

Report of Observations and Activities

as

Adviser in Medicine

to

College of Medicine

Seoul National University

Seoul, Korea

by

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I. INTRODUCTION

Mrs. Brown and I arrived in Korea on July 28, 1958 and we will leave on January 24, 1959.

So many faculty members of the Medical School welcomed us to Korea and to Seoul National University that I hesitate to mention names. It has been a most pleasant experience to renew friendships with many of these people and to establish new friendships with many others.

President Yun Il Sun, Dean Myung Choo Wan, Dr. Kim Dong Ik, Dr. Kwon E Hyock, Mrs. Lee Kwi Hyang and Miss New Soon Han soon made us feel at home in Korea. They have been constantly helpful and we count them among our personal friends. I am particularly grateful to Dr. Nam Kee Young, Dr. Rhee Sang Don and all of the other members of the Physiology Department staff, including the graduate students, for the help and cooperation they have given me. It has been a pleasure to work with them.

Dr. James Matthews, Mr. Glenn Mitchell, and Miss Margery Low had been here about 15 months at the time of our arrival and they gave freely of their time to orient me and Dr. George Schimert, who had recently arrived, to the situation in the Medical School, Hospital, and Nursing School from the American Adviser viewpoint. In December Miss Joan Williams replaced Miss Low as Adviser in Nursing. Much of the pleasure in serving as an adviser in Medicine has been due to the cooperative and helpful spirit of the members of this group.

I am indebted to Dr. Arthur Schneider, Chief Adviser in Korea, Seoul National University Cooperative Project for help extending beyond the official function of his office in making our stay here pleasant and fruitful. The office staff, Miss Gertrude Koll, Miss Hong, and Miss Hahn, have been helpful and cooperative at all times.

Area of Special Interest

To date eight University of Minnesota faculty members have served as advisers to Seoul National University in the Medical fields. Of these only one, the writer, has been from the preclinical or basic medical science disciplines. With this in mind I have devoted most of my time to the basic science areas of the Medical School. This will be apparent in the remainder of this report and unless it is otherwise stated the observations and recommendations apply only to this area. The principal exception is in the area of research, where information has been obtained from and closer contact has been maintained with the clinical departments. Special attention has been given to establishing a cardio-pulmonary physiology laboratory. Although this has been carried out largely within the confines of the Physiology Department, it has been used by the Cardiac Catheterization group for their studies and by Capital Army Hospital for training two young Medical Officers with a view to establishing a pulmonary function laboratory there when they return.

Neither direct contacts nor observations were made in the pre-medical fields.

During the first few weeks an interview was held with the staff members of each of the preclinical departments and this was repeated during the last few weeks of my stay. Informal meetings and conferences with staff members of all departments on many subjects were a regular and routine practice throughout the 6 months.

Dr. Nam Kee Young made the arrangements and guided me on a visit to the basic science departments of other medical schools in Seoul. These included Sodo Medical College, Ewha Woman's University Medical College, and Severance Medical College of Yonsei University. We also visited the

Republic of Korea Aeromedical Laboratories in Youngdungpo. In November Dr. Kim Sung Hwan, Head of the Dermatology Department, guided me on a tour of the Leprosarium near Ascom City. This was my first observation of leprosy.

During the six months, in addition to the lectures and laboratory demonstrations given as part of the regular course in physiology for freshmen medical students, a weekly seminar on pulmonary function was conducted for 12 weeks. Lectures were also given at the Annual Meeting of the Republic of Korea Military Surgeons Association, Quarterly Meeting of the Republic of Korea Aeromedical Officers, Capital Army Hospital Staff Meeting, and Severance Medical School Staff Meeting. Two lectures were given for the Seoul National University Internal Medicine Department. Papers were submitted by request to the New Medical Journal, Republic of Korea Journal of Aviation Medicine, and proceedings of the Republic of Korea Military Surgeons Association. In the latter two cases the manuscript of the lecture given before the group was requested. Along with the other members of the Medical Advisers Group, considerable time has been given to meetings with the Dean, Hospital Superintendent, Director of Nursing, and Head of the Department of Nursing, in discussions of any and all problems pertaining to the Medical School and to the role of the Minnesota Contract.

II. PHYSICAL PLANT OF BASIC SCIENCES

The physical plant for the basic medical sciences consists of 8 buildings. These are 1) Main Building (commonly called The Medical School Building) 2) Biochemistry Building, 3) Anatomy and Pathology Annex, 4) Lecture Hall for Freshmen, 5) Lecture Hall for Sophomores, 6) Students' Buildings, 7) Heating Plant, and 8) Large Animal House.

The main building is a large quadrangle with outside dimensions 240' x 180' around an open court 100' x 95'. The front section and side sections of this building are three stories high and the back section has an additional floor.

This building contains the following:

- a) Administrative offices of the Medical School
- b) Department offices, libraries, and research laboratories for
 - 1) Anatomy
 - 2) Physiology
 - 3) Pathology
 - 4) Microbiology
 - 5) Parasitology
 - 6) Preventive Medicine
 - 7) Pharmacology
 - 8) History of Medicine
- c) All student laboratories except gross Anatomy and Biochemistry
- d) Medical School library
- e) Auditorium (450 seats)
- f) Animal quarters (4th floor, rear wing)

The biochemistry Department is housed in a 2 story rectangular building 200' x 60' with 3 small (25' x 15') one story annex buildings. The 3 annex rooms are now used for assistants' offices. The main building houses the offices and research laboratories of assistants and graduate students, and the undergraduate students' laboratory. Two rooms in

this building are now being used as class rooms by the Foreign Language Institute.

