 assistants. The lecture sections usually include the whole class (approximately 110 students) and laboratory sections about half. In analytical chemistry, however, the laboratory sections have only 25-30 students.

The faculty is acutely aware of the lack of advanced training and hopes that more staff members may have opportunities to study abroad for Master's and Doctor's degrees.

The Survey Group recommends that:

The staff be encouraged to seek opportunities for advanced study abroad.

Teaching Methods. The freshman curriculum includes 24 hours of lecture and 12 hours of laboratory work each week. The sophomores have 21 hours of lecture and 16 hours of laboratory whereas the juniors have 18 hours of lecture and 24 hours of laboratory. Twenty-one hours of lecture and 16 hours of laboratory are provided the seniors. It is evident that a disproportionate amount of time is given to lectures. Discussion groups and seminars of small numbers of students properly led by a faculty member should be developed.

The Survey Group recommends that:

1. Less emphasis be placed on the lecture method of teaching and more practical laboratory sessions be scheduled.
2. The faculty develop small group discussions and seminars for the students.

Curriculum and Course Offerings. The college has a curriculum committee of five members which meets once a month. The curricula of 20 American pharmacy schools have been studied and extensive revisions of the course of study are in prospect. It is hoped that duplications and certain course offerings, too general in nature, will be eliminated. Too few elective courses are offered the seniors.

The Survey Group recommends that:

The curriculum be revised to provide more intensive coverage of the field of pharmacy, utilizing newer teaching methods, particularly small group teaching in laboratories and seminars.

Library. The pharmacy library is located in the Seoul National University library. Practically all of the 3,859 items in the library are out-of-date German or Japanese volumes. The faculty has access to the open stacks but students do not.

The Survey Group recommends that:

Funds be sought to obtain recent and current pharmaceutical publications.

Equipment. Equipment for research and teaching is very inadequate. For example, only 40 microscopes are available for the entire student body and 50% of these are in need of repair. The same is true of the 50 available chemical balances.

The Survey Group recommends that:

Funds be sought for needed research and teaching equipment.

Buildings. Present facilities for pharmacy are very meager and are certainly not adequate. A new building under construction will provide 600 square pyungs for faculty and graduate student offices and laboratories. Three temporary buildings house two laboratories and one lecture room, all totally inadequate. The college utilizes one lecture hall in the medical school.

It is anticipated that support organization funds will be available for an undergraduate building this year. Plans should be carefully studied to insure that this new proposed building will function with the faculty building to promote closer faculty-student working relationships. The library is to be housed in the new faculty building.

The Survey Group recommends that:

The proposed new undergraduate instructional building be built as a functional addition to the faculty building to promote faculty-student relationships.

Graduate Instruction

The college is authorized to grant Master's and Doctor's degrees. It is very doubtful whether any doctorate program should be offered at this time. In view of the heavy undergraduate teaching load and the limited graduate experience of the faculty it would seem desirable to limit graduate instruction to the Master's degree level.

The Survey Group recommends that:

The graduate program be limited to the Master's degree level until the faculty can be strengthened in both numbers and qualifications.

Major Needs in Pharmacy in Order of Priority

1. Limitation of pharmacy education in the national universities to the Seoul National University College of Pharmacy.
2. Requirement of at least a one-year and preferably a two-year pre-pharmacy course for admission to the College of Pharmacy.
3. Strengthening of the faculty by advanced graduate study abroad.
4. Provision of additional classroom and laboratory space.
5. Procurement of recent and current pharmaceutical publications.

School of Public Health

In January, 1959, the School of Public Health was established at Seoul National University and admitted the first class to its graduate program on April 1, 1959.

Requirements for graduates and Training Institutions

A major problem in Korea still to be solved is the introduction of the principles of public health into the daily lives of the citizens. Tuberculosis and leprosy are major diseases that can be controlled if adequate measures are undertaken. Immunization programs, with the exception of smallpox vaccination, do not exist. Maternal and child health programs have just been introduced in a few areas. Less than one-half of one percent of the national budget is allocated to medical care and public health.

The need for well trained personnel in public health is critical. Because of the meager expenditures in the field, only a limited number of positions are available for graduates. The Minister of Health and Social Affairs proposes a rapid expansion of rural health centers to total 181 within a few years. Personnel must be available to operate these centers. A National Institute for Public Health Training (NIPHT) is offering in-service training for technicians and public health personnel but cannot be expected to conduct an intensive, basic course in public health. In view of the limited support given public health by the government, the School of Public Health at Seoul National University should be able to supply the needs of the nation for some time to come.

The Survey Group recommends that:

The School of Public Health of Seoul National University continue to be the only nationally supported school of public health.

Organization

The School of Public Health does not have a director trained in its field. The dean of the College of Medicine along with other important duties is assuming this responsibility.

There is obviously need for close cooperation and coordination between the School and the National Institute for Public Health Training which provides public health in-service training. The existing

avenue of communication through the President of the University, the Minister of Education, and the Minister of Health and Social Affairs is slow, cumbersome and generally not adequate to obviate the possibility of duplication and conflict of objectives.

The Survey Group recommends that:

1. The School of Public Health have a director who has completed graduate work in the field and that he be directly responsible to the dean of the College of Medicine.
2. A formal committee be appointed by the Ministries of Education and of Health and Social Affairs to act in an advisory capacity to the School and the Institute.
3. The National Institute for Public Health Training restrict its functions to in-service training and the School of Public Health to the academic and research objectives for which it was established.

Preparation of Students

This is a graduate level course. All student applicants must have a Bachelor degree and successfully pass a competitive examination. It should continue as a Master degree program and when the faculty improvement appears adequate, a study of the facilities for offering a doctorate program should be undertaken.

Students

The authorized class size is 40 students. This is a large number for the existing staff but we are assured plans are firm to increase the staff within a few years. As a matter of fact, the school was opened in April, 1959, without adequate full-time staff, classrooms, library materials, and other needed facilities. Despite these handicaps, the faculty of the Department of Preventive Medicine of the College of Medicine and many visiting lecturers from the health fields have developed a reasonable curriculum.

Seventeen students were admitted in the first class but only 11 were graduated, several failing to present an acceptable thesis. In April, 1960, 41 students were admitted, 9 being members of the armed forces. Many applicants were rejected. No scholarships are available.

Academic Staff, Program and Facilities

Staff. The table of organization authorizes two staff positions for the school. Members of the Department of Preventive Medicine give freely of their time to the school. Thirty-five guest lecturers have been appointed. Apparently there has been excellent unofficial cooperation between the school's faculty and other public health personnel in Korea in providing teaching assistance. Four members of the Department of Preventive Medicine and the one School of Public Health staff member have had advanced training abroad. Three temporary instructors of the school are currently studying in the United States and another will begin his work there this fall. Authority for regular positions for them should be obtained.

The Survey Group recommends that:

A total of six staff positions be authorized for the School of Public Health.

Teaching Methods. The teaching methods of the school include lectures and frequent seminars with student presentation and discussions. Through field trips to health centers and through inspections of school health programs, and of water purification, sewage disposal, and many other community health units, the students are given an excellent understanding of the duties of public health personnel. In preparation of their theses, students may engage in laboratory work, in intensive field studies, and in library study. Regular laboratory exercises are scheduled for all students. Audio-visual educational methods are used effectively.

Curricula and Course Offerings. The curriculum was designed by the faculty with the assistance of USOM personnel in the Division of Health and Sanitation. The basic course class hours per week required of all students are 28 during the first semester and 12 during the second. Nine elective courses ranging from 2 to 9 hours a week are offered to fulfill the credit requirements. The curriculum appears to be satisfactory to meet the objectives of the school.

Class Sizes. The authorized class size of 40 students is satisfactory. With improved physical facilities and adequate staff as herein recommended this number of students can be taught effectively.

Library. The College of Medicine library has only a limited number of books and journals pertaining to public health. However, with the aid of ICA, more materials in this field are being acquired.

Equipment. Through ICA assistance the Department of Preventive Medicine has obtained teaching and research equipment. Since the faculty of this department is necessarily involved in the School of Public Health program it has been possible to provide essential equipment for teaching in the school. It is hoped this relationship will continue.

The Survey Group recommends that:

Support be sought to obtain teaching equipment for this school when it occupies its own building and that where possible, equipment of the Department of Preventive Medicine be shared.

Buildings. Currently the school is being conducted in the Department of Preventive Medicine utilizing specially arranged seminar rooms and the department's regular laboratory facilities. Plans have been made to rehabilitate an unused building adjacent to the basic science building where the School of Public Health can have its offices, classrooms and laboratories.

The Survey Group recommends that:

The planned rehabilitation of the existing unused building be undertaken to provide needed physical facilities for the School of Public Health.

Major Needs in Public Health in Order of Priority

1. Organization changes and particularly the appointment of a director and a committee for coordination with the National Institute for Public Health Training.
2. Staff increase.
3. Library and equipment additions.
4. Improved physical facilities.

HUMANITIES AND SOCIAL SCIENCES

General Statement

The post-election demonstrations in Korea highlight a world-wide scene which reflects on five continents the baffling complexity of social and political problems and underlines the need for more effective education in the humanities-social science field. Contemporary events in Africa, Asia, Europe and the Americas give positive indication that advances in the mensurative sciences must be underlaid and accompanied by the development of corresponding competence in those sciences which help to bring about an understanding of man in his relation to his fellow men.

The free world's struggle for survival against the continuing menace of Russian Communism is as much a battle of values as it is a race for the control of space and atomic superiority.

Never in history has it been more important for the young person to know the culture, language and ideological foundations of his own country and to understand the democratic way of life. Many of the underlying convictions and insights which prepare the individual to be an effective participant in this value conflict are developed in the humanities-social science field. It will take a strong program in the national universities of Korea to match the intense zeal of the contemporary youth on the Russian side.

In today's world the truly educated person needs a broad background of understanding and competence in order to be effective in the complex role of the modern citizen. Training in the social sciences and humanities provides an essential part of the necessary foundation for living in the twentieth century.

The challenge in these fields is as great as it is in the physical sciences. To mention a few areas: the population explosion, civil rights, the emerging role of the newly independent peoples in world affairs, the growing inadequacy of traditional political and governmental organization, juvenile delinquency, divorce and the changing status of the home and family, the cold war and international tension, and inter-racial clashes and conflicts.

Every person needs to develop a philosophy of life, aesthetic and ethical appreciations and the ability to make discriminating judgments in many fields. For the individual

going into a specialized career in medicine or engineering, the humanities-social science courses offer a bulwark in breadth against the narrow depth of over-specialization.

In Korea, by building a few strong colleges in each university through the aid program and allowing others to remain relatively weak through lack of assistance, it is possible to develop inequalities that are inimical to good morale and university-wide cooperative effort. The "have-not colleges," as they call themselves, lose status, spirit and initiative.

This may contribute to the narrow compartmentalization which we are convinced is inimical to good education. It may accentuate that spirit of college separation which handicaps the development of Korean institutions. A broadened university approach in the assistance program would be logical and preferable.

