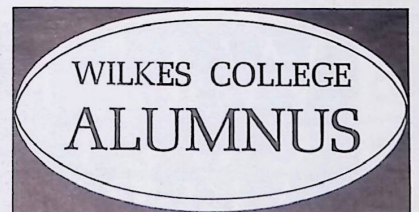


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Volume 22, No. 4

June, 1969



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## ON THE COVER . . .

Wilkes College takes pride in its faculty of more than 130 vigorous, experienced teachers who, with the students, comprise a community of scholars.

photo by Robert Berman

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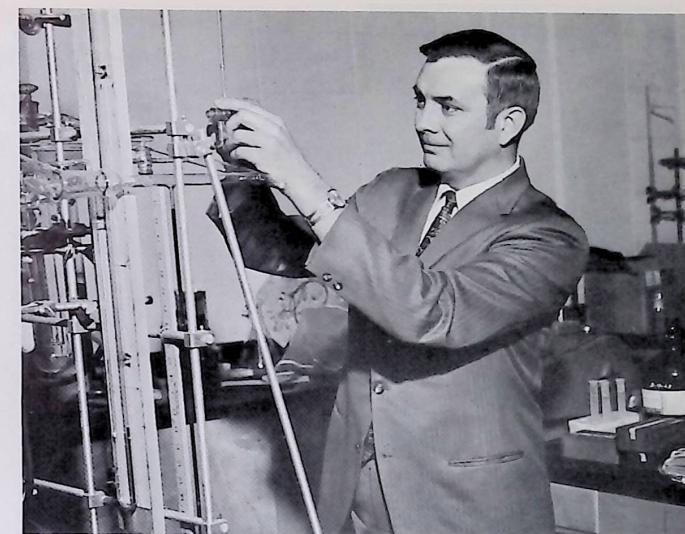
Wilkes College ALUMNUS is published quarterly for the Wilkes College Alumni Association by the Wilkes College Alumni Office, 170 South Franklin Street, Wilkes-Barre, Pennsylvania, 18703. Second class mailing privileges have been authorized at Wilkes-Barre, Pennsylvania.

Subscription — \$2.00

# MINE DRAINAGE RESEARCH AT WILKES COLLEGE

by Dr. Ralph B. Rozelle

Contrary to popular opinion, not all mine drainage is acid, and hence not all mine drainage is polluting when discharged into streams. Mine water pools in Wyoming Valley can be cited as good examples. For example, one pool in the Nanticoke area contains approximately 15 billion gallons of alkaline water. If this water were aerated to remove iron it would improve the quality of streams it was discharged into. On the other hand, a mine water pool in the Alden area, which contains approximately 11 billion gallons of water, is decidedly acid. Discharge of this water into streams of the Commonwealth would result in a chemical reaction between the acid in the mine water and alkaline material in streams. Destruction of alkalinity would result in a lower pH value (pH being a measure of acidity; lower pH values indicate more acidity), and production of an environment in water which may not support life. If this happened, a fish kill would result.



Chairman of Division of Natural Sciences and Mathematics

Mine drainage which is acid and, if untreated, polluting has been the object of study at Wilkes College for the last four years. Research projects were sponsored by the Pennsylvania Coal Research Board, and the Public Health Service and Federal Water Pollution Control Agency. Both research investigations have produced significant results.

Mine drainage which is acid is produced by combined action of Iron Pyrite (fools' gold), oxygen, water, and bacteria in mines. Removal of any of these would halt acid mine drainage production. However, as a result of complex chemical reactions, acid is produced and the iron in pyrite is placed in solution in the form of ions. Not only is the acid polluting, but also when the iron is exposed to oxygen in streams, it is oxidized and precipitates forming "yellow boy," which is clearly visible, and more acid. Other materials such as aluminum and manganese may be detrimental if they exist in large quantities, but the two major problems in treating acid mine water in this region are removal of acid and iron.

Research sponsored by the Coal Research Board centered on the use of ozone (a highly reactive form of oxygen) to oxidize iron and hence aid in its removal from mine drainage. This method proved very effective but was

considered economical only for removal of lower quantities of iron which may otherwise be difficult to remove. However, the economics were based on production of ozone by electrical discharge through oxygen, such as occurs during an electrical storm.