The Anatomy and Pathology Annex Building is an L shaped, one-story building containing the gross Anatomy dissecting Laboratory, the autopsy amphitheater, and pathology specimen rooms. The long wing of this building is 140' x 45' and the short wing is 65' x 50'. No medical school offices are in this building but 2 rooms are being used as office space for the Graduate School of Social work.

A separate building 90' x 40' contains the Freshman medical student lecture amphitheater and a class room at present being used by the School of Nursing. With completion of the new School of Nursing building in the near future this room will be returned to the Medical School.

A second class room building 50' x 40' contains the Sophomore lecture amphitheater.

A one story building 75' x 30' is known as the students' building. During the Japanese Occupation this building housed the Student Health Center. One end is now utilized for maintenance and utilities. One small room is used as an office by the Medical Students' Association. The remainder of the building has not been rehabilitated and is unused.

The heating plant is housed in a building approximately 65' x 50'.

One part of this building has just been erected as an addition to the original structure, and a new roof has been put over the old part of the building. Four boilers are housed here and this plant is to supply steam for heating all of the buildings listed above.

A low one story rectangular animal building completes the group of buildings making up the Basic Science part of the Medical School

Campus. This animal building has outside runways and was evidently intended for large animals such as dogs. It has not been rehabilitated and is now being occupied as a dwelling.

All of the buildings are brick wall construction except the Freshman lecture room building which is stucco or concrete plaster. The buildings range in age from 25 to 50 years. They appear to be structurally sound and from the outside they give a favorable impression of their condition.

This adviser agrees with former Medical Advisers on this contract that space needs can be adequately met for the foreseeable future without additional building. This includes the proposed School of Public Health and other ancillary departments such as Medical Technology that may be established.

When it is remembered that these buildings were returned to the Medical School by the Fifth US Air Force only a little more than 4 years ago and that they were returned completely empty, it is apparent that the rehabilitation already completed has improved the usefulness of the buildings enormously.

Rehabilitation planned and approved but not yet completed will further improve the situation. The rehabilitation program for basic science buildings, including a tentative list for FY 1959, appears as Table 1 (Appendix).

As indicated in the column at the right, all of FY 1955 and most of FY 1956 has been completed. Items 5 and 7 of FY 1956 are under way at the time of this writing.

Recommendations

It is recommended that the following rehabilitation projects be added to FY 1959 or included in FY 1960 and 1961 if the contract is extended.

1. New outside doors for the main buildings. Many of the present doors are little more than swinging gates held together by a hasp and lock. This looks unkept and these doors supply very little insulation against the cold. The latter factor is not important now but will be when the entire building is heated from the central heating plant.
2. Terrazzo floors in hallways and new smooth concrete or terrazzo floors in student laboratories and research laboratories of main building, biochemistry building, and anatomy-pathology annex.

Present floors are concrete and are in poor condition in most areas of the building. With the current rehabilitation of the plumbing system in these buildings, floors have been torn up and then patched in most rooms and in many areas of the hallways. These patched, rough, irregular level floors are difficult to keep clean and they look dark and dirty even when they are clean.

3. Fluorescent lights in the hallways of the main building. At present the long corridors of this building are dark and gloomy. Originally the halls were supposed to receive light through windows in the inside walls of offices and laboratories. All of these windows have been painted or made opaque by some other means to give privacy to professors' offices and laboratories. Better lighting of these long, dark halls is badly needed.
4. A large capacity still and distribution system for supplying distilled water to student laboratories and to research laboratories should be installed. Faucets should be the type that automatically turn off when released so that distilled water cannot be left running from an open faucet. If the cost of supplying distilled water to all research laboratories is prohibitive, at least one or two laboratories in addition to the student laboratory should be supplied. The present system of each department preparing its own distilled water is expensive and constitutes a fire hazard.

A gas fired still with a capacity of 30 gal/hour has been received and is in storage. This still can be used when the building is supplied with illuminating gas. It seems unlikely that this capacity is adequate for the Main Building. Either an additional large capacity still to be

used along with the 30 gallons now on hand should be purchased or the 30 gallons still should be installed in the biochemistry building and a much larger one purchased for the main building.

III. BASIC SCIENCE STAFF

Regular staff appointments embrace the 5 ranks of Professor, Associate Professor, Assistant Professor, Instructor, and Assistant. Distribution of the basic science staff among these ranks is shown in Table 2. All of the 34 regular staff members hold the M.D. degree, about 25 have Masters Degrees, and 13 have the Ph.D. degree. (An explanation of the transliteration of Korean academic degrees into American degrees is given in the section on Graduate Education.) Twenty-eight staff members have studied abroad for a total of 48 man years. This includes 6 men who are now abroad and counts the current academic year as a man-year. Of the 28 who have had foreign study, 18 have been supported by the Minnesota Contract for $29\frac{1}{2}$ man-years. It is significant that 10 men for $18\frac{1}{2}$ man years have obtained support apart from the Contract. Some of this support has been from other agencies aiding in the rehabilitation of Korea and some has been on straight support from the University where the graduate work was carried out. Graduate work has been carried on in Germany, France, England, and United States. Department chairmen should be encouraged to help obtain opportunities for the younger men (graduate students, and unpaid assistants) in their departments to study abroad by direct negotiation for assistantship and scholarships with a foreign university. This course for broadening the training and experience of future medical teachers will not dry up with termination of the Minnesota Contract.

Table 3 attempts to present the faculty picture in relation to undergraduate course load. Course offerings at this institution are quite similar to those in American Medical Schools where Dental, Pharmacy, Nursing, and Arts Colleges are associated in the same university. In almost all

departments course offerings are heavier some semesters than others.