No effective attack has yet been made on the problem of developing democratic institutions in a country long dominated by a dictatorial occupying power. The complete solution is not yet in sight but one phase of the answer must certainly be related to the development of a strengthened program in the humanities and social sciences.

The Colleges of Liberal Arts and Sciences

Each one of the five national universities has a College of Liberal Arts and Sciences. In only a limited sense have these colleges been able to meet their academic responsibilities as the strong central shaft of their respective institutions. To varying degrees they present a diversified program of general education and pre-professional work available to all students plus opportunities for advanced study to those who wish to specialize in one or more of their constituent departments.

Table 1 indicates that the Colleges of Liberal Arts and Sciences enroll well over 5000 students or approximately one-fifth of the total student body in the national universities of Korea. Full-time faculty members number 310. Of these 17 hold the Doctorate, 53 have a Master's degree, 202 are trained at the baccalaureate level and 38 have no earned degree.

In three of the universities the College of Liberal Arts and Sciences is responsible for the program of general education on a university-wide basis, one has limited responsibility in this area and one has no responsibility outside of its own college. It is the judgment of the Survey Group that the College

of Liberal Arts and Sciences should administer the general education program in all universities. These colleges thus face the obligation of teaching the values, goals and purposes of Korean society in the humanities-social science field and of developing through experience in the science or technical field a basis for the skills and insights necessary to move toward realization of those goals in today's industrialized world. In order to meet this challenge in addition to providing opportunities for advanced departmental specialization a basic strengthening process must go on in each of these colleges.

Colleges of Liberal Arts and Sciences

Table 1

<u>University</u>	<u>Depts.</u>	<u>Full-time Staff</u>	<u>Doctorate F.T.S.</u>	<u>Master F.T.S.</u>	<u>Bachelor F.T.S.</u>	<u>Part-time Staff</u>	<u>Enrollment 1959</u>	<u>Quota 1959</u>	<u>Graduates</u>	<u>Gen. Educ.*</u>
Seoul	22	103	10	17	74	115	1907	2120	317	2
Kyungpuk	8	52	4	15	31	12	687	860	153	1
Pusan	12	58	1	7	38	21	1374	1800	197	1
Chonnam	8	58	2	9	25	8	892	1160	61	1
Chonpuk	7	39	-	5	34	12	337	820	54	3
Totals	57	310	17	53	202	168	5197	6760	782	

- *Gen. Educ. 1. University-wide responsibility
 2. Limited responsibility in other colleges
 3. No responsibility in other colleges

The Colleges of Law

Colleges of Law in the five national universities in Korea offer a four-year program which enrolls nearly 3500 students and produces over 500 graduates per year. According to the best available information there are approximately 1100 individuals actively engaged in the legal profession in Korea. This includes in round numbers about 400 practicing lawyers, 300 judges, 200 prosecutors and 200 judge advocates. Public and independent educational institutions produced more than 1800 law graduates in 1959 according to figures released by the Ministry of Justice. The discrepancy between the number trained and the number needed in the profession is quite obvious. Allowing for 10% turnover each year the colleges are producing 18 times as many graduates as the field of work can absorb.

Since the number who are allowed to practice law is limited to those who are passed in the higher civil service examination an automatic control is in effect and the supply of legally trained personnel is thus kept somewhat in phase with demand. Of the several thousand applicants in 1959 only 60 passed the examination and consequently only this number were admitted to the profession. As a result the great majority of students who graduate from the law colleges and are able to secure employment go into teaching, banking, clerical work or lower level governmental positions where their legal preparation is of secondary or minor importance. The Survey Group is of the opinion that the number of institutions giving legal training per se should be drastically reduced. Test construction and content for admission to the profession should be carefully reviewed.

Full-time staff members in the five law colleges affiliated with the national universities number 81. Two of these have a Doctor's degree, 13 have the Master's and 62 are listed in the bachelor's category. Four have no degree. Part-time staff numbers 67.

The Colleges of Law

Table 2

<u>University</u>	<u>Depts.</u>	<u>Full-time Staff</u>	<u>Doctorate F.T.S.</u>	<u>Master F.T.S.</u>	<u>Bachelor F.T.S.</u>	<u>Part-time Staff</u>	<u>Enrollment 1959</u>	<u>Quota 1959</u>	<u>Graduates 1959</u>
Seoul	2	21	2	3	16	42	1215	1200	207
Kyungpuk	3	14	-	3	11	5	665	620	114
Pusan	2	14	-	4	9	18	551	640	52
Chonnam	1	14	-	3	8	1	574	320	80
Chonpuk	2	18	-	-	18	1	451	660	55
Totals	10	81	2	13	62	67	3456	3440	508

The Colleges of Commerce

Colleges of Commerce properly oriented and related in a realistic way to the business and industrial life of the country could be an important factor in the recovery and economic development of Korea. Unfortunately the traditional "detached from life" theoretical emphasis continues to exist in most of these colleges. There is, however, an encouraging desire to change direction on the part of a few leaders. Participant training and the services of a few effective American advisors can pay big dividends at this time when there seems to be a definite nucleus of personnel interested in developing a more practical and realistic institutional program.

In 1959 the four Colleges of Commerce related to the national universities in Korea had a total enrollment slightly over 3000 students and a graduating class of 379. Of a full-time staff of 68, one had a Doctor's degree, nine had been trained at the Master's level, 53 had not gone beyond the baccalaureate classification and five had no degree. Part-time staff totaled 29.

In terms of organization three of the four national Colleges of Commerce have departments of economics. This is in line with prevailing practice in Korea. Many American institutions place economics in the college of liberal arts and sciences.

Colleges of Commerce

Table 3

<u>University</u>	<u>Depts.</u>	<u>Full-time Staff</u>	<u>Doctorate F.T.S.</u>	<u>Master F.T.S.</u>	<u>Bachelor F.T.S.</u>	<u>Part-time Staff</u>	<u>Enrollment 1959</u>	<u>Quota 1959</u>	<u>Graduates 1959</u>
Seoul	3	22	1	5	14	26	1236	1280	202
Kyungpuk	-	-	-	-	-	-	-	-	-
Pusan	2	11	-	2	6	2	638	644	64
Chonnam	3	18	-	1	17	-	724	550	79
Chonpuk	2	17	-	1	16	1	455	645	34
Totals	10	68	1	9	53	29	3053	3119	379

The Colleges of Fine Arts and Music

Despite the rich cultural heritage and undoubted talent of the Korean people in music and art only one of the public institutions of higher education currently offers advanced training in these fields. Seoul National University has a College of Fine Arts located on the central campus and a College of Music which occupies a site adjacent to the National Medical Center. While some incidental work is noted in the other national institutions no organized departmental programs have been developed. Offerings among the independent and private universities and colleges are similarly limited.

At Seoul National University anyone who has had contact with the ongoing life of the institution over a period of years cannot fail to be impressed with the fine educational experiences young people are receiving in music and fine arts.

Student work will compare favorably with the best to be seen or heard in American institutions. All evidence indicates that the two colleges are well organized and effectively administered.

Graduate Schools

Because the attention of government officials and university administrators during the post-liberation period has been largely centered on the attempt to develop sound programs at the baccalaureate level, the progress of graduate school education in Korea has been relatively slow. At the present time an organizational framework exists and degrees are being given in all five of the national universities but the operation is in an experimental stage lacking in stability and stature. Accelerated progress is possible and will be essential during the next ten years as the undergraduate academic foundation becomes more firm and the demand for highly trained governmental, industrial and professional personnel in this developing country becomes more evident.

Proposals

General

The Survey Group recommends that:

1. The faculty of these colleges be upgraded through the provision of approximately 60 man years of participant training and 18 man years of specialist advisor assistance.

This faculty improvement program should recognize the importance in a developing country of such natural sciences as mathematics, physics, chemistry, biology and geology and of such social sciences as economics, psychology, sociology, political science and geography. The distribution of participant man years among the universities should recognize the heavier responsibilities of Seoul National University in the graduate field and the later proposed Center for Continuation Study. A suggested distribution would be Seoul National University, 20, and each other national university, 10. In this connection the possibility of advanced graduate work at Seoul National University should be considered and every effort should be made to utilize the teaching talent of qualified scholars who may from time to time be returning from other countries following graduate training, whether privately financed or underwritten by one of the various assistance programs now in operation. To the extent feasible specialist advisors should serve all national universities.

2. Central library resources for humanities and social sciences be improved by the provision of more adequate annual budgets for library materials.

A suggested total amount for all universities is 140 million hwan. A basic weakness in the humanities-social science field in all institutions is the lack of central library resources required to support even the most modest instructional programs. In some colleges the only library books are those held in faculty offices where they are often not readily available for student use. Reference materials in central libraries are largely out of date and in very limited supply. The provision of a realistic annual support budget is essential if improved library resources are to be made available. Distribution among the national universities should recognize the larger over-all enrollment and the heavier responsibilities of Seoul National University in the graduate field. A suggested distribution is 40 million hwan to Seoul National University and 25 million hwan to each other national university.

3. The number of student preparations be reduced by developing more four-credit courses and eliminating two-credit ones.

Many courses in the national universities are given on a two-hour-per-week, two-credit basis. In practice the two hours are often consolidated into one double period so that each class meets only once a week. The result is often very limited student-teacher contact and a highly fragmented pupil course load consisting of ten or more different preparations.

4. Graduation requirements be reduced from 160 to 140 credits and ultimately to 120 credits.

Students are currently required to carry a course load of 22 to 24 hours per week. This leaves little time for collateral reading, individual project work or creative personal development.

5. A greater variety of instructional methods be developed through an in-service training program emphasizing wider use of class discussions, individual reports, term papers, panel and seminar techniques, case-study projects and audio-visual aids.

The usual instructional method in Korea is lecture-dictation-memorization in which the professor stands aloof as the unchallenged source of knowledge. The single requirement for academic success is repetition on the final examination of the professor's lecture material. The result is that libraries and reference materials are not well utilized and there is little opportunity for development of critical thinking, self-expression, independent judgment, or the ability to define problems, assemble evidence and draw logical conclusions. These and other related skills are essential as a basis for effective participation in a democratic society.

6. An in-service training program in classroom evaluation and testing be developed with the assistance of an advisor-specialist for one year and the provision of two to four years of participant training.

Evidence indicates that evaluation of student achievement and progress is based almost entirely on one essay-type test administered at the end of the semester. Evaluation should be based on a wider range of growth experiences and examinations should be more frequent, more skillfully prepared, and better balanced between essay- and objective-type items.

7. The academic climate be sharpened by:
 - a. A review of grades at the end of each semester.
 - b. Probation of students who fail to maintain a stipulated grade point ratio established on a graduated and rising scale from freshman to senior year.
 - c. Dismissal of students probationed more than twice.
 - d. Enforcement of attendance regulations.
 - e. Limitation of authorized semester class absences for reasons other than illness to the number of class meetings per week.

Available evidence indicates that class attendance of students in national universities is irregular. Present regulations permit students to be absent one-third of the time without penalty. Since two-credit classes generally meet only once a week in a double session, even those students who conform with established regulations may meet their instructors 12 or fewer times during the semester. The result may well be a serious interruption of the instructional sequence which is not conducive to efficient learning.