Investigators at Brookhaven National Atomic Energy Laboratory have shown recently that oxygen in water may be converted to ozone by use of a nuclear reactor. Thus possibilities exist for using nuclear energy for treatment. Brookhaven and Wilkes College are undertaking joint investigations on a pilot plant scale as a result of the original results of the Coal Research Board study and the findings at Brookhaven.

Research on the Public Health Service-sponsored study produced a mathematical model for controlling mine drainage pollution by regulating the amount of acid and alkaline water interacting in the Susquehanna River Basin at any one time. Dams on both acid and alkaline feed streams could regulate the flow. The model can be used to predict water quality at any point in the river as a result of this regulation.

Although continuing research on mine drainage is and will be carried on, the investigations at Wilkes have made contributions toward solving the overall acid mine drainage problem.





by Dr. Stanley J. Holden  
Professor of Physics

Wilkes College is currently in the second year of a three-year project to upgrade secondary school science and mathematics in northeastern Pennsylvania. The project is sponsored by the Luzerne County School Board and is funded under Title III of the Elementary and Secondary Education Act of 1965. The work is being carried on under the co-direction of Dr. Stanley J. Holden, Professor of Physics and Coordinator of Scientific Research; and Dr. Eugene L. Hammer, Professor and Chairman of the Department of Education. The Associate Director for the project is Mr. Victor F. Baiz who was formerly principal of Coughlin High School in Wilkes-Barre. The project staff is composed of faculty members from local colleges and well-qualified high school teachers from the region.

The project staff is distributed among five disciplines. These are Biology, Chemistry, Environmental (Earth and Space) Science, Physics, and Mathematics. Biology is staffed by Mr. Harold Harty of the University of Scranton and Mr. William J. Murray who teaches at Scranton Prep and also teaches part-time at the University of Scranton. Dr. Francis J. Michelini, Dean of Academic Affairs at Wilkes College, has assisted from time to time. The chemistry staff is composed of Dr. Ralph B. Rozelle, Professor and Chairman of the Department of Chemistry and Director of Graduate Studies at Wilkes College; Dr. Alfred W. Bastress, formerly Chairman of the Department of Chemistry at Wilkes College; Mr. John W. Sulcoski, Science Supervisor and Chairman of Chemistry at Coughlin High School in Wilkes-

## THE SCIENCE AND MATHEMATICS IMPROVEMENT PROJECT (SMIP): A PROGRAM TO UPGRADE SECONDARY SCIENCE AND MATHEMATICS IN NORTHEASTERN PENNSYLVANIA

Barre; and Mr. Frank Wempa, who teaches chemistry at Meyers High School, Wilkes-Barre. Environmental science is staffed by Dr. Alvan Bruch, Associate Professor of Physics at Wilkes College; and Miss Kathryn Gregory, who teaches earth science in the Wyoming Valley West School District. The responsibility for developing the physics program is in the hands of Dr. Francis J. Donahoe, Professor of Physics, Wilkes College; Mr. Walter A. Placek, who is currently teaching at Keystone Junior College but who will be joining the Wilkes College Physics Department in September; Mr. Joseph Moran, physics teacher, Coughlin High School, Wilkes-Barre; and Dr. Holden. Two members of the Mathematics Department at Wilkes College enjoy the main responsibility for developing the program in mathematics. They are Mr. Boyd L. Earl, Associate Professor of Mathematics; and Mr. Joseph H. Salsburg, Assistant Professor of Mathematics. In addition, they have been aided from time to time by several high school teachers including Mr. William R. Murphy, Scranton City Schools; and Mrs. Ruth Roman, Blue Ridge Schools.

The overall goal of the project is to upgrade and modernize the teaching of science and mathematics in the schools of northeastern Pennsylvania. In order to accomplish this objective, it is necessary to both improve the background of the teachers in their specific disciplines and to provide them with information concerning the availability of new curricula and new materials which they may adapt to their needs. In order to accomplish its stated goal, the Science and Mathematics Improvement Project (SMIP) has adopted a multi-pronged approach.