Table 2. Basic Science Staff Analysis

	Prof.	Assoc. Prof.	Ass't. Prof.	Instr.	Assts.	Total	Ph.D.	Number Studied Abroad	Man Years of Foreign Study	Number Supported on Minn. Contract	Man Yrs. on Minn. Contract
Anatomy	2		1	1	1	5	2	4	7	4	7
Physiology	1	2		1	1	5	2	4	7	2	3
Biochemistry	1	1		1	1	4	2	3	7	3	5
Pharmacology	1	1		1	1	4	1	3	4	3	4
Pathology	1		1	1	2	5	1	5	9	2	3½
Microbiology	1	1	1		1	4	2	4	9	2	5
Parasitology			1			1	0	1	1	1	1
Preventive Med.	1	1	1	1		4	2	3	3	1 X	1 X
Medical History	1			1		2	1	1	1	0	0
Total	9	6	5	7	7	34	13	28	48	18	29½

Table 3

	Present Staff	Proposed Staff	Graduate Students	Approximate Teaching Load Hours/week	
				Lectures	Laboratory
Anatomy	5	12	1	21	17
Physiology	5	7	2	12	11
Biochemistry	4	7	5	11	11
Pharmacology	4	7	3	11	16
Pathology	5	9	5	8	22
Microbiology	4	7	0	11	13
Parasitology	1	3	1	1	4
Preventive Med.	4	7	9	7	8
Medical History	2	1	0	1	0
Total	34	60	26		

The figures given in the last 2 columns of the table represent an attempt to distribute this load roughly in terms of hours per week over both semesters.

The number of regular graduate students currently registered in each department is given. Data were not obtained on the number of "special" graduate students but the number equals or exceeds the number of regular students in some departments.

The distribution among departments of the proposed staff of 60 indicates that present inequities will be corrected. As an illustration, the Department of Anatomy must teach separate courses in Gross Anatomy, Embryology, and Histology. In many schools neuro-anatomy is also a separate course. Obviously this department needs a larger staff than departments teaching only a single subject. On the other hand the proposal to keep all departments except Parasitology and Medical History where the teaching responsibility is lightest, at a minimum size is laudatory. This is necessary to encourage productive scholarly work by staff members, and it should be kept in mind that a professor with a light teaching load may keep very busy in directing graduate students and carrying on research work.

IV. PREMEDICAL AND PRECLINICAL CURRICULUM

The medical curriculum at Seoul National University is a six year course, the first two years of which are spent in the College of Liberal Arts and Sciences. The curriculum during these two years corresponds to our premedical course. An outline of the required courses at Seoul National University follows:

First year

	<u>First Semester</u>	<u>Second Semester</u>
	<u>Sem. Hrs.</u>	<u>Sem. Hrs.</u>
Korean	2	2
English	4	4
German	3	3
French	2	2
Cultural History	2	2
Sociology	1	1
Botany	3	3
Mathematics	2	2
Physics	3	3
Public Health	1	1
Physical Training	1	1
Inorganic Chem.	3	0
Law	0	1
Organic Chem.	0	2
Total	27 Sem. Hrs.	27 Sem.Hrs.

Total for 1st year 54 semester hours.

Second Year

	<u>First Semester</u>	<u>Second Semester</u>
Korean	2	2
English	5	5
German	2	2
French	2	0
Latin	2	0
Philosophy	1	1
Ethics	1	1
Psychology	2	2
Zoology	3	3
Mathematics	2	2

Second Year - continued

	<u>First Semester</u>	<u>Second Semester</u>
	<u>Sem. Hrs.</u>	<u>Sem. Hrs.</u>
Organic Chem.	3	3
Physical Chem.	0	4
Economics	0	1
Physics	3	2
Physical Training	<u>1</u>	<u>1</u>
Total	29 Sem. Hrs.	29 Sem. Hrs.

Total for 2nd year 58 Semester hours.

This may be summarized as follows:

	<u>Semester hours credit</u>
Languages	44
Social Sciences	8
Biology	12
Mathematics	8
Chemistry	15
Physics	11
Psychology	4
Philosophy	4
Public Health	2
Physical Training	<u>4</u>
	112

Total for the 2 years 112 semester hours.

One semester hour of credit is defined as one hour of lecture or recitation or 3 hours of laboratory per week for one semester.

It is apparent that students here carry a much heavier course load than do our premedical students in the United States, and that the extra credits carried here are largely in foreign languages. Chemistry does not receive as large a proportion of time here as it does in our curriculum but other requirements appear to be roughly comparable. No actual observations were made of either lecture or laboratory teaching in premedical courses.

Course offerings and time allotment for the first two years of medical school (pre-clinical or basic science years) are given below.

First Year

Anatomy (gross, microscopic & developmental)	624 hrs.
Physiology	240
Biochemistry	224
History of Medicine	<u>32</u>

Total 1120

Second Year

Pathology	304
Pharmacology	60
Microbiology	192
Parasitology	80
Surgical Anatomy	32
Physical Diagnosis	80
Preventive Medicine	144
Principles of Surgery	<u>80</u>

Total 1072

This division is patterned after that found in most American Medical Schools.

V. ADMISSION PRACTICES

Students are admitted to the Medical curriculum on the basis of scores on entrance examinations and selection by an admissions committee composed of the faculty and the Dean from the College of Liberal Arts and Sciences, and 2 members and the Dean from the Medical School. When a student has been admitted to this curriculum he automatically proceeds into Medical School proper without further examination or selection if he succeeds academically during the first 2 years.

This system has certain advantages and also certain disadvantages over other systems. With selection for Medical School taking place between High School and College there are no disappointed premedical students who have spent 3 or 4 years preparing for a course and vocation which is denied to them. On the other hand, in Universities such as this one, the problem of who shall admit students to this curriculum is not fully settled. Administrators of the College of Liberal Arts and Sciences feel that they should have authority for admission and administration since they must teach the courses during the first 2 years. They feel that someone else should not have administrative control over students for whom they have academic responsibility. The Medical School faculty and Dean believe the selection of future physicians should be in the hands of the staff of the Medical School proper.