8. The student's secondary school record be given equal weight with his entrance examination score in determining admission to national universities.

Admission to the national universities depends almost solely on the attainment of a satisfactory entrance examination score. Due to this policy a top-ranking high school student may be denied university entrance because of a spuriously low

test performance. With secondary education generally improving and becoming more stabilized in Korea, the national universities can rely with greater confidence on student records from the best high schools in the nation.

9. Teaching staffs be so constituted that not more than one-third of the total staff members are part-time.

Because part-time staff members are teaching in several places they have fragmented responsibility, divided loyalties and limited time for the guidance and counselling of students.

10. Full-time staff members be expected to devote 40 hours per week to university service, a substantial portion of which should be on the campus.

There is a definite tendency for full-time teachers to spend only part time in their colleges and to neglect teaching duties at certain times during the school year. Through administrative action or through an aroused professional conscience on the part of the staff, classes should be organized and taught each day from the beginning of the school year to the end and full-time faculty members should be engaged in teaching or other college service for the equivalent of a full-time day.

11. A concerted effort be made to identify and utilize the teaching ability of qualified scholars who return from abroad following advanced study whether privately financed or underwritten by assistance programs.

Inasmuch as one of the major problems in Korean national universities is lack of fully competent and qualified staff, particularly in certain fields, it is in the national interest to utilize effectively the personnel resources available.

12. Every effort be made to recruit full-time staff personnel with divergent backgrounds of training and experience.

Many of the present faculty members in national universities are graduates of the institution

in which they teach. Aside from the possible narrowness of instructional viewpoint and constriction of academic environment which may result, this situation tends to develop factionalism within the faculty which handicaps the objective consideration of issues concerning the colleges involved.

13. Graduates of colleges in the humanities-social science fields who decide to enter elementary or secondary teaching be required to take an extra year of work beyond the Bachelor's degree in a college of education to be eligible for certification.

Graduates of colleges in the humanities-social sciences fields frequently embark on a public school teaching career with inadequate professional training. Basic preparation in child growth and development, psychology of learning, education philosophy and sociology, and other foundational fields together with even a minimum of supervised practice teaching experience cannot be accomplished satisfactorily in less than an additional year of concentrated study.

14. The Central Laboratory land and facilities of the Ministry of Commerce and Industry be secured--as recommended elsewhere--for relocation of removed units to the main campus.

This acquisition would be a first step in the desired objective of consolidating all colleges with the exception of engineering, agriculture and veterinary medicine on the main campus. This consolidation will permit colleges to serve one another; will render unnecessary the duplication of administrative, academic and business services; will reduce operating costs; and generally will be beneficial to both students and staff.

Colleges of Liberal Arts and Sciences

The Survey Group recommends that:

1. The Liberal Arts and Sciences Colleges in each national university be responsible for administering the over-all program of general education with the specific understanding that this important teaching function be performed by fully qualified university staff members.

Too frequently the colleges of liberal arts and sciences have not provided foundation programs of general education which are satisfactory and acceptable to the faculties of other colleges. It seems apparent that some departments in these colleges attach little importance to this phase of their academic responsibility. Since general education consists of those common learnings which every student needs in order to gain effective maturity, lack of strength in this phase of the instructional program weakens the whole academic structure. The colleges of liberal arts and sciences should give this program high priority among the many service functions which they administer for students in other colleges of the university. All colleges of the university, however, should jointly determine education requirements through a university General Education Committee exercising a coordinating and policy-making function.

2. The Chung Rang Ri campus of Seoul National University College of Liberal Arts and Sciences be abandoned and needed laboratory and classroom facilities be provided on the main and engineering campuses in accordance with recommendations made elsewhere.

The dispersal of the staff and facilities of the college between two locations limits the effective use of personnel, prevents the common utilization of equipment, handicaps coordination and integration of programs, complicates administration and results in scheduling and transportation difficulties.

3. The course of study in the Seoul National University College of Liberal Arts and Sciences be expanded to include anthropology as a field of study.

The study of man and his environmental and social relationships is important for a developing nation dependent for future growth on the achievement of effective relationships with other peoples and nations.

4. The courses of study in the Liberal Arts and Sciences Colleges at Chonnam, Chonbuk, Kyungbuk and Pusan National Universities be expanded to include psychology, anthropology, music and fine arts.

If liberal arts and sciences colleges are to successfully assume modern roles as university service units, they must offer comprehensive programs in the humanities-social science fields.

Colleges of Law

The Survey Group recommends that:

1. Chonnam National University strengthen its program of law and that Chonpuk National University discontinue its program in this field.

Placement experience, anticipated manpower needs and currently available staff and resources do not justify strong and comprehensive programs at both of these neighboring institutions. Rather, in support of their own desire for academic eminence, they should adopt the principle of sharing responsibility for the total instructional program. It is suggested elsewhere that Chonpuk National University specialize similarly in commerce.

2. The College of Law at Chonnam University strengthen its program by giving increasing emphasis to instruction in the field of public administration, by reducing class sizes, and by improving staff salaries.

Evidence indicates that graduates of law colleges find relatively few placement opportunities in the legal profession and must often take positions in which legal training is of secondary or minor importance. Since many law graduates plan to go into government service, their university training should prepare them directly and specifically for this type of career. Efforts to individualize instruction and to attract the most competent available staff are essential to an increasingly important and effective instructional program designed to serve both of the Cholla provinces.

3. The Colleges of Law at Seoul and Pusan National Universities adopt five-year programs consisting of two years of pre-legal class work followed by three years of professional training.

The present curriculum in the legal field is not comprehensive enough to prepare young people for effective professional service in a nation characterized by increasingly complicated social and economic conditions.

4. Consideration be given to the desirability of limiting eligibility for bar examinations to graduates of approved law colleges.

In general, this should have the effect of reducing the number who take the examination and of admitting for practice only those who have successfully completed the approved formal professional training.

Colleges of Commerce

The Survey Group recommends that:

1. Chonpuk National University strengthen its program in commerce and that Chonnam National University discontinue instruction in this field and dispose of the Mokpo property now used for this purpose.

Elsewhere the recommendation is made that Chonpuk discontinue its law program and that Chonnam strengthen its program in this field. With limited resources it is not possible to offer high level instruction in all fields. However, if universities will develop specialties, as suggested here, even with the same resources improved instruction as well as improved research can be supported. The Cholla provinces would be well served by a strong law school at Chonnam and a strong commerce school at Chonpuk.

2. The Colleges of Commerce of Seoul and Pusan National Universities establish departments of business administration.

Business and industry are developing rapidly in Korea. There is need for good training in all the business management skills. Without these skills domestic markets are endangered and world markets will not open. Seoul and Pusan National Universities should take the lead in offering strong foundation training.

3. The College of Commerce of Seoul National University be moved to the main campus, its present facilities be sold or otherwise disposed of and new facilities be provided.

The separation of this college from other colleges, particularly from the College of Liberal Arts and Sciences, typifies the disadvantages of isolation. Academic and business services are duplicated and the students and staff have limited access to related subject fields, central library facilities and the other common services which make centralized integrated universities strong.

4. The Colleges of Commerce of Seoul and Pusan National Universities be provided with equipment essential to modern instruction and research.

Such equipment as typewriters, adding machines, calculators, tape recorders, duplicating machines and projectors are required for present-day training for business pursuits.

Colleges of Fine Arts and Music

The Survey Group recommends that:

1. The College of Fine Arts of Seoul National University continue its planning of new facilities but that new facilities not be constructed until a more suitable site on or adjacent to the main campus is made available.

The course offerings of music should be reasonably accessible to students enrolled in other colleges. Likewise, music students should have easy access to those of other colleges. The proposed site across from the School of Nursing is attractive but too remote for interchange purposes. A site nearer the present location of the college would serve better the needs of students and staff.

2. The College of Fine Arts of Seoul National University be provided added funds for the purchase of materials and supplies.

This is the only College of Fine Arts in the nation. Its standards are high and its student body is talented. However, many gifted young men and women have had to give up their studies because of financial inability to purchase such essential materials and supplies as paints, brushes, canvases and the like. An added appropriation of 10 million hwan would permit many needy and promising students to continue their studies.

3. The College of Music of Seoul National University be provided with twenty additional practice pianos.

This college is offering excellent instruction. It is, however, handicapped in the instrumental field by a lack of practice pianos. The cost of twenty pianos is estimated to be approximately 15 million hwan.

Graduate Schools

The Survey Group recommends that:

1. The graduate faculty of the universities be composed only of those members of departmental staff who have been individually selected as qualified to give instruction on the graduate level.

Under present plans the assumption is general that all members of staff of college departments are qualified to teach graduate level courses. Instruction beyond the baccalaureate degree will not be of the best until teachers as well as students are specially chosen as qualified.

2. Organized programs of course requirements be developed for advanced degrees and that "exceptional case" doctorates be no longer given.

Although the number of credits are specified and a dissertation is required, no formal patterns of subject matter have been developed for either the Master's or Doctor's degrees. The "exceptional case" doctorate is listed as an earned degree, yet no graduate level courses are a requirement.

3. The graduate schools be given unrestricted authority to select candidates, to administer the programs and to award degrees.

The delegation of this responsibility is essential if degrees granted are to represent rewards for the satisfactory completion of appropriate graduate work. At present the Minister of Education must approve all doctoral candidates and all doctoral degrees, both earned and honorary. Proper standards cannot be maintained and the honor and integrity of these degrees cannot be safeguarded unless this responsibility lies with the graduate faculties.

4. A majority of the membership of the examining committee of any candidate for an advanced degree be from the major field of study of the candidate and that all members, so far as possible, be of the faculty of the graduate school in which he is enrolled.

The decisions of examining committees will be sounder and more equitable if a majority of the committee are capable of appraising the progress of the candidate in his major field of study. While it is preferable to have the candidate examined by staff of his own university it is of more importance that he be examined by staff qualified in his field.

5. Doctoral candidates be allowed to carry 10 hours of class work each semester so that requirements beyond the Master's degree could be met in two years.

The present post-Master's degree minimum is four years and all requirements must be completed within a five-year interval. Setting a two-year minimum may help to attract more full-time students who wish to concentrate on graduate studies and complete them in a shorter period. The maximum time limit of five years should be retained for students who must work a longer time for completion.

6. Graduate instruction at Chonnam, Chonbuk and Kyungbuk National Universities be limited at this time to the Master's degree program.

Graduate instruction in these institutions is improving but more competent staffs and expanded research programs and facilities should be available before graduate work beyond the Master's level is offered.

7. Graduate instruction at Pusan National University be discontinued until more adequately trained staff and improved facilities are available.

Graduate instruction at this university is not well organized, adequately staffed or sufficiently equipped. The president is temporarily acting as the graduate school dean and the Council of Deans has assumed the functions of the usual graduate school committee. A relatively small number of students are taking course work in the two-year Master's program. There are no students for the doctoral degree. The shortage of qualified staff and facilities is very noticeable. Until conditions improve graduate instruction should not be offered. When they have been improved sufficiently, instruction should be limited to the Master's degree program.