During the first year and a half of the project's operation, the staff has concentrated on the development of curriculum guides in each discipline. These curriculum guides are designed so that the teacher may adapt or adopt

each of these guides as he best sees fit. The complete set of guides in each discipline constitutes a course of study and may be used in lieu of the teacher's regular text or materials. By the end of the project, which is scheduled for completion on June 30, 1970, a complete set of curriculum guides will have been developed in each discipline. During the period while these guides have been under development, the SMIP staff has been engaged in several other activities. Last summer a very successful one-week workshop was run for approximately 80 teachers in all five disciplines. The workshop familiarized the teachers with the SMIP program and dealt with new curricula materials which the teachers had not seen. The workshop also provided time for discussion of existing problems and their possible solutions. Since that time there have been innumerable requests for additional workshops and it is planned to run another one-week workshop for approximately 125 teachers from the region at the end of August.

The staff has also provided other services during the past year and a half. The environmental science cadre are giving a two-semester course on Saturday mornings for teachers of earth and space science from the region. In cooperation with SMIP, Wilkes College is offering these teachers either six undergraduate credits for certification in earth and space science or three graduate credits in education at no cost to the teachers. There are presently 18 teachers enrolled in this Saturday morning course. It was decided to offer this course due to the pressing demand to retrain general science teachers so that they might be able to competently teach the new earth and space science courses which are gradually replacing general science at the seventh, eighth, and ninth grade level. The success of this ninth grade level. The success of this course and requests which have been

(continued on page 6)

## Wilkes Will Offer New Degree As Materials Engineering Major



Dr. James M. Toole, assistant professor in the Wilkes College Department of Physics, explains some of the techniques to be used in the new Materials Engineering program, which will be inaugurated in September, to Michael S. Ruduski, a student in the physics program at the college.

Wilkes College, in September of this year, will initiate a program leading to the Bachelor of Science Degree in Materials Engineering, thus becoming the second school in the United States to provide such an opportunity at the undergraduate level.

Education in the field of Materials Engineering has expanded considerably in the last decade. However, the emphasis has been primarily at the graduate level. Stanford University in California offers the only other program leading to the Bachelor of Science degree in this field.

Due to the short supply of trained people, industrial competition is great and persons with training in this field are in more favorable positions of securing employment than other people in related engineering disciplines. Generally, salaries are 15-25% higher. It is this increasingly important role of the Materials Engineer that Wilkes College has recognized in the creation of this new program.

### Demand Exceeds the Supply

Materials Engineering or Materials Science as it has become known is one of the most recent additions to the list of professional and academic disciplines. The demand for such persons greatly exceeds the supply, and as man expands his technology and extends the limits of his environment to the far reaches of space, the demand will undoubtedly become critical.

Every engineer is vitally concerned with the materials available to him. Whether his product is a computer, a space vehicle, a bridge, or an automobile, he must have a thorough knowledge of the properties and behavioral characteristics of the materials he proposes to use. It has become a common practice in engineering education to require all engineers to complete a course dealing with the fundamentals of Materials Science.

The Materials Engineer determines and attempts to change the atomic ar-

rangement and chemical composition of materials in order to effect a desired change in their properties and behavioral characteristics. In a sense then, the Materials Engineer is an architect, and his building blocks are the chemical elements which nature has thoughtfully provided. The building blocks can be assembled in different ways to yield metals, plastics and ceramics with desirable properties.

Steels, which are primarily alloys of iron and carbon, are particularly illustrative of the need for Materials Engineers.

Current production of iron and steel exceeds 120,000,000 tons per year, a rate equivalent to more than 400 tons of steel per year for each engineer in this country. The versatility of the steels as engineering materials is evidenced by the many kinds of steel which are manufactured — over 2,000 varieties!

At one extreme are the very soft steels used for deep-drawing applica-



tions, such as automobiles and refrigerator panels. At the other extreme are the very hard and tough steels used for gears and bulldozer blades.

Some steels must have abnormally high resistance to corrosion. Steels for such electrical purposes as transformer sheets must have special magnetic characteristics so that they may be magnetized and demagnetized many times each second with low power losses. Other steels must be completely non-magnetic, for such applications as wrist watches and minesweepers.