Adherence to the latter proposition would obviously involve both original selection for the medical curriculum and promotion throughout the entire course, including the 2 years spent in the College of Arts and Sciences.

This problem deserves continuing study. Although evidence of academic competence is the most reliable single criterion for use in selecting candidates for Medical School, it is not infallible. Additional scales have been found to be helpful.

Recommendations

It is recommended that a future participant from this school, preferably the Dean or a representative of his office, study admission practices at the University of Minnesota Medical School. It might also be possible to review admission practices at other Medical Schools in the United States. Medical aptitude, Intelligence, Personality, and Vocational Interest Scales used in the United States could not be used in Korea without modification but they would be helpful in developing similar materials here if it were decided that such were needed.

As long as the National Educational Law requires that students be admitted to Medical School at the beginning of their college work, it is recommended that a committee composed of members from both the Medical School and the College of Liberal Arts and Sciences be charged with the responsibility of establishing admission practices and standards and in carrying out the function of admitting students to the medical curriculum. The chairman of this committee should be the Dean of the Medical School or his representative. Since this is an intercollege committee, appointment should be from the Office of the President of the University.

It should be the prerogative of the College of Liberal Arts and Sciences to control standards of performance and promotion during the first two years just as this prerogative falls to the Medical Faculty during the last 4 years.

VI. TEACHING PRACTICES AND PROBLEMS

Courses in the basic medical sciences are taught by the conventional lecture method. Visual aids were commonly used by physiology staff members during their lectures. Not enough lectures were attended to assay the use of visual aids in other departments. At least 2 or 3 departments prepare their own 2" x 2" transparencies in black and white or in color for classroom or laboratory demonstration use. When the Central Photo Laboratory is installed, all departments should be able to prepare either 2" x 2" (35mm) transparencies or 3 $\frac{1}{4}$ " x 4 $\frac{1}{4}$ " glass slides.

Considerable time was spent in the physiology student laboratory, and the biochemistry student laboratory was visited on 2 occasions. Student laboratory teaching was discussed with all basic science departments. When it is remembered that these laboratories were practically bereft of equipment 4 years ago, the level of work now being carried on is good. More equipment is needed in the physiology laboratory so that students can work in smaller groups. Groups now consist of 9 students. Four, or at most six, to a group would be far better. In order to achieve this, more laboratory tables, more equipment, and more expendable supplies such as chemicals and experimental animals are needed. The Minnesota Contract can help with some of these items and not with others. Biochemistry laboratory needs more centrifuges and spectrophotometers and these have been requested for a future equipment purchase on the Minnesota Contract. The 150 new microscopes purchased on the Minnesota Contract are used by the departments of Microbiology and Parasitology. Pathology and anatomy share microscopes all of which were salvaged after the war and many of these need new objectives and oculars. No embryology laboratory exists at

the present time. When Dr. Kim Jae Nam returns from Minnesota where he is completing work for the Ph.D. in Embryology, he will establish a student laboratory course as well as research in this field. Equipment which will be needed for this must be given consideration in the FY 1960 and 1961 requests.

No mechanical calculators for a statistics laboratory are here or on order at present. A request for a small supply of such equipment has been submitted. With establishment of a School of Public Health, strong courses in Medical Statistics must be instituted and machines for laboratory work in these and other courses that will be in the curriculum must be considered in future equipment requests.