8. A Center for Continuation Study be established on the Seoul National University campus to provide in-service training and personnel development opportunities for various types of business, professional and governmental workers.

Because of the emergency resulting from the repatriation of thousands of Japanese at the end of World War II and the dislocation of populations and loss of life resulting from the Communist invasion, a great many Koreans hold positions in business, industry, government and education for which they are not adequately prepared. As a result, there is great need for in-service training and personnel development programs. A center for continuation study should provide institute, seminar and short course training opportunities in a variety of fields. Establishment of such a center would require provision of space for offices, conference rooms and board and lodging facilities. The provision of six man years of participant training and two man years of specialist-advisor services would be required for the preparation and orientation of the Korean personnel needed to operate such a center.

Major Needs in Order of Priority

1. Improvement of instructional programs and procedures.
 - A. Five-year programs--Colleges of Law at Seoul and Pusan National Universities.
 - B. Departments of Business Administration in the Colleges of Commerce at Seoul and Pusan National Universities.
 - C. Student course load changes involving:
 - (1) Development of more four-credit courses and elimination of two-credit ones.
 - (2) Reduction of graduation credit requirements from 160 to 140, and ultimately to 120.
 - D. Greater variety of instructional methods emphasizing wider use of class discussion, individual reports, term papers, panel and seminar techniques, case study projects and audio-visual aids
 - E. Development of an in-service training program in classroom evaluation and testing.
 - F. Sharpening of the academic climate through:
 - (1) Review of grades at the end of each semester.
 - (2) Probation of students who fail to maintain a stipulated grade point ratio.
 - (3) Dismissal of students probationed more than twice.
 - (4) Enforcement of attendance regulations.
 - (5) Limitation of authorized semester absences for reasons other than illness to the number of class meetings per week
 - G. Enhancement of faculty service by:
 - (1) Establishment of a two-to-one ratio of full-time staff to part-time staff.
 - (2) Definition of full-time service to comprise 40 hours per week of institutional service with a substantial portion on the campus.

H. Strengthening of the Colleges of Liberal Arts and assignment to them of the responsibility for university general education programs.

I. Graduate School changes involving:

- (1) Limitation of faculty to departmental staff individually selected as qualified.
- (2) Organization of programs of course requirements for advanced degrees and elimination of "exceptional case" doctorates.
- (3) Autonomy of administration.
- (4) Majority of examining committee in field of candidate.
- (5) Allowing doctoral candidates to meet course requirements beyond Master's degrees in two years.
- (6) Limitation of graduate instruction at Chonnam, Chonbuk and Kyungpuk National Universities to the Master's degree program and discontinuance for the present of graduate work at Pusan National University.

J. Establishment of a center for continuation study at Seoul National University.

2. Staff improvement program--participants and advisors.
3. Library service improvements in all national universities.
4. Land, building and equipment changes:
 - A. Acquisition of Central Laboratory land and facilities of Ministry of Commerce and Industry.
 - B. Movement of Seoul National University College of Commerce to main campus and provision of necessary facilities.

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- C. Sale or trade of Chung Rang Ri campus of Seoul National University and provision of needed laboratory and instructional space for the College of Liberal Arts and Sciences on the main campus.
- D. Sale or other disposal of Mokpo property utilized by Chonnam University College of Commerce and discontinuance of college.
- E. Continuation of planning but relocation of new building for Seoul National University College of Fine Arts.
- F. Securing of necessary equipment for Colleges of Commerce at Seoul and Pusan National Universities.

TEACHER EDUCATION

Introduction

On July 12, 1948, the National Assembly ordained and established the Constitution of the Republic of Korea. Article 16 provides for education as follows:

"All citizens shall be entitled to equal opportunities of education. The attainment of at least an elementary education shall be compulsory and free of cost.

"All educational institutions shall be administered under the supervision of the State and the organization of the educational system shall be determined by law."

Thus by Constitution Korea provided for elementary education and paved the way for free primary schools for all children. The words "at least" reflect the wisdom of the founding fathers in anticipating a higher level of education for all in the future.

The Preamble of the Constitution sets the goals for the Republic which these schools should help to achieve:

"To consolidate national unity through justice, humanity and fraternity:

"To establish democratic institutions eliminating evil social customs of all kinds:

"To afford equal opportunity to every person and to provide for the fullest development of the capacity of each individual in all fields of political, economic, social and cultural life:

"To require each person to discharge his duties and responsibilities:

"To promote the welfare of the people at home and to strive to maintain permanent international peace and thereby to ensure the security, liberty and happiness of ourselves and our posterity eternally."

It is clear that teacher education designed to help achieve these national objectives is a most important responsibility of the government. Nationally supported teacher training is presently

carried on in the 18 high-school level normal schools, 3 teachers colleges and 2 colleges of education located in national universities. All of the 5 national universities are providing limited teacher training in their liberal arts colleges and in some other fields. Many graduates from fine arts, music, commerce and law seek teaching positions. Three of the national universities have no colleges of education and therefore arrange for the professional teacher-training courses in a variety of ways, some of them questionable and inadequate.

In addition to the public teacher-training institutions many private colleges and universities are engaged in teacher education. Two or three of them specialize in the professional preparation of teachers and are providing sound programs. On the other hand, many of the private schools merely flood the teacher market with graduates who have a minimum, if not inadequate, preparation for a career in teaching.

The purpose of the normal schools which are specialized high schools is to train primary school teachers for grades one through six. They offer a three-year curriculum. Graduates of middle schools are admitted to the normal schools by entrance examination.

The teachers colleges have either two or four-year programs, depending on the kind of teachers they are authorized to prepare. The two-year colleges prepare middle school teachers and the four-year teachers colleges prepare high school teachers. Only graduates from high school are permitted to take the examinations for admission to the teachers colleges.

The colleges of education in national universities are authorized to prepare secondary school teachers and teachers for the special fields of physical education, home economics, music and art. Each teacher-training institution has one or more attached schools at the primary, middle or high school level. These are used for student-teaching purposes and are becoming demonstration and experimental centers.

Tables 1 and 2 give enrollment information for nationally supported teacher-training institutions as of September, 1959. Similar information is provided for the attached schools.

Table 1 shows that there was a total of 10,945 students enrolled in the 18 normal schools. They were taught by 367 normal school teachers. At the same time the 14 attached middle schools of the normal schools enrolled 9731 pupils who were taught by 171 middle school teachers. Similarly, there were 17 attached primary schools enrolling 12,549 pupils who were taught by 223 primary teachers.

Table 1. Enrollment in Normal Schools and Attached Schools and Number of Teachers in Each Type*

Name	Number of Students			Number of Teachers		
	Normal School	Attached Middle	Attached Primary	Normal School	Attached Middle	Attached Primary
Andong	660	761	732	22	14	12
Cheju	264			14		
Chinju	603	603	828	23	10	12
Chongju	635	560	631	20	9	12
Chonju	710	795	902	22	14	15
Chunchon	651	610	688	22	10	13
Chungju	326	595	701	12	10	12
Inchon	709	915	624	20	14	12
Kangnung	518	518	573	18	10	12
Kongju	642	341	601	21	7	12
Kunsan	763	762	760	22	15	12
Kwangju	715		792	22		15
Mokpo	469	640	534	18	10	12
Pusan	714		1,228	22		18
Seoul	793	829	1,092	26	14	18
Soonchon	505	475	806	18	10	12
Taegu	689	748	342	23	14	12
Taejon	<u>579</u>	<u>579</u>	<u>715</u>	<u>22</u>	<u>10</u>	<u>12</u>
Total	10,945	9,731	12,549	367	171	223

*All figures as of November, 1959.

Table 2. Enrollment in Teachers Colleges and Colleges of Education in National Universities*

Institution	No. of years in Program	Number of Students				Number of Teachers			
		College	High School	Middle School	Primary School	College	High School	Middle School	Primary School
Kongju Teachers	4	783	547			29	15		
Kyungpuk Univ. Teachers College	4**	1,073	792	918	1,021	51	28	25	17
Kwangju Teachers	2	394		754		21		18	
Pusan Teachers	2	452		797		21		18	
Seoul Univ. Coll. of Education	4**	1,699	1,254	1,198	1,090	56	39	33	26
Total		4,401	2,593	3,667	2,111	178	82	94	43

*All figures as of November, 1959.

**Both these national universities have graduate schools which are attended by a small number of education students.

Table 2 indicates that only 4,401 students were enrolled in nationally supported college level teacher training programs in November, 1959. They were taught by 178 college teachers. The attached schools of these colleges enrolled 2,593 pupils in high schools, 3,667 pupils in middle schools, and 2,111 in primary schools. These attached schools were taught by a total of 219 teachers who may be presumed to give some time to prospective teachers in the teacher training programs.

Teacher Requirements

Primary School

At the present time six years of free elementary school education is mandated for all children by the Constitution of the Republic of Korea. As yet the economy of the country has not reached a level to do this fully. In order to meet this obligation of free and compulsory primary education Korea has built many schools, recruited and trained thousands of teachers and principals, prepared millions of textbooks and other materials in the Korean language, and has established a school system dedicated to providing the "citizenship necessary for the development of a democratic nation and the advancement of prosperity." This has been done in the short period of 15 years since Liberation, even though the rebuilding was interrupted by the Korean War, during which many of the school buildings and their contents were destroyed. Korea is to be highly commended in having done so much about education in such a short time. A part of the expense of elementary education is supported by a special education tax which goes for teachers' salaries.

Over 3,600,000 primary school children are taught by 55,000 teachers in about 4,500 different schools. Latest figures indicate that 96% of children of primary school age now attend school. Almost exclusively these schools are taught by teachers who were prepared in the 18 normal schools or earlier teacher training institutes. When these young and often immature teachers are graduated from the normal schools they begin teaching in the primary schools of Korea. Thus Korea's basic education is given by high-school trained teachers.

It seems clear that the normal schools now produce enough teachers to supply the primary schools. There is some surplus of teachers who do not get jobs. However, as the enrollment of primary school children approaches 100%, more teachers will be

needed. If the standards for teachers in primary schools are raised most of the present teaching staff will have sub-standard qualifications and will need upgrading through in-service programs.

Middle School

Primary school children qualify for admission to the middle school at the end of the 6th grade by taking entrance examinations. In 1959 44% of the primary school graduates entered middle school. Approximately 450,000 middle school children were taught by 9,000 middle school teachers in about 1,000 public and private middle schools. Middle school teachers are required to be college graduates or to have completed the two-year program in a teachers college. If and when middle school education is made compulsory more than twice as many middle school teachers will be needed.

High School

Middle school graduates are admitted to high schools by passing entrance examinations. In 1959 approximately 70% of the middle school graduates entered high schools. A total of 275,000 high school students were taught by 8,750 teachers in 600 public and private high schools. Approximately 2/3 attended public high schools and the other third enrolled in private high schools.