#### Solid State Electronics

Perhaps the most spectacular contributions of the Materials Engineer to modern technology have been in the area of solid state electronics. Materials such as germanium and silicon are available to the electronics industry on a routine basis, with extraordinary purity; for example, silicon can be prepared such that for every 1,000,000,000 atoms of silicon there is but one non-silicon or impurity atom.

Certain ceramic materials, which are compounds consisting of metallic and non-metallic chemical elements, can be

made to conduct electricity as efficiently as a metal or as poorly as an insulator. The transition from metallic to insulator properties is achieved by an electric field, and the speed of the transition is phenomenal.

Semiconductor devices being produced at the present time cannot be operated at temperatures exceeding 200 degrees centigrade, but it now appears that a new material, silicon carbide, which is quite similar to diamond, can extend the range to 600-700 degrees centigrade, making certain space missions much more realistic. Silicon carbide is also useful as a laser, and this, in conjunction with its semiconducting properties, may lead to a new generation of miniaturized computers, incomparably faster than present day machines.

Solid materials are available that change the length of light waves, produce hundreds of volts from the heat of a match, or expand by hundreds and even thousands of times when placed in water. Some materials even possess the capability of memory retention of certain types of information for several years.

#### SCIENCE, MATH PROJECT continued

received from the teachers in other disciplines for similar courses have led to plans on the part of the SMIP staff to offer courses for graduate credit in education in each discipline next year. Once again, these courses will be offered to the teachers for credit at no cost to the teachers. The actual cost will be shared between SMIP and Wilkes College.

In order to install the new materials and new programs in some of the local schools so that change may take place, the SMIP staff plans to work very closely with several school districts next year. Negotiations are presently underway with a number of school districts to allow their teachers released time one-half day per week so that they may meet with the SMIP staff and prepare material to be presented to their classes in the succeeding week. Both the school districts and the project staff are most enthusiastic about the benefits to be derived from

such a close relationship. It is hoped that it will be possible to provide credit for the teachers who will work with the project staff on a half-day-per-week basis during the next school year.

In addition to the above-mentioned activities, the staff has engaged throughout the life of the program in general consulting with the schools on any problems that might arise. These problems have ranged from the choosing of a new textbook to the design of a new science facility. The project office has also acted as an information dissemination center maintaining a complete library of textbooks and reviewing all audio-visual materials as they become available. Information has also been distributed through newsletters and by programs presented at one-day institutes sponsored by the local school districts.

All these activities have been necessary and of great worth in establishing a rapport between the project and the local school districts. Without a doubt,

**Broad Background in Arts Included**  
Because Wilkes College is a liberal arts college with a strong science faculty, a student in the program will be able to obtain a broad background in the arts as well as a sound education in the basic sciences. Upon graduation, a student may enter industry directly, or continue his education in graduate school.

The programs leading to a Bachelor of Science Degree in Materials Engineering will begin in the Fall Semester of this year. They are geared to educating engineers in modern science and technology of this field. A student graduating with this degree will be well prepared to meet the challenges of the electronic industries from the standpoint of design and use of the new solid state devices and in their fabrication.

Selected advanced courses in this new program of Wilkes includes Electromagnetic Fields, Materials Science, Physical Electronics, Physical Metallurgy, Materials Science Instrumentation, Crystallography, X-Ray Diffraction Techniques, Crystal Growth and Defects and Engineering Research.

the most difficult task in attempting to install change in the schools is the establishment of the proper relationship with the teachers and administrators in the schools. Only after a great deal of work and personal contact has the proper rapport begun to evidence itself in recent months.

As can be seen from the size of the staff and the 700 teachers in 100 school districts who are involved in this five-county project, the task is large. The staff is, however, enthusiastic about the eventual outcome and feels that significant changes will have been wrought.

This project was undertaken because its goal is coincident with the long-established commitment to community affairs which exists at the college. It has long been the practice of the college to provide help and service to the community wherever it could and the Science and Mathematics Improvement Project is further evidence of this commitment.