Lectures to Freshman Medical Class. October, 1958

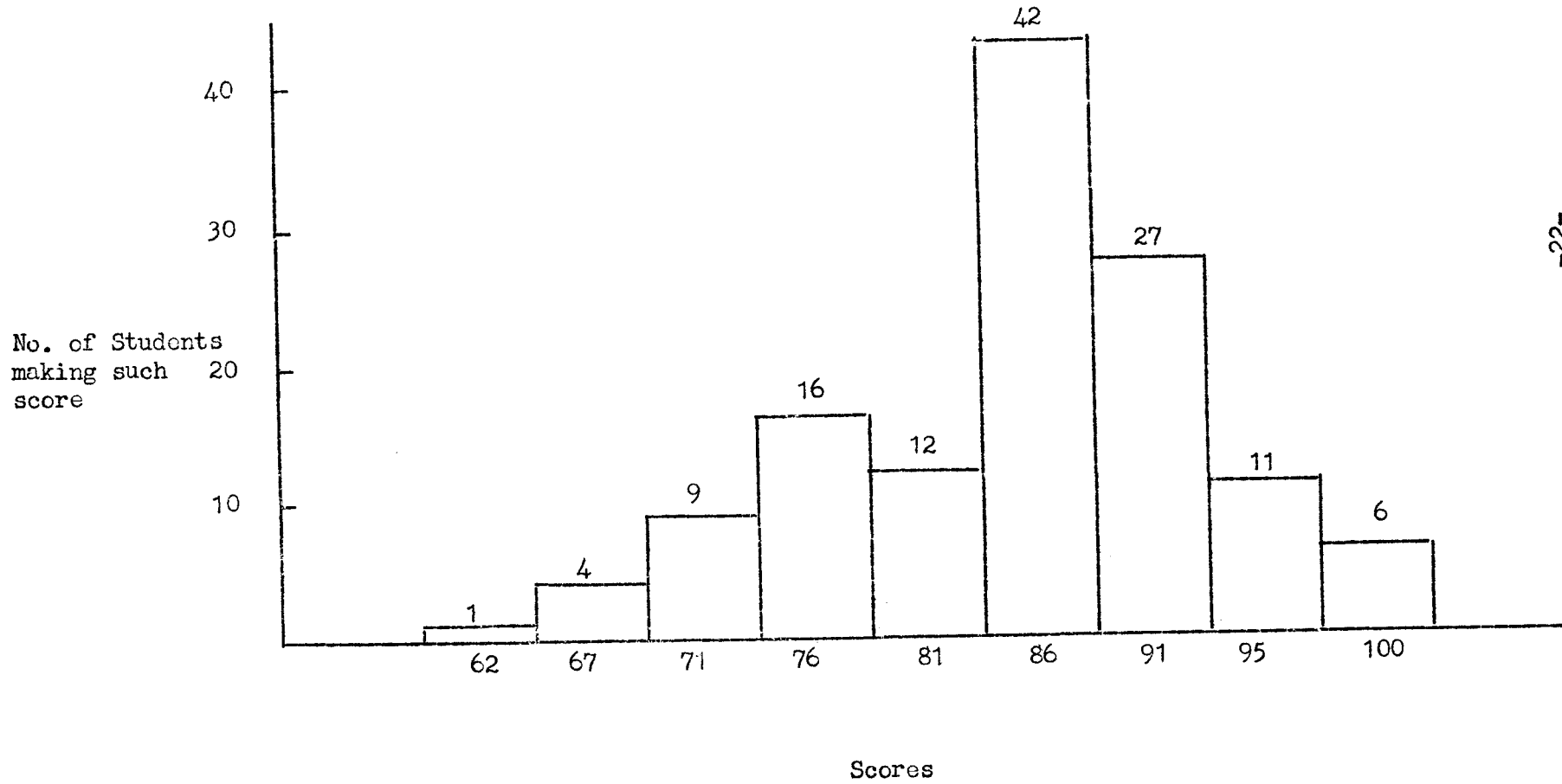
During the Fall Term I was asked to give a series of 10 lectures to the Freshman Class on the subject of Respiration and Acid Base Balance. These lectures were part of the regular course in Physiology. On the basis of the previous experience and recommendations of Doctors Flink and Matthews these lectures were given with a member of the physiology department, who understands English, present to interpret any part of the lecture which he thought required translation. Doctors Nam and Rhee performed this task.

One week before the first lecture, the same mimeographed outline of this material which is used at Minnesota was distributed to the class. The outline contains tables and graphs which were also presented by means of slides during the lectures. One lecture, the first, which was largely anatomy, was given without interruption for translation. In all others, either Dr. Nam or Dr. Rhee, interrupted to translate and interpret at several points during the lecture. As the material became more difficult, the interruptions were more frequent and the interpretations more extensive.

At the end of the term a one hour written examination in English covering the material was given. The examination consisted of 18 questions, 17 of which were multiple choice items and one of which was a table to be completed by inserting 8 values. The test was graded and an item analysis and grade distribution were made. The complete analysis was given to the physiology Department and a copy is on file in the Minnesota Office in Seoul National University Hospital. The grade distribution is presented here as Figure 1. On the basis of these results it appears that the method was successful in getting the material across to the students.

Figure 1

Distribution of Percentage Scores on Physiology Examination
(Median Score 86)



Although the students read and understand English without difficulty, understand spoken English readily when it is not spoken too rapidly, and speak some English themselves, I do not believe we would have been as successful without the translation. When it is remembered that many of these concepts are difficult to comprehend in one's own language, this is not at all surprising.

It is recommended, therefore, that future advisers who are asked to lecture to undergraduate medical students insist that a member of the department who understands both English and the material being presented, be present to interpret at any point where he or the lecturer thinks it would be necessary or helpful. Such an interpreter need not be fluent in speaking English but he must understand English thoroughly.

VII. TEXTBOOKS AND WRITTEN TEACHING MATERIALS

Eight preclinical science departments of Seoul National University Medical School embracing 10 subject fields were surveyed to obtain information about materials in current use, and needs, if any, in this area. A written questionnaire and personal interviews with each department were used for the purpose. The 10 subject fields were Gross Anatomy, Biochemistry, Embryology, Histology, Microbiology, Pathology, Parasitology, Pharmacology, Physiology, and Preventive Medicine.

Textbooks

In all 10 fields the recommended textbook or textbooks is an English language book. In 7 fields supplementary material in Korean is supplied. In one case this is a printed, hard back bound, textbook. In 3 cases mimeographed textbooks are supplied and in another case mimeographed lecture notes are furnished by each lecturer. In 2 areas mimeographed abstracts of English textbooks are supplied in the Korean language. One department mimeographs parts of an English textbook in English for student use, and 2 departments supply no supplementary written material for lecture or recitation use. With the supplementary material that is available in their native language, it is not surprising that in some subjects only a small fraction of the students buy the recommended English textbook.

Plans have been made for publication of a Korean language textbook in all of the basic science fields. The textbook of Pharmacology by Dr. Oh has been printed and is in use by 5 Medical Schools of Korea. Three other departments have textbooks in mimeographed form, and with a little more work these could be printed and made available to other Medical Schools. All other departments have plans for writing and publishing a textbook in Korean. In several instances these plans have been drawn

up by a committee composed of faculty members in the particular discipline from all of the 8 Medical Schools in Korea. Assignments have been made and writing is in progress. The success or failure of these cooperative projects will depend to a great extent on the ability of the Editor (committee chairman) to get the material in from the various contributors and assemble, proof read, and submit the manuscript to the publisher. There seems to be little doubt that Seoul National University faculty members will have to take the lead in these projects and where assignments from other schools do not come in, write such material themselves.