The preparation requirement for high school teachers is college graduation. They are trained in four-year teachers colleges, in the colleges of education of Seoul and Kyungpuk National Universities and in the liberal arts and other colleges of these and other national universities. Many also receive their college education in private universities and colleges.

Teacher Training Institutions

In 1945 at the end of World War II 25,000 Japanese teachers in Korean schools were repatriated. This created the tremendous problem of restaffing the schools. After Liberation the 10 normal schools which were operated during the Japanese occupation were reorganized. Six others were added in 1946, one in 1947 and one more in 1951. In these early days the output from the 18 normal schools hardly met the demand for teachers in the rapid expansion of primary education. At the primary level a temporary one-year teacher training course was set up to prepare high school graduates for teaching. At the same time it was necessary to set up special provision to train

secondary teachers. To do this a teachers college was established at Seoul National University in 1946, now known as the College of Education. The Teachers College at Kyungpuk University was established in 1948. A two-year teachers college was opened at Kongju in the same year. This school was raised to a four-year teachers college in 1954.

The two-year teachers colleges at Kwangju and Pusan were established in 1955 for the purpose of training middle school teachers of art, music, physical education, science, mathematics and home economics. In the mid-fifties three private teachers colleges were started: Ewha University established a four-year teachers college in 1956, Sudo Woman's Teachers College and Seoul Liberal Arts and Science Teachers College, both two-year colleges, were established in 1953 and 1956, respectively.

Another important event in these years when the secondary schools were expanding so rapidly was the establishment of nine secondary school teacher-training institutes. They were attached to colleges of liberal arts and social science. They produced many partially prepared teachers in a short time to the point of fully meeting the demand. These institutes were all closed in 1959.

At the present time it seems clear that the normal schools, teachers colleges and universities are producing an oversupply of teachers in most fields. At last the supply has caught up with the demand for primary school teachers. Some normal school principals have reported that all graduates cannot be placed. This also is true at the teachers colleges and in the universities with colleges of education. It was also reported that many graduates from these institutions do get positions in primary schools even though they have no special training for such work.

In the judgment of the Survey Group the time has come to reduce the number of normal schools by upgrading some of them and by converting the others to comprehensive, vocational or academic high schools. Also, the time is here when major attention should be given to improving the quality of the teacher education programs in all institutions. Korea should not continue producing large numbers of inadequately trained teachers for its public schools.

It is reported that the Ministry of Education is considering seriously the problems involved in making middle school education compulsory for all children. In the future this seems necessary

and desirable to prepare people for a changing economy and for democratic citizenship. If this were done immediately there would be another great demand for middle school teachers, schoolrooms, equipment and supplies that could not be met. It will, of course, take several years of careful planning and preparation to get ready for universal middle school education. Consequently the recommendations in this report emphasize and give first priority to the upgrading of preparation for teachers in primary schools and to the reorganization of teacher education at the collegé level to better prepare teachers and school administrators for all types of schools.

Organization for Teacher Education

Organization at the Ministry of Education Level

Teacher education is a major responsibility of the Republic of Korea. This stems from the fact that the Constitution guarantees primary education to all children. It is not surprising then that the Ministry of Education in this new nation does have a major role in the direction, control and management of teacher education. Responsibility for teacher education resides in the Bureau for Higher Education and in its sections on College Education and Normal Schools.

The Ministry of Education and finally the President of the Republic of Korea are responsible for the appointment of all normal school principals, vice principals and faculty members. The Ministry and President have like responsibility for the appointments of university presidents and college deans. The employment and promotion of professors and instructors are also subject to approval by the Ministry.

The Ministry of Education controls the establishment of subject matter departments in the normal schools and teachers colleges through approval of a table of organization. Table 3 gives data on allotments to each normal school. Similar tables of organization are established for teachers colleges and colleges of education in national universities. This, of course, is true for other colleges and schools as well as those engaged in teacher education.

The curriculum of the normal schools is spelled out in considerable detail by the Ministry of Education. It is broken down into subject areas with recommended time allotments per week. See Table 4 for details. To a lesser degree the Ministry specifies the curriculum of the colleges by establishing quotas for each subject matter department and specifying the number of professors and instructors needed to establish a new department.

Table 3. Number of Teachers Allotted to Each Normal School, by Subject.

	<u>Korean Language</u>	<u>Social Studies</u>	<u>Educa- tion</u>	<u>Mathe- matics</u>	<u>Science</u>	<u>Physical training vocation</u>	<u>Home Economics</u>	<u>Music</u>	<u>Fine Arts</u>	<u>Foreign Language</u>	<u>Total</u>
Andong	3	2	2	3	3	2	2	1	1	3	22
Cheju	2	1	2	2	2	1	1	1	1	1	14
Chinju	3	3	2	3	3	2	2	1	1	3	23
Chongju	3	2	2	3	2	1	2	1	1	3	20
Chonju	3	2	2	3	3	2	2	1	1	3	22
Chunchon	3	2	2	3	3	2	2	1	1	3	22
Chungju	2	1	1	2	1	1	1	1	1	1	12
Inchon	3	2	2	3	2	1	2	1	1	3	20
Kangnung	3	2	2	2	2	1	2	1	1	2	18
Kongju	3	2	2	3	3	1	2	1	1	3	21
Kunsan	3	2	2	3	3	2	2	1	1	3	22
Kwangju	3	2	2	3	3	2	2	1	1	3	22
Mokpo	3	2	2	2	2	1	2	1	1	2	18
Pusan	3	2	2	3	3	2	2	1	1	3	22
Seoul	3	3	3	3	3	2	2	2	2	3	26
Soonchon	3	2	2	2	2	1	2	1	1	2	18
Taegu	3	3	2	3	3	2	2	1	1	3	23
Taejon	3	2	2	3	3	2	2	1	1	3	22
Total	52	37	36	49	46	28	34	19	19	47	367

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Table 4: Normal School Curriculum*

<u>Subjects</u>	<u>Periods Per Week</u>		
	<u>First Year</u>	<u>Second Year</u>	<u>Third Year</u>
National Language	4- 5	3- 5	2- 5
Social Studies	3- 5	3- 4	2- 3
Morality	1	1	1
Education	9-12	9-12	9-12
Practice Teaching			10-12
Philosophy	1- 2	1- 2	1- 2
Mathematics	3- 5	2- 5	2- 5
Science	2- 4	3- 4	2- 3
Gymnastics	2- 4	2- 4	2- 4
Military Training	2- 4	2- 4	2- 4
Vocational Training and Home Economic.	2- 4	2- 4	2- 4
Music	2- 4	2- 4	2- 4
Fine Arts	2- 4	2- 4	2- 4
Foreign Language	4- 5	2- 4	2- 4
Special Activities	<u>3- 5</u>	<u>1- 3</u>	<u>1- 2</u>
Total	34-39	34-39	34-39

*From an article by C. W. Wood in The Educational Forum, Vol. XXIV, No. 1, November 1959. This curriculum is the same as the academic high school curriculum but has two additional subjects, Education and Practice Teaching.

The Ministry of Education exercises control over all fees by setting the maximum amount to be collected for tuition, admission fee and supporting association fees. This is done for the commendatory purpose of protecting the student and his parents from exorbitant charges. The Ministry reviews and revises the amounts each year if necessary.

The Ministry has also defined the amount of space per college student for classrooms and special rooms. There is little opportunity for the colleges of education and teachers colleges to experiment with more economical and functional school and college buildings although it would seem desirable that those concerned with teacher education should study such problems.

It is the judgment of the Survey Group that the amount and kind of Ministry of Education direction and control in teacher education as well as in higher education generally should be changed to give more responsibility to the local institution. Recommendations on this matter are included elsewhere in this report.

Organization at the Local Level for Teacher Education

At the local level the normal schools are administered by the local principal and his assistant. Each normal school has a principal, vice principal and faculty appointed by the President of the Republic of Korea on nomination of the Minister of Education. The dean and faculty of the teachers colleges are similarly appointed.

The provincial governments which are under the Ministry of Home Affairs have responsibility for the appointment, promotion and in-service training of primary and secondary school teachers and principals. The normal schools, teachers colleges and university colleges of education which are under the Ministry of Education prepare these teachers and principals, presumably are well equipped and should be expected to provide any needed in-service training. To insure full cooperation to this end on the provincial level the two Ministries involved should develop a plan which would give formal legal effect to such an arrangement.

The national universities are authorized to establish "college councils" made up of faculty members and citizens for the purpose of dealing with important problems and policies of the local institution. The Survey Group did not discover such councils operating in the normal schools or teachers colleges. There are, of course, organized parent organizations and foundations concerned

with tuition and fees. It would seem appropriate for the teachers colleges as they exist and are established to have "college councils" to deal with local matters and to advise the dean of the college.

The manner of selection of deans and faculty members for colleges is of concern in teacher education. The election by secret ballot of faculty members before appointment by the ROK government is a questionable practice that is dealt with in another part of the Survey Report.

It seems clear that the Ministry of Education has the dominant role in the administration of normal schools, teachers colleges, and universities. The local administrators and college councils, where they exist, seem to have little responsibility and control and are handicapped in exercising educational leadership and statesmanship.

Recommendations

The Survey Group recommends that:

1. The Ministry of Education provide for more local responsibility in the administration of teachers colleges and national university schools of education.

This may require changes in education law and in the rules and regulations of the Ministry of Education. The need is to free administrators and faculties and local college councils to make decisions and develop needed programs. The extent of the freedom accorded them would be guided by the policies laid down by the national Board of Regents, proposed elsewhere.

2. The responsibilities of normal schools and teachers colleges to carry out in-service courses and workshops for teachers in a province be clarified to remove any possible conflict of interest or misunderstanding between the Ministry of Education and the Ministry of Home Affairs.
3. Local college councils be activated in teacher-training institutions to serve as policy boards in advising presidents and deans on local programs within broad national policy.

4. The chief administrative officer of a teachers college, whether such college is independent or is part of a national university, have the title of dean.

Any move to establish presidencies in teachers colleges should be discouraged since, if the recommendations of this survey are accepted, eventually they would become colleges or schools of education in national universities.

Teacher Preparation

Primary School

As mentioned earlier, the preparation of primary teachers is now carried on in 18 specialized high schools known as normal schools. These institutions have served Korea well in supplying the primary schools with teachers having minimum qualifications in an emergency situation. Since primary school education for all is the only education guaranteed by the Constitution of Korea, it is clear that the population generally receives its basic education from teachers who are often immature and who have little professional preparation. The Survey Group agreed with many of Korea's responsible educators, citizens and organizations that this preparation is inadequate for a democratic nation.

Also, there is great need for in-service education programs to upgrade the preparation of primary teachers now teaching in the schools. A small beginning has been made on this problem in some normal schools, teachers colleges and one national university.

The Ministry of Education, in a recent publication titled "Survey of Education in Korea," has defined provisions for in-service education as specified in Article 74 of the Education Law which stipulates:

"School teachers shall devote themselves to national education by always endeavoring to improve their character and quality to be exemplary teachers, enhancing their academic knowledge and pursuing the study of theory and method of teaching."