## Chemical Reaction Mechanism Highlight of Wilkes Research

by Dr. John Labows  
assistant Professor of Chemistry

The study of the mechanism of chemical reactions is one of the many aspects of research being centered upon in the Wilkes College Department of Chemistry. The mechanism of a reaction involves the individual motions atoms undergo during the course of a chemical reaction.

By understanding reaction mechanisms, the scientist is able to adapt a given reaction to make important new compounds. Of special interest is a study of the mechanism of thermal and photochemical reaction.

Photochemistry is most familiar through the action of photosynthesis, whereby plants absorb light energy and transform it through the action of various chlorophyll pigments into chemical energy. The chemical energy can then be used by the plant cells to provide the energy necessary for the synthesis of complex biological molecules (growth).

#### Light Energy Changes Organic Molecules

Similarly, in the laboratory, organic molecules can be made to undergo changes in structure when



Dr. John Labows at work in Wilkes College laboratory.

subjected to light energy. This is usually done by using a mercury arc lamp, which provides high energy ultraviolet radiation. When a simple organic molecule such as benzene, is exposed to this ultraviolet light, it absorbs energy and, thus, exists in a high energy or excited state. In such a state, it can be made to undergo interesting molecular rearrangements or other reactions with other molecules to form more complex molecular structures.

Also, it is of interest to study the effects of high temperature (as high as 500 degrees centigrade, for instance) on molecular structure. Such extreme temperatures provide new synthetic routes to complicated molecules which have not been previously synthesized.

These synthetic molecules found in such reactions created by high temperatures and ultraviolet light are then analyzed by special infrared and nuclear magnetic resonance instruments, which are available in the Wilkes College Laboratory.

Results of the work are then published in scientific journals and may facilitate the synthesis of biologically important molecules, which are vital in this processing of the increasing number of synthetic products on the American market.

#### Outside Support for Research Projects

In addition to the study of the mechanism of chemical reactions at Wilkes, the Petroleum Research Fund, administered by the American Chemical Society, and the National Science Foundation are supporting research work on the structure of communication systems of arthropods, such as insects, beetles and millepedes.

The main vehicle for communication among these small creatures involves chemicals. The chemical messages are divided into two types: (1) communication within the same species, where chemicals serve as sex attractions, alarm systems and territorial and trail markings, and (2) communication between different species where chemicals serve defensive purposes in a type of chemical warfare.

The classical example of a defensive secretion is the spray of a skunk. Among arthropods, chemical defenses comparable to that of the skunk are widespread. In fact, the vocabulary of protective chemical signals possessed by these organisms may be one of the richest in the entire world of life, and scientists now are beginning to understand a small part of this vast domain, thanks to research comparable to that being done by Wilkes College Chemistry Department.





# Wilkes College Conducts Study of 25 Lakes in Nearby Region

*Bodies of Water Among This Area's Most Valuable Resources with Data Needed to Better Utilize Assets*

Dr. Charles B. Reif, chairman of the Wilkes College Department of Biology, prepares an analysis of a water specimen, which he is pouring into a millipore filter, in connection with further study of a small relative of the lobster called *Daphnia*.

Limnology is the field of science in which the study of lakes is of primary interest. The Greek word "limnos" means lake and the Greek word "logos" means a discourse upon some subject; thus the formation of the word limnology.

The lakes in the region of Wilkes-Barre are among the area's most valuable resources. To better utilize these resources a study of 25 lakes of the region has been undertaken by the Wilkes College Department of Biology.

The limnology survey thus far has involved mensuration or measuring of the lakes to determine their areas, depths and volumes, chemical analysis of the lakes' waters to determine what ions are dissolved therein, determination of the temperatures of the waters and the penetration of light into the waters, and sedimentation of organic and inorganic materials onto the original bottoms of the lakes.

In addition to the general survey, a number of specific biological problems have been studied and soon the living organisms of all 25 lakes will be considered. The limnological research was begun early in 1943 and has involved close to 100 students in various activities.

Some of the lakes being studied are natural lakes which now occupy depressions created by the glacial ice which covered the area around Wilkes-

Barre several times during the Pleistocene Epoch.