In addition to the Textbook of Pharmacology, which has been printed, plans have progressed with 3 other books to the point where a publisher has been contacted. In every case there appears to be no difficulty in getting the book printed on a private enterprise, no guarantee basis. Since this can be done in the basic medical science fields where potential sales are limited to the number of freshman or sophomore medical students per year (about 700), it appears certain that it can be accomplished in the clinical fields where potential sales are much larger, and in the clinical fields where such books are often bought by practicing physicians in addition to medical students.

Laboratory Manuals

In 5 subjects, laboratory manuals in Korean are available. Four of these are written by staff members of the department and the fifth is a translated University of Minnesota Manual. In three subjects in English manual is used and in 2 areas no manual is used.

Dental and Nursing Courses

In general the same materials are used for Dental Students as are employed for Medical Students. One textbook for nurses, Anatomy and

Physiology by Millard and King, has been translated into Korean. Other nursing courses apparently rely almost entirely on lectures with little written material supplied.

It seems likely that written material in Korean is more acutely needed by Dental and Nursing students than by Medical Students, since the latter have had 2 years of college English before starting medical subjects whereas neither of the other groups has had this advantage.

Recommendations

1. Plans to produce textbooks in the Korean language for medical and dental courses should be expedited. Staff members are to be congratulated on their intention to write these books rather than to translate existing textbooks in some other language. A translated book might be useful but the members of this staff are competent to produce their own material in their native language and this they should do.
2. Elementary textbooks for nursing and other courses (pharmacy, medical technology, veterinary medicine, etc.) should be written and printed in the near future. Books at this level are much more readily produced since references and documentation are not ordinarily used.
3. When a textbook has been published or mimeographed it should be officially listed as the required textbook for the course. Textbooks in English should be recommended as supplementary reading.
4. Laboratory manuals for all courses where such are required should be written for the course by a member or members of the staff of that department. There is little excuse for using a laboratory manual in any foreign language. Furthermore a laboratory manual written at and for one institution rarely fits the needs or equipment available in another institution. Staff members here should feel free to draw on any source for student laboratory experiments and procedures, but these procedures should be modified to fit the conditions and equipment at this Medical School and directions should be written in Korean.

VIII. GRADUATE EDUCATION

The Graduate School of Seoul National University is organized in much the same fashion as is true for most universities in the United States. The faculty is composed of all Professors and Associate Professors in departments offering graduate work. Both master's and doctorate programs are offered but the particular degree awarded and course of study as followed here is different from that in American Universities.

The degree awarded upon completion of the 6-year medical course is a Bachelor of Medicine and the title of a medical graduate is "Euisa" (Physician). The Bachelor of Medicine degree is required for admission to graduate school in any of the medical fields. For the regular program of study, 2 years are required for the master's degree and an additional 4 years for the doctorate degree. The master's degree is required for admission to the doctorate program. In either program the degree awarded is a Master or Doctorate of the field in which the work is performed. Thus the Doctorate of Philosophy is given only to a candidate whose major work is in philosophy and the Doctorate of Medicine only to one who completes the work in some medical field. The title for one holding any doctorate degree is Paksa (Doctor); for a doctorate of medicine, Euihak Paksa.

In transcribing records into English it is customary to list the Korean Bachelor of Medicine degree as M.D. and the Doctorate of Medicine degree as Ph.D. This usage is followed in Table 2. Any other procedure would be misunderstood by an American audience.

Considerable prestige is attached to the title, Paksa, and many practicing physicians return to the University to earn the Doctorate of Medicine degree. These people are known as special students and do not

follow the course of study prescribed for regular students. Rules of the Graduate School allow the Graduate School Committee to approve as equivalent to having completed a doctorate program of the school one who has either:

- "1. Completed a doctoral program in other recognized graduate school.
2. Shown a notable achievement for 7 years after graduation from a university.
3. Shown an outstanding achievement in research."

At present, work is not required in a Minor field for either graduate degree. Discussions with basic science department staff members indicate that graduate students spend the full 2 or 6 years working in the department concerned with very little work in other departments and no work in other colleges. The lack of interdepartmental exchange of graduate instruction is inexcusable, and the restriction on crossing college boundaries is a serious limitation on the training of graduate students in the basic medical sciences. It is difficult to conceive of a 6-year program leading to the doctorate degree in anatomy, physiology, biochemistry, pharmacology, or microbiology without additional training in physics, chemistry, physical chemistry, and mathematics.

Recommendations

1. Plans under study to require a minor field of study should be expedited and put into effect.
2. All basic science departments should develop graduate courses and/or seminars which are open to graduate students of other departments including clinical departments.
3. Deans of the Colleges should begin studying ways and means to allow students in one college to take courses in another. This serious limitation to graduate training should be of concern to all of the colleges and certainly the College of Medicine must share deeply in this concern.

IX. RESEARCH IN SEOUL NATIONAL UNIVERSITY MEDICAL SCHOOL

Present Situation

The Minnesota Contract has as its stated purpose the strengthening of teaching and research at Seoul National University in four areas, one of which is medicine. In the early years of the Contract primary attention in Medicine was given to strengthening the teaching function. This was a proper assignment of priority and there is still improvement to be made in this area as other sections of this report indicate. However it appears that the situation now is such that a greater emphasis can be placed on strengthening research during the extension of the contract without detracting from support of teaching and service (patient care); the other 2 major functions of any good medical school.

There is little doubt about the eagerness of staff members here to carry on research. In spite of many limitations work is under way in most departments and is being started in others. In the 6 months spent at this school I have edited and corrected 6 full length manuscripts written in English and 14 English abstracts of papers to be published in Korean. Obviously this represented only a fraction of the output during this time.