Middle School

Teachers for the middle schools are now required to have two years of college preparation in a teachers college or be graduates of a college or university. Two-year teachers colleges now operating at Kwangju and Pusan are authorized to prepare middle school teachers only. The graduates of four-year colleges of education often find positions in middle schools and the same is true for some graduates of liberal arts and other colleges.

High School

High school teachers are prepared in three nationally supported four-year colleges at Seoul National University, Kyungpuk National University and Kongju Teachers College. Also, many high school teachers qualify by attending liberal arts and other schools at the national universities and in some private colleges by taking a minimum of professional courses.

The Ministry of Education in order to encourage students to seek a career in teaching forgives the payment of a national tuition fee and provides many students a monthly allowance. The student, in turn, is obligated to teach for a period not shorter than the duration of his training.

The Ministry of Education has established training requirements for the principal's certificate and the assistant principal's certificate. At the present time steps are being taken to establish a program for this training at Seoul National University.

At present there is no adequate accreditation program for establishing the conditions and standards to govern the establishment of colleges for teacher education or the conditions under which new curricula for teacher training may be offered. As a consequence almost all colleges and many schools and colleges within universities consider teacher education their right and prerogative. This results in questionable standards of teacher education and inadequately trained people in many instances. Furthermore, it floods the market with more people than can possibly find positions in the schools. In the judgment of the Survey Group proper accreditation safeguards should be established to assure the preparation of good teachers.

Underlying Principles

These principles underlie and support the recommendations that follow in this report. In the judgment of the Survey Group, if they are accepted and the recommendations are carried out, teacher education and university and college education generally will be greatly strengthened.

All teacher education including preparation for teaching in primary schools should be done in colleges and universities.

All students planning to teach should enroll in teachers colleges or colleges of education for their major work.

All teachers, like other professionals, should have a sound general education. It should be planned jointly by all colleges within the university, or by departments within the college whose students are to take the program. Once the general education is planned it should be administered by the college of arts and sciences.

Some arts and science faculty members now teaching in colleges of education should participate in teaching general education.

There should be no duplication and dispersal of liberal arts and science faculties in colleges and universities. One strong and well-staffed college of arts and sciences should be responsible for general education and for upper level courses in the arts and sciences.

The teachers colleges and the colleges of education should emphasize and expand the professional aspects of teacher education rather than the general education and subject matter content fields. They should send students preparing to teach to other colleges or departments in the institution for the courses in arts and sciences.

Teachers colleges and colleges of education in universities will need some specialists in the subject-matter areas on their faculties since they prepare teachers of history, language, mathematics, science and many other fields. This is necessary in order to teach students what to teach and how to teach it. In many instances this may require joint appointments of some faculty members to two colleges--education and arts and sciences.

All faculty members on tenure should be retained and their promotional rights protected, as the above principles are worked out over a period of time. In many instances the faculty members will remain on the faculty of the college and department where they are now assigned, others will divide their teaching between two colleges, while for still others transfers may be desirable either into or out of the teachers college or college of education.

There should be only one national college for teachers in a national university city. This college should be a part of the national university.

As normal schools are upgraded to teachers colleges in the national university cities, arrangements should be made to establish the teachers college as a part of the college of education of the national university. This will require planning to integrate faculties and programs under the administration of the national university.

In some situations such as that at Seoul National University where colleges are separated geographically and a large measure of autonomy of the units and duplication of the arts and sciences already exists, it will take time, patience and wisdom to follow the above principles. In other situations which are less fixed these principles can operate almost immediately.

Recommendations

The Survey Group recommends that:

1. Certain normal schools be upgraded to teachers colleges. Teacher preparation for the primary schools should be upgraded from normal school education to two-year teachers college education within the next one to three years by:
 - a. Raising requirements for certification to teach in grades 1 to 6 to two years of training in a teachers college. This change would require Ministry of Education action.
 - b. Upgrading about 10 of the present 18 normal schools to the level of teachers colleges in a series of steps as follows:
 - 1) First, upgrade the normal schools in Kwangju and Pusan by combining them with the already established teachers colleges. These teachers colleges should be authorized to prepare primary teachers as well as

middle school teachers. Probably these two colleges eventually should become four-year teachers colleges if and when the requirements for middle school teachers are raised. This will be necessary when they become the colleges of education for the Chonnam and Pusan National Universities in these cities. These changes will require Ministry of Education authorization and revisions in the education law.

- 2) Second, upgrade the normal schools in the other national university cities: Chonju, Seoul and Taegu. These teachers colleges should as soon as possible become integral parts of the Chonbuk, Kyungbuk and Seoul National Universities. In the case of Kyungbuk the new teachers college might well become the primary teacher training unit of the Teachers College of the University. Likewise, the Seoul Teachers College, resulting from the upgrading of the Seoul Normal School, might become the primary teacher training unit for the College of Education of Seoul National University. The upgraded Chonju Normal School should become the College of Education for Chonbuk National University.
 - 3) Third, upgrade about five other normal schools to teachers colleges as need is demonstrated and coverage of geographical area is desired. These changes will require Ministry of Education action and perhaps some change in the education law. In the meantime, pending decisions by the Ministry of Education and the ROK government, it is suggested that no further building be done on normal school campuses except that already authorized. Also, it is suggested that existing plans for improvement of normal school programs now underway be continued.
2. The normal schools that are not selected for upgrading be discontinued as soon as possible.

When they are no longer needed as normal schools it is suggested that they be converted to comprehensive, academic or vocational high schools since they will have certain facilities and equipment that should make this quite feasible.

3. Strong in-service programs be established at Kwangju and Pusan Teachers Colleges and at the College of Education at Seoul National University.

These in-service programs should be designed to prepare teachers for the other teachers colleges and to develop the curriculum, teaching methods and standards for the new teachers colleges to be established.

They should be held during the vacation periods and in extension programs on some late afternoons and evenings where possible. The purpose would be to help present normal school teachers qualify for positions in teachers colleges.

4. At Seoul National University's College of Education where several professors have had advanced training in American universities, there be established a program to prepare teachers for the teachers colleges. This program should be four years in duration and should lead to the bachelor's degree.
5. Two faculty members from each of the normal schools to be upgraded be sent to America for one year of advanced study of teachers college education. This would require authorization of about 20 man years of participant training.
6. Plans be made through the Korea Federation of Educational Associations, with the aid and support of the Ministry of Education, to establish an accrediting agency for colleges of teacher education in Korea.

This is much needed to guide the development of teachers colleges and to set standards. Such accreditation will serve to prevent the proliferation of private teachers colleges and the development of teacher education in other colleges within national universities except as they meet sound standards for teacher education. Specific programs for preparing teachers which meet accreditation standards should be approved by the Ministry of Education. Then the college should be held responsible for upholding the standards.

To achieve this recommendation will require joint action by the Ministry and the Federation. Also, aid should be sought to send two participants to America to study the accrediting processes of the regional accrediting associations of the National Commission on Teacher

Education and Professional Standards and of the American Association of Colleges for Teacher Education. It is estimated this would require two man years.

7. Consultants from America be employed to work with the Ministry, the Federation and other agencies in developing the accreditation and certification plans for Korea.
8. The attached schools of teachers colleges (and of normal schools until they are upgraded or converted) be the direct responsibility of the teachers colleges, which colleges should select the personnel, determine the curriculum, and experiment with new teaching procedures and aids under broad policies established by the Ministry of Education and the proposed Board of Regents.

This recommendation requires action by the Ministry to establish special regulations relating to the attached schools of teachers colleges to free them for demonstration, for student teaching and for experimental purposes under the direction of the teacher training institutions.

9. Guidelines for a balanced two-year curriculum in elementary education be developed for the teachers colleges by a committee composed of normal school and teachers colleges administration and teachers, Ministry of Education personnel from the divisions of Higher Education and Textbooks, and representatives of the Korea Federation of Educational Associations.

This curriculum should include a distribution of courses somewhat as follows:

- | | |
|--|-----------|
| a. General education | 40% |
| b. Professional teacher education courses and student teaching | 20% |
| c. Specialization in basic elementary school subjects | 40% |
| d. Student activities that develop leadership and special skills | No credit |

Joint action by the Ministry and Federation personnel is required to implement this recommendation.

10. For the present no new colleges of education be established in national universities and every effort be made to strengthen the programs and services at Seoul and Kyungpuk.
11. The Ministry of Education continue to give the graduates of the teachers colleges and colleges of education preference in job placement.
12. Those who wish to teach but who are graduates of liberal arts, agriculture, engineering, law, commerce or other colleges be required to take an additional year or its equivalent after graduation of special preparation for teaching in a college of education or a teachers college.

In America this has been worked out as a fifth year or Master's degree program in some universities.

13. The teachers colleges at Kwangju and Pusan at an early date become integral parts of the Chonnam and Pusan National Universities and be established as their colleges of education; the upgraded normal school at Taegu become the primary school teacher education unit for the College of Education at Kyungpuk National University; the upgraded Seoul Normal School become the primary school unit of the College of Education at Seoul National University; and the upgraded normal school at Chonju become the teachers college for Chonpuk University.

In the judgment of the Survey Group this procedure of upgrading normal schools to teachers colleges, then affiliating them as colleges of education or units of such colleges in national universities is a logical and desirable sequence. It would integrate, coordinate and strengthen teacher education and would constitute a much more economical use of teaching resources. It should be accomplished over the period of the next five years.

These recommendations will require Ministry action and no doubt changes in education law. Also, they will require joint agreements and actions by the institutions involved.

14. Each national university have access to the assistance of an American consultant to aid in developing the relationships between the teacher education institutions and in combining them. This would require a total of approximately 6 man years of such consultant services.

15. Graduate programs at the Master's degree level in teacher education be developed at the two national universities which now have established colleges of education, namely, Seoul and Kyungpuk.

These graduate programs for the present should center on satisfying three great needs in Korean education:

- a. Teachers to staff the new teachers colleges and the colleges of education.
- b. Master teachers for the elementary and secondary schools.
- c. Administrators and supervisors for leadership positions in public schools and the provincial and national offices of education.

This will require Ministry of Education action and also planning and commitment in the two colleges of education. Aid should be sought to send two faculty members from each to America to study graduate programs in education. On their return they would become key leaders in graduate education. This would require 4 man years for participants to study in America.

16. As soon as feasible, the various teacher education units of national universities be located on their main campuses.

This is desirable in order that the total educational resources of the university may be utilized in teacher education. Of crucial importance are general education, library and equipment resources as well as the administrative services of the university. This move to the main campus would, if carried out, result in the following changes:

- a. The College of Education at Seoul National University would be moved to the main campus.
- b. The Seoul Teachers College, if Seoul Normal School is upgraded and becomes a part of the College of Education of Seoul National University, would be moved to the main campus.

- c. The teachers colleges in Taegu, Pusan, Kwangu and Chonju would be moved to the main campuses of the national universities.
- d. The attached schools of these teachers colleges used for demonstration, student teaching and experimental purposes would be moved to the main campus of the national universities.