Evidence obtained from examination of the sediment in Cummings Pond indicates that the lake was originally 40 feet deep and had living within it certain small creatures characteristic of deep cold lakes, whereas the present forms in Cummings Pond (which has filled in so that it is now only 10 feet deep) are found in warm, shallow lakes. The man-made lakes, most of which have been created within the last 50 years, are somewhat different in nature from the glacial lakes.

## Work on Ice Cover

Bathymetric mensuration of the lakes has been accomplished during the winter months when the survey crews could work on the ice-covered water. The charting of the lakes was done only in winter principally because surveying lines can be established on the ice with the result that each sounding can correctly be plotted, whereas the taking of soundings from a boat is efficacious only if one has two or more transits properly positioned on shore. From the charts which have been thus prepared, the areas, mean depths, and volumes have been determined. In several cases the original bottoms of the lakes have been established by painstakingly probing through the bottom sediments.

Although many students have had a part in making various determinations concerning the chemical natures of the local lakes, their material has not yet been published. One study was published by Thurman Grove and Joseph Crane in which a comparison was made of natural lake water, inlet stream water, rain water and spring

The generalization was put forth that the natural lakes reflect the chemical qualities of the springs which supply them much more than the qualities of rain water, whereas the newly created lakes reflect more the natures of rain run-off waters which do not have as many ions in solution as does spring water. In general all of the 25 lakes tend to be neutral or slightly on the acid side as far as their hydrogen ion concentrations go. The native rocks are low in calcium and this is generally the case in the lakes' waters.

Harveys Lake which has two deep areas, one of which has a maximum of 92 feet, stratifies in such a manner that the warm, upper layer has a thickness of 25 feet in August and the lower waters remain cooler than 50 degrees Fahrenheit so that plenty of oxygen is retained throughout the summer for trout, smelt, and salmon.

Winola Lake, on the other hand, which also has two deep areas (the deeper one being only 65 feet at maximum), has a tendency to have temperatures above 50 in its deepest parts and so does not retain enough oxygen during the month of August to support fish below 30 feet.

Several of the lakes, such as Cummings Pond, are so shallow that their summer temperatures encourage large populations of many kinds of living organisms and their demands for oxygen on warm summer nights (when photosynthesis stops during the hours of darkness) cause catastrophes involving the death of thousands of fish. Several of the lakes characteristically support great numbers of blue-green algae in July and August so that the lake has a greenish color. Dr. Sheldon

(continued on page 10)



*Presented at the Seventeenth Annual Convention of the National Science Teachers Association, Dallas, Texas, March 21-25, 1969 Work sponsored by the Luzerne County School Board under a Title III ESEA grant from the Office of Education.*

## Teaching Problems in the Earth and Space Science Courses

There is today increased emphasis on earth and space science in the public schools across the nation. This is due, at least in part, to the growing problem of pollution of air and water and to the NASA space program. At any rate, the demand for teachers trained in the earth and space sciences far exceeds the supply and in many states the need is being filled by anyone with a science major or, in extreme cases, a science minor. Administrators seem to think that because the subject matter is environmental, any educated person who knows the scientific method can intelligently guide children through the course. Their reasoning may be correct in principle, but it fails to take into account several factors in the school situation that we believe make it difficult for even the teacher who is well prepared in the earth and space sciences to teach the subject effectively. These factors tend to separate the student and the phenomena he must study, which is outside the school—sometimes at a considerable distance. If

## A PROPOSED PROGRAM TO PREPARE FILMSTRIPS ON REGIONAL GEOLOGY FOR EARTH AND SPACE SCIENCE COURSES

*by Dr. Alvan Bruch and Kathryn A. Gregory, teacher, Wyoming Valley West, Environmental Science Staff, Science & Mathematics Improvement Project, Wilkes-Barre, Pennsylvania. Associate Professor of Physics*

these administrators would provide a little assistance, however, they could justify their assignments, increase the effectiveness of both experienced and inexperienced earth and space science teachers, and meet a demand which is not unreasonable in this day—that public schools provide instruction in that area of growing concern, the environment of man. The geology unit of the earth and space science course provides a good example of the type of assistance that can be provided.