In order to get a more complete picture of the present research productivity of the staff, each department was asked to supply the following information:

1. Please list the publications by members of your department over the past 4 years. The usual form of reference; title, journal, volume, page, year, would be helpful if it is available. Please include all types of publications; articles, books, editorials, etc.
2. Please list the research projects actively under way now by members of your staff or graduate students in your department.
3. What are the present limitations or restrictions to research in your department? Please be as specific as possible.

4. In what way could the Minnesota Contract improve the research situation in your department?

Replies were received from all of the basic science departments and all but 10 clinical departments. In attempting to evaluate the present situation and the future potential, several factors must be kept in mind. Essentially no equipment was available for any kind of work when the buildings were reoccupied in 1954. Very soon after reoccupation of the buildings faculty members started going abroad for additional study and this continues to the present. In most departments stability and normal teaching load have been restored by return of most of these staff members. Anatomy is a notable exception where 3 of 5 regular staff members are now studying at the University of Minnesota. It is unreasonable to expect that an extensive program of research would be in progress in such a situation or in a department where several faculty members have returned within the last year. In the light of these factors it is gratifying to see what has been done and what is being done at the present time.

Table 4 gives the data on papers published and in press as obtained from the returned questionnaires. Only paper in which the journal reference was given or which had been accepted for publication were counted. Oral presentations at meetings were counted as abstracts. The table may be far from complete since some departments included oral presentations at meetings and others did not. The importance of the table is the fact that it shows a sizable output from this medical school. Such data give no evaluation of the quality of this output and none has been attempted. The spectrum covered by the papers I have reviewed is not different from that of reports appearing in American Journals - excellent to mediocre.

Table 4

	Published original articles, reviews, monographs, books	Abstracts or oral presentations	In press	Total
Anatomy	0			
Physiology	9		3	12
Biochemistry	5			5
Pharmacology	3			3
Pathology	7		2	9
Microbiology	5		2	7
Parasitology	2		1	3
Preventive Medicine	7			7
Medical History	10		2	12
Totals - Basic Sciences	48	0	10	58
Medicine. Infectious Diseases	19		5	24
Medicine Respiratory	14			14
Medicine Cardiology	15	2	5	22
Medicine Hematology	14		1	15
Medicine Gastro Intestinal	8			8
Surgery	8		22	30
Pediatrics	10		5	15
Dermatology		16		16
Urology	7		42	49
ENT				
Ophthalmology	9			9
Obstetrics & Gynecology	24			24
Totals - Clinical Sciences	128	18	80	226

As might be expected, the great majority of these papers has been published in the last 1½ years and the number of projects ready to report, usually listed as "ready for publication", is larger than the number already published. Among the articles from clinical departments are many case reports and clinical studies and only a few animal experimental studies. Since the clinical research building has not been rehabilitated, and little or no experimental laboratory space will be available to the clinical departments until this has been done, it is surprising that any animal experiments have been possible.

Only 10% of the articles have been published outside of Korea. Among publications from basic science departments, nearly 50% are published in Seoul National University Collected theses - Natural Science. The Korean Medical Journal receives more than 25% of the articles from the clinical departments with the other 75% scattered in 12 other journals. Most of the articles published outside of Korea have been submitted while the author was studying abroad. Staff members should be encouraged to submit more of their reports to foreign journals. Even though an English abstract is included with a publication in a Korean Journal, the possibility of the results reaching the worldwide scientific or medical fraternity is small.

Limitation

The most commonly mentioned limitation to research was shortage or absence of research budget. It is evident from even a casual review of the situation here that a few modest research grants in the hands of each department would offer the greatest stimulus possible to research at this medical school. Dr. Lee Chae Koo of Pathology and Dr. Chin Byung Ho of Surgery now have grants from the Damon Runyon Cancer Research Foundation.

One application for research support is pending with the U.S. Army and another has recently been submitted to the U.S. Public Health Service. A list of 8 foundations and private organizations representing potential sources of research support for faculty members here has been presented to the Dean. He has written a letter of inquiry to each of these organizations and will make the information available to the staff when it is received. Faculty members must be encouraged to pursue these avenues of research support in increasing numbers.

Clinical Research Building

Another limitation mentioned frequently by clinical departments was lack of laboratories and equipment. A major contribution to research by clinical staff members will be the rehabilitation of the clinical research building. This large brick building should provide adequate space for all clinical departments. If the contract is extended, a major item in the equipment budget must be money to equip these laboratories.

The policy of developing central laboratories in which equipment is shared by all departments is a laudable and necessary one where the equipment is very specialized and expensive. The most wealthy universities do not try to duplicate equipment like electron microscopes or mass spectrometers. Nevertheless, the investigator who is going to do good research must have a laboratory or a part of a laboratory which is his and in which he has certain basic items of equipment such as glass ware, a few surgical instruments, chemicals, and regularly used instruments such as blood gas analyzers, centrifuges, or colorimeters. Whereas it is not feasible to duplicate an instrument such as the Beckman DU Spectrometer with UV and IF attachments (cost, approximately \$2,500), it may be feasible and desirable

to duplicate and equip more than one laboratory with instruments costing ~~one-tenth~~ or ~~one-fifth~~ that amount.

A study of research space needs for clinical departments with a view to assignment of space in the clinical research building should be started very soon. The current research output of a department, the type of research being conducted or planned, and the number of active investigators in the department should guide in this assignment. Each clinical department should be asked to submit an outline of research space and equipment needs with documentation of these needs - who is going to use the space and equipment and for what purpose. Many clinical investigators require only a small space and laboratories can be shared. After assignment of laboratories to a department, assignment of space to individuals should be left to the department head.