The above recommendations, in the judgment of the Survey Group, are desirable for the long-term future. However, all of these teachers colleges (some of them normal schools at present) have recently completed extensive building programs with aid from American and Korean sources. Only advantageous sale of present facilities and adequate available new sites and buildings would justify early moving to the main campuses. However, in long-term planning every effort should be made to bring the units of national programs of teacher education into a coordinated and unified university system.

Students in Teacher Training Institutions

Selection

Students in the teachers colleges and in the colleges of education in national universities are admitted almost exclusively on the basis of entrance examinations. Although these examinations may result in the selection of students with high ability, they do not take into account such other important factors as high school record, personality, and vocational interest which may be closely related to success in the teaching profession.

Enrollments

In the judgment of the Survey Group there will be no difficulty in securing the needed enrollments to meet demands for teachers in Korea through regularly established colleges for teacher education. The present ratios of students to teachers are approximately as follows: Primary, 60 to 1; Middle, 50 to 1; High, 31 to 1.

Should the ratios change in the primary and middle schools to approximately that of the high schools there may not be an oversupply of teachers. At the present time, however, an oversupply is apparently being trained in most fields. Not all the graduates of normal schools find positions. The colleges of education point to difficulties in placing many graduates, the liberal arts colleges and others feel discriminated against when the Ministry of Education gives preference to the graduates of teachers colleges. All this argues that supply has caught up with demand and it is time to limit the numbers to be trained.

Of course, if and when the middle school is opened for all children, there will be a large new group of teachers needed. Likewise, if industrialization proceeds as hoped, there would be need for more trained vocational teachers. As the economy of the country rises there may be more need for special teachers of various kinds such as vocational and industrial arts, crafts, physical education, guidance counsellors, and others. Even now there is great need to provide special preparation programs for school principals, supervisors and superintendents. At present very little is being done in these important fields.

Student Attendance

Student attendance is reported to be excellent in the teacher training schools and colleges. Even during the cold period from February to March the Survey Group found student attendance high in the normal schools and the colleges.

Discipline

The only discipline problem that was reported in teacher training institutions was cheating. The penalties imposed are severe. Apparently it is not widespread. The good behavior and courtesy of students was impressive on all occasions. It seems clear that the competition for admission and desire to stay in college materially lessen the number of discipline cases.

Army Service

Students who are admitted to teacher training schools and colleges usually are deferred from army service until they are graduated or until they reach the age of 24. Any students who are not placed in teaching positions on graduation are immediately subject to draft for the armed services.

Tuition and Scholarships

Tuition is remitted and monthly allowances are granted students of national normal schools and teachers colleges. The students or their parents pay a support organization fee which ranges from about 1,000 Hwan a month in the normal schools to a much larger amount in the universities. The systems of free tuition to students preparing to teach and the state allowances or scholarships enable many needy students with fine ability to enter the teaching profession.

Guidance, Counselling and Placement

There is little student counselling by trained guidance workers. Only in a few teachers colleges and normal schools is the need recognized and then only to the extent of setting up an office and assigning a teacher with some guidance training on a part-time basis. There is little student placement service.

Follow-up of Graduates

A program of in-service education and post-graduate follow-up has been started. This should be continued and expanded.

Recommendations

The Survey Group recommends that:

1. The admissions procedure for teacher training institutions be studied with a view to a more discriminating selection.

In addition to entrance examinations, such factors as the high school record, recommendations of high school teachers and principals, vocational interest and personality inventories, and perhaps a national teachers examination for Korea should be considered.

2. Colleges preparing teachers establish student counselling and placement services.

These services would assist students in making adjustments to college and in finding teaching positions after graduation and part-time jobs while in school.

3. The calendar of teacher training institutions be changed as recommended for all institutions elsewhere in this report.

4. Free tuition and monthly allowances be continued for students enrolled in national teacher training programs only as long as necessary to attract an adequate number of well qualified candidates.

Staff, Programs, and Facilities

Staff

Although the seriousness of purpose and the intelligence of the staffs are quite apparent, it is clear from the records that many have had only limited opportunities for formal training.

The great majority of those who work in normal schools and teachers colleges have the bachelor's degree with many having no degree. Only a few have Master's degrees and none have achieved the Doctor's degree. The picture in the colleges of education is not much better, although several professors now have received Master's and Doctor's degrees, usually as a result of financial assistance to study in America. It seems important that in the future these levels of preparation for employment in teacher training institutions should be raised. This will require that special programs for the preparation of college teachers be established in one or more of the national universities as recommended elsewhere.

Faculty members in teacher training institutions are relatively young. In the normal schools the median age is between 31 and 35. In the teachers colleges it is between 36 and 40, and in the colleges of education of national universities it is between 41 and 45. Only a few faculty members in the institutions are above 50 years of age. This would indicate that, in general, faculty members have many years of productive service ahead of them and that they might benefit from special in-service and graduate programs for college and university teachers in the field of education.

The number of faculty members assigned to teacher training institutions often falls far below the number that regulations of the Ministry of Education specify and that student enrollments justify. For example, the College of Education at Seoul has 60 faculty members while the Ministry quotas call for more than twice that number. The result is that most teacher training programs are understaffed, classes are large, individualized attention to student needs is limited and faculty members often are overloaded.

Teaching Methods

The usual teaching method is the lecture, if one can judge by limited observation and interview. This is not surprising since lecturing probably is the easiest method to employ. Professors and instructors have had long experience with it, and there is a limited supply of textbooks and library materials, teaching aids and laboratory equipment of various kinds. Instructors try to offset these deficiencies by lecturing, often neglecting other teaching procedures either because they don't know them, because proper equipment is not available, or because they are not convinced that other methods could be useful. Here is an opportunity for productive in-service work.

The objectives of education in Korea are stated in the Education Law as follows:

- Article 1. The aims of education are for citizenship necessary for the development of a democratic nation and the advancement of prosperity.
- Article 2. In order to achieve these aims, the following educational objectives are set up:
- (1) Development of the knowledge and habits needed to maintain good health and develop an indomitable spirit;
 - (2) Development of a patriotic interest in preserving the independence of the nation and advancing the cause of world peace;
 - (3) Development of Korean culture as an asset of the development of world cultures;
 - (4) Development of scientific understanding and of desire for pursuit of the truth;
 - (5) Development of a high regard for freedom and responsibility together with the ability to participate faithfully, cooperatively and respectfully in the social life of the country;
 - (6) Development of esthetic feeling and ability in the fine arts;
 - (7) Improvement of economic ability as a good producer and wise consumer.

The approach to achieving these objectives is through lecture and book learning. It is a "learning of subject matter" approach with little emphasis on a "learning by practice and experience" approach. If these important objectives are to be fully achieved, students must become more active participants in the instructional process.

There is evidence that professors and teachers are becoming interested and are improving their competence in discussion techniques, the use of audio-visual aids, demonstrations, field trips, and other promising procedures. The teacher training institutions are installing arts and crafts shops, science workshops and laboratories, experimental greenhouses and farm plots, good libraries and reading rooms, audio-visual centers and demonstration programs in attached schools.

With regard to courses and curricula offerings the most important observation is that the curriculum in teacher education is fragmented into small parts way beyond any necessity. As a result students take many courses for only a period or two per week and instructors teach too many classes. This fragmentation of the curriculum and of the students' and instructors' programs combined with a "lecture-textbook-memorization-examination" approach, limits opportunities for developing depth of understanding and insight, and for exploring ways and means of teaching effectively as the subject matter is learned.

An important need is to improve the curriculum of the normal schools scheduled to become teachers colleges. Emphasis should be placed on the professional courses and the experiences with children. The courses might well include an up-to-date approach to the philosophy of elementary education, the principles and methods of teaching, educational psychology and child development, observation in schools and improved student teaching practices.

In the normal schools classes are usually about 60 in size, and in the colleges somewhat less, between 50 and 60. Professional education classes in the colleges of education are often the largest of all. The general impression one gets is that all classes are quite large, regardless of field or subject matter. This necessitates an excessive use of the lecture method to the detriment of both teaching and learning. The need is for more flexibility in class sizes to meet specific needs and purposes. Some classes might well be 100 to 200 in size if the lecture method is to be used while others might be as small as 10 to 15 where individualized instruction or experimental methods are to be employed.

Duplications in General Education

In Seoul National University's College of Education there is duplication of the general education and other arts and science courses offered in the College of Liberal Arts and Sciences. This, no doubt, arises from the fact that the College of Education is located on a campus several miles from the Liberal Arts College and the added fact that the College needs to offer advanced work in the subject fields in which students are preparing to teach.

At Kyungpuk National University in Taegu the Teachers College and the Liberal Arts College are located on the same campus in separate buildings. The arts and science faculties of the colleges have joined forces to offer the general education courses as a common requirement for all.

There is no justification for duplicating general education programs on several campuses of the same university beyond convenience for professors and students. Some might contend that a unique general education program should be offered for teachers in training. This is not the case in Korean colleges.

Course Examinations

Course examinations, usually of the essay type, appear to be given undue weight in the determination of grades and the passing or failure of students. Such examinations should not be the only basis for measuring achievement of course objectives.

Equipment and Teaching Aids

Adequate materials and equipment are continuing needs in teacher education. Many new buildings are poorly equipped for good teaching. There is need for sturdy and functional furniture, and teaching aids of all kinds. A good start has been made on designing and providing suitable furniture.

Libraries

Students now have or in the near future will have rather adequate library space in the teacher training institutions. These libraries have been housed in new buildings, the present holdings of books cataloged, new books purchased, and librarians are being trained in the Yonsei University program. In the judgment of the Survey Group the greatest need is to build up the holdings of professional books on education and teacher education and to secure the services of full-time librarians.

Physical Facilities

The buildings on the campuses of teacher training institutions have been extensively improved with the assistance of economic aid from the United States. In the judgment of the Survey Group the need for classrooms, science laboratories, music rooms, and other special facilities will be largely met when present projects are completed. The greatest need is to improve and develop the teacher training programs which go on in these buildings and to secure the teaching aids and other equipment necessary for quality programs. Of course, there is lack of certain kinds of facilities such as dormitories, but these can wait until more crucial needs are met.

Almost everywhere there is evidence of neglect, lack of upkeep and inadequate cleaning of buildings. In some cases buildings are deteriorating rapidly. If this continues they will be useful as school buildings for only a short time. Custodial care is generally ineffective. Teachers colleges and normal schools should devote more of their budget resources for building maintenance and repair.

Recommendations

The Survey Group recommends that:

1. Seoul National University and Kyungpuk National University establish strong in-service programs for college teachers of education.

These in-service programs might be of three types:

- a. Year-long programs that require leaves of absence from college positions.
 - b. Short-term seminars and workshops during vacation periods.
 - c. Graduate programs for prospective college teachers. These courses should utilize the services of faculty members who have had advanced study.
2. The services of technical consultants be sought to aid in the development of these programs.

3. A plan be developed for each teachers college and university college of education to improve teaching and instruction.

A model classroom equipped with the best in teaching aids and furnishings might be established in each college. It should be staffed by one or more outstanding teachers who would demonstrate for students and colleagues the best in instructional methods. Also, these professors would conduct research on promising methods and procedures. The technical consultants could assist in developing these classrooms as demonstration and research centers.