Medical Library

Missing volumes of journals over the years 1941 to 1955 present a constant handicap to the scholars at this institution. These missing volumes need to be filled in as rapidly as funds are available and in the order of greatest need. The library committee under Dr. Nam Kee Yong's chairmanship is at work on this problem now. Lists are being assembled and prices obtained from suppliers. Funds for beginning this task should be obtained from FY 1958 equipment budget.

One other limitation to research should be mentioned. With more and more electronic equipment coming to the medical school, maintenance and upkeep becomes increasingly important. The Medical School should begin now to plan for eventual employment of a full time electronics engineer to be available for this purpose. Part or all of the salary of such a person

could be paid justifiably from research grants supporting projects utilizing electronic equipment.

Recommendations

1. Investigators at this medical school should submit more papers to American or European journals. They should utilize contacts made while studying abroad or ask Minnesota advisers for advice and help in editing English language versions of manuscripts.
2. Staff members should make applications for research grants in increasing numbers to private foundations and to any other sources open to them. The United States Public Health Service may be establishing a section under the International Division which will offer research support to foreign medical investigators. This source should be thoroughly explored.
3. In assignment of space in the rehabilitated clinical research building, central interdepartmental laboratories should be kept to a minimum and confined to those areas where very expensive equipment is required.
4. After thorough study by a committee appointed by the Dean, space should be assigned to departments and the department should assign space to individuals.
5. Equipment for the laboratories in this building should take a high priority in FY 1960 and 1961 requests.
6. Title to all equipment bought on the Minnesota Contract for the clinical research laboratories should be retained by the Medical School or Hospital. Equipment should be checked out to individuals or departments to be used as long as the need exists and returned to central storage upon termination of need.
7. In future equipment requests from basic science departments top priority should be given to items having regular use in both teaching and research laboratories.
8. All departments should immediately begin a study of the long range needs of the department and prepare a report which the Dean and his advisers could use in establishing policy and preparing equipment and rehabilitation requests for the extension of the Minnesota Contract.
9. The balance remaining in FY 1958 equipment funds should be used to purchase missing volumes of medical journals for the library. When these funds are exhausted additional funds should be assigned to this if the need exists.

X. APPENDIX

Table 1

REHABILITATION PROGRAMS OF MEDICAL SCHOOL BASIC SCIENCE BUILDINGS
FOR 1955, 1956, 1957, 1958, AND 1959

<u>FY 1955</u>			<u>Date completed</u> or <u>Anticipated date</u> <u>of completion</u>
	<u>Project</u>	<u>Dollars</u>	<u>Hwan</u>
1.	Repair of roof of main building	8,700,000	Dec. 26, 1956
2.	Preparation of plans	347,600	Oct. 5, 1956
3.	Painting of Anatomy Annex	510,000	Nov. 15, 1956
4.	Window repair of Biochemistry building	720,000	Nov. 14, 1956
5.	Painting of Biochemistry building	655,000	Nov. 15, 1956
6.	Electrical system repair work in Biochemistry building	399,000	Dec. 13, 1956
7.	Repair animal room and roof of the main building	6,560,000	Dec. 26, 1956
8.	Installation of tile floor in Anatomy Department	538,000	Dec. 10, 1956
9.	Repair of electrical system in main building	985,000	Dec. 15, 1956
10.	Installing plumbing and laboratory tables in Biochemistry	1,180,000	Dec. 17, 1956
	Total	<u>\$10,560.83</u>	<u>20,574,600</u>

FY 1956

<u>Project</u>	<u>Dollars</u>	<u>Hwan</u>	<u>Date completed or Anticipated date of completion</u>
1. Construction of 50,000 gallon water tank		8,573,000	Nov. 12, 1957
2. Rehabilitation of heating facilities in main building		26,290,000	Feb. 16, 1958
3. Installation of lead foil		4,420,000	" " "
4. Repair of toilet facilities in main building		3,600,000	" " "
5. Installation of two new boilers		12,285,000	In progress
6. Installation of hot water heaters and pipes		3,745,000	Unknown
7. Rehabilitation of all plumbing not on other programs		24,074,000	In progress
		<hr/>	
Total	\$75,000.00	82,987,000	

FY 1957

<u>Project</u>	<u>Dollars</u>	<u>Hwan</u>	<u>Status of Work</u>
1. Construction of water tank on roof of main building		2,320,000	Completed
2. Rehabilitation of animal room		6,600,000	Not started
3. Rehabilitation of library		8,145,000	" "
4. Rehabilitation of all basic science laboratories		6,950,000	" "
5. Construction of student health center		7,691,000	" "
6. Installation of windows in the animal quarters		10,705,000	" "
7. Planning cost		1,938,000	" "
		<hr/>	
Total	\$ 9,100.00	44,349,000	

FY 1958

<u>Project</u>	<u>Dollars</u>	<u>Hwan</u>	<u>Status of Work</u>
1. Installation of gas producing apparatus		23,436,000	Not started
2. Installation of walk-in incubator		3,816,000	" "
		<hr/>	
Total	None	27,262,000	

FY 1959 (Preliminary estimate)

1. Screens for entire medical school building	3,000.00	5,000,000	
2. Sewage system renovation	4,000.00	5,000,000	
3. Paint entire building (Oil paint)		19,200,000	
4. Room reallocation for school of public health	10,000.00	20,000,000	
5. Fire fighting system	10,000.00	10,000,000	
6. Shelving, cabinets, counters, table, etc.		1,000,000	
7. Photo Laboratory		5,760,000	
8. Isotope Laboratory		15,000,000	
9. Auditorium repair, floor and ceiling		25,000,000	
10. Window repair, weather stripping and insulation	15,000.00	25,000,000	
11. Wall repair (outside)		54,000,000	
		<hr/>	
Total	\$42,000.00	149,960,000	