4. One or more librarian positions be established in each teacher training school or college.
5. The programs to improve the curriculum and teaching in the normal schools and teachers colleges be continued.

An approach that will combine small segments of the curriculum in larger blocks of subject matter and time both in content areas and professional courses seems to be fruitful.

6. The attached schools, of great importance in teacher education, be freed from restrictive regulations and be the direct responsibility of the dean of the teachers college to which they are attached.

These primary schools should be developed along the lines of accepted modern education and become demonstration and experimental centers.

7. Building services be improved, as suggested elsewhere in this report, to assure the upkeep, repair and maintenance of the new teacher education plants.

Major Needs in Order of Priority

In this section the recommendations for improving teacher education in Korea are summarized under three headings: normal schools, teachers colleges, and national universities. Although recommendations are listed in priority order, simultaneous implementation of highly related recommendations may be necessary.

Normal Schools

1. Requirement of two years of training in a teachers college for certification of primary school teachers.
2. Upgrading of about ten normal schools to the level of two-year teachers colleges in a series of steps:
 - a. Upgrade Kwangju and Pusan normal schools by combining them with the already established teachers colleges.
 - b. Upgrade the normal schools in the other national university cities of Chonju, Seoul and Taegu. This should be done with the expectation that they will become the primary school units of colleges of education at the national universities.
 - c. Upgrade five other normal schools as need arises and geographical coverage is desired.

Teachers Colleges

1. Establishment of strong in-service programs at Kwangju and Pusan teachers colleges to prepare present normal school teachers as instructors for the new teachers colleges.
2. Establishment of a department and a four-year degree program at Seoul National University to prepare instructors for the teachers colleges.
3. Participant training for some faculty members of normal schools and teachers colleges.
4. Development of guidelines for a balanced two-year curriculum for the new teachers colleges by a specially appointed Ministry of Education committee.
5. Establishment of an accrediting agency for colleges of teacher education in Korea through joint action by the Korea Federation of Educational Associations and the Ministry of Education.
6. Placement of attached schools of teachers colleges directly under the college administration.

National Universities

Every effort should be made to strengthen the two colleges of education of Seoul and Kyungpuk National Universities. For the present no additional colleges of education should be established at national universities. Eventually, however, all national universities should have colleges of education. With this objective in mind, the following recommendations are made in priority order for each university.

1. Seoul National University College of Education

- a. Establishment and implementation of in-service programs for school principals, supervisors, teachers college instructors, and other educational leaders.
- b. Development of graduate courses and programs leading to the Master's degree for teachers college faculty members and elementary and high school teachers and administrators.
- c. Placement of the attached schools under the direction and control of the College of Education.
- d. Affiliation of the Central Education Research Institute with the College of Education.
- e. Cooperation with other colleges of the University in the development of one general education program to be taken by all students and to be administered by the College of Liberal Arts and Sciences.
- f. Revision of the curriculum of the College to strengthen and expand the professional part of the program and to reduce and combine content courses.
- g. Incorporation of the Seoul Normal School, when and if it is upgraded, as the elementary education unit of the College of Education; development of a four-year degree program in elementary education; and abolishment of the major in education which has no designated specialization.
- h. Arrangement for full use of new science laboratories and facilities by allowing other schools to use them when they are available and needed.

- i. Transfer of the teaching of upper level arts and science courses to the colleges of arts and sciences and engineering and science with the understanding, however, that students preparing to teach in these fields enroll in the College of Education.
 - j. Development of needed new teacher education program in areas not now covered such as industrial arts and crafts, vocational education, business education, guidance and counselling, music, fine arts, and other areas as needed.
 - k. Movement of the College of Education with all its units and attached schools to the main campus of Seoul National University as soon as is feasible.
2. Kyungpuk National University College of Education
- a. Continuation and expansion of the offering of in-service courses and workshops for middle and high school teachers, school principals and teachers college instructors.
 - b. Development of specific programs of courses and requirements for the Master's degree in education.
 - c. Limitation of graduate work at present to the Master's level.
 - d. Placement of the attached schools under the direction and control of the College of Education and relocation nearer the University campus.
 - e. Advanced study in America for carefully selected faculty members with good command of English.
 - f. Improvement and expansion of the professional library for education students and procurement of needed teaching aids and equipment of all kinds including audio-visual materials.
 - g. Extension of the general education program to at least the equivalent of one year of work and continuation of this as a jointly planned and taught program to be administered by the College of Liberal Arts and Sciences.
 - h. Revision of the curriculum to strengthen and expand the professional part of the program and to reduce and combine content courses.

- i. Incorporation of the Taegu normal school, when it is upgraded, as the primary school unit of the College of Education.
- j. Continuance of the plan of using many schools for student teaching and reduction of the number of students working with each regular teacher.
- k. Development of new areas of teacher education as need is demonstrated.

For example, the report on Agriculture in this survey recommends that vocational agriculture teachers be prepared at Kyungpuk in a jointly sponsored program of the College of Education and the College of Agriculture.

- l. Transfer of the teaching of upper level arts and science courses to the College of Liberal Arts and Sciences with the understanding, however, that students preparing to teach in these fields enroll in the College of Education.
- m. Relocation of all attached schools of the College of Education to the main campus when this becomes feasible.

Chonnam National University

This university at the present time prepares some teachers for secondary schools in the liberal arts and other colleges. Two instructors offer the necessary professional courses for students who wish to be certified to teach.

- a. It is recommended that Chonnam University discontinue its present teacher training programs. It seems to be a make-shift plan to secure certification for some people and not a program to prepare career teachers. This kind of program merely creates a more difficult situation in a market for secondary school teachers that is already oversupplied.
- b. In long-term planning it is recommended that the Kwangju Teachers College absorb the Kwangju normal school and become the College of Education of the Chonnam University. As soon as feasible the Teachers College should be moved to the main campus of the University.

4. Chonpuk National University

This university, like Chonnam, has no college of education or teacher education program. A number of liberal arts college students do qualify for teaching by taking the professional courses from Chonju Normal School teachers.

- a. It is recommended that Chonpuk, like Chonnam, abandon its present teacher training. When the Chonju Normal School is upgraded the new Teachers College should become the College of Education of Chonpuk National University and as soon as possible move to the main campus of the University.

5. Pusan National University

This university, like Chonnam and Chonpuk, has no college of education or carefully designed teacher education program. Some students qualify for teaching by completing a minimum of professional courses taught by one or two faculty members.

- a. It is recommended that Pusan National University also abandon its present teacher training program for the same reasons as at Chonnam and Chonpuk. In long-term planning it is recommended that Pusan establish a college of education with a graduate program and that the Pusan Teachers College, after absorbing the Pusan Normal School, become the primary and middle school teacher training unit of this college of education.

NATIONAL HIGHER EDUCATION NEEDS IN ORDER OF PRIORITY

During the past five years the International Cooperation Administration has given substantial aid to higher education in Korea. Approximately 90% of this aid has been to national universities and colleges and 10% to private institutions. Seoul National University has received about 80% of the national university grants and Korea and Yonsei Universities over 90% of the private institutional grants. The distribution among the fields of assistance during this five-year period was: teacher training, 25.5%; engineering, 25.4%; health sciences, 17.4%; agricultural sciences, 16.8%; business administration, 8.6%; public administration, 3.8%; miscellaneous, including library science, 2.6%.

The assistance in teacher training was distributed among the national colleges of education, the national teachers colleges and the national normal schools. In general, assistance in the agricultural, engineering and health sciences and in public administration was limited to Seoul National University; while business administration assistance was confined to two private institutions, namely Korea and Yonsei Universities. This aid program principally involved (1) staff improvement—Korean teacher study in the United States and United States technical advisors in Korea, (2) provision of equipment, and (3) assistance for rehabilitation and new construction. The major concentration of assistance, other than teacher training, in three institutions—Seoul, Korea and Yonsei—must have been on the assumption that substantial advantages would flow from these institutions to other national universities and colleges. This is undoubtedly a sound assumption, long range, but as yet there is little clear evidence that other national universities and colleges have been benefited. For this reason the Survey Group believes that a change in the assistance program to emphasize the role of the other national universities and colleges would be in the interest of national higher education. This suggestion should not be interpreted to mean that the International Cooperation Administration should now assume responsibility for similar programs of aid in all national universities and colleges. It merely means that, to the extent that assistance is available, preference, henceforth, should be given to these institutions.

The impression should not be left that ICA aid has been the sole or even the main source of progress in higher education. Through ministerial, institutional and individual initiative, government appropriations, parents tuition and private foundation grants have contributed, in an unparalleled manner, to improvement in these national institutions, particularly in the area of physical facilities.

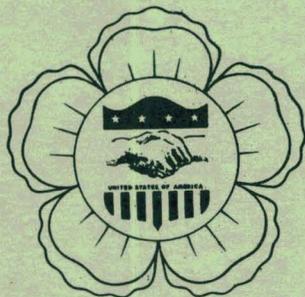
Each specialist with Survey Group approval has presented in priority order the major steps which should be taken for improvement in his field. Where feasible these steps have been detailed. In some fields it was necessary to indicate them in more general terms. In this section the Survey Group wishes to present in some priority order over-all recommendations relating to total national higher education. It is not the intention here or elsewhere in this report to relate proposals involving expenditures to specific sources of funds. It is rather a suggested order as funds from any source may become available.

Subject to the priorities stated for each field, the Survey Group recommends general priorities as follows:

1. The establishment of a Board of Regents in the Ministry of Education for the management, on a high level policy basis, of all national universities and colleges.
2. The centralized type of university internal organization together with the related short and long range university, college and campus consolidations.
3. The substitution of a faculty consultation method for the existing secret ballot procedure in the appointment and promotion of members of the academic and administrative staffs.
4. The improvement of academic staff salaries.
5. Student and staff quotas on a college or university basis rather than on a departmental basis.
6. Budget and administrative procedure changes particularly those involving retention of institutional income and appropriations to universities instead of to colleges.
7. Establishment of a staff improvement program--both Korean foreign study and U. S. advisor assistance--in the general field of administration, organization and physical plant.
8. Continuance of present improvement program--including both foreign study and advisor assistance--in the fields of agriculture, health sciences, and engineering with

preference henceforth to the national universities and colleges other than Seoul National University and in the field of agriculture with high priority to the unification of agricultural extension and research with instruction in the national colleges of agriculture.

9. Continuance of teacher training improvement program with emphasis on the upgrading of normal schools.
10. Continuation of business administration improvement program with preference henceforth to one or possibly two national colleges of commerce.
11. Continuation of the public administration improvement program.
12. Extension of the improvement program to include such related natural sciences as mathematics, physics, chemistry, biology and geology and such supporting social sciences as economics, psychology, sociology, political science and geography.
13. Provision of more adequate building and equipment maintenance and repair funds.
14. Provision of equipment and books with preference to the above fields.
15. Provision of new construction and rehabilitation funds only after the completion of recommended building planning studies and only when in accord with the recommended campus changes.



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