## Teaching Problems in the Geology Unit

Geology is the scientific account of the development of the earth from the earliest recorded events to the present. The record is, of course, not in learned books but on the face of the earth. A first course must deal with this record, at least in part. That is to say, the student must be familiar with the data before he is introduced to the scientific account. There are two ways to give him visual experience in this presentation of the geologic record. One is the field trip directly to the side of that part of the record to be studied; the other is the use of pictures—films, slides, and filmstrips. The field trip has the force of personal involvement and would be the natural choice of any teacher; and, once he had learned where the interesting phenomena were located, the inexperienced teacher would no doubt find he could guide the children through the observation intelligently. However, the field trip is not practical in most school situations: too much advanced planning is necessary, poor weather may force a cancellation, the total classroom time lost may be excessive, the most rewarding observations are often in the most hazardous locations, and the student-to-teacher ratio which might be satisfac-

tory in the classroom is unacceptable in the field.

Films, slides, and filmstrips provide indirect visual experience without personal involvement. Many excellent examples are available and, judiciously selected, they may be used to provide a full survey of the field. However, economic considerations dictate that these visual aids have no regional characteristic that would limit their commercial value. Thus, several problems arise: 1) there is no possibility for personal involvement in the observation; 2) there is no basis for selection for the inexperienced teacher; 3) detail and relevance must be supplied by the teacher who too often does not have adequate background.

If the teacher has sufficient background, he can bias the selection of material toward his interest and training. This will always be the satisfactory basis for a meaningful course. Another satisfactory basis for selection of material is bias toward what is nearby, and this might even serve well the adequately trained teacher. For the inadequately prepared teacher, it is the only reasonable basis for selection. Without such a criteria, the alternative is to show it all. This is, in fact, what is most commonly done, at least in the region in which the authors have studied the problem. The result is a rather steady march through the encyclopedic pages of the text with visual aids used without clear point or emphasis. Detail and relevance are lost in the press to get through it all. The student finds his interest and attention decreasing as the number of things he must commit to memory increases. The natural inquisitiveness he initially brought to the earth and space science class has been suppressed by an avalanche of facts he cannot relate to.



### Proposed Solution to the Problems of the Geology Unit

The objections to the field trip are valid; yet the need that could be met by the field trip—direct visual experience with personal involvement—remains. The authors suggest that there is only one reasonable substitute—indirect visual experience that can be reinforced by direct visual experience obtained individually and apart from the classroom. They say, "Put the field trips on filmstrips. Augment them with detailed discussion for the teacher. Restrict them to the area in which the students actually move about, individually or with the family. Treat in the classroom only those general topics in detail that are related to the geologic features in the filmstrips, and use the many excellent films available to teach all other topics in the unit for which you find time." This solution has almost the force of personal involvement and also helps the teacher in his selection and presentation of materials. Detailed write-ups that accompany these filmstrips would enable the teacher to become versed in the natural phenomena of his area without his spending valuable time in research.

The authors suggest that the administrative unit of a region or district should seek out an earth science teacher who is competent enough to do this type of work. If no one has this competence, geology teachers from the nearest college or university can certainly provide someone on a consultant basis who can prepare regional filmstrips within the budget discussed later.

### Justification Based on Experience of the Authors

The filmstrip restricted to regional geological features need not be a fear-

some thing for the amateur. The authors had great trepidation when they started their first filmstrip, for neither had any experience; but it develops that the audience is as sympathetic as the family is to home movies, and errors of technique are quickly forgiven. The authors were also not familiar with the geology of the region when they began. However, a month or two reviewing the publications of the state geologic survey, and other public documents, and a few weeks in the field were sufficient preliminaries to photographic work. Several misadventures—such as working with positive prints instead of slides—proved to be surmountable. Additional side benefits developed when photographic trips to new areas were expanded into field trips for regional earth and space science teachers on an informal once-a-week basis. By the end of the first summer, sufficient work had been done to make seven filmstrips, and about 15 regional teachers had become aware of the richness of their local area in geologic features they could introduce into their teaching program.

Two of these seven filmstrips have been produced. The first filmstrip is clearly a complete field trip. The second has a slightly different format: it uses some of the regional features to teach geologic processes and then locates numerous sites where the results of the processes may be seen. Both formats are included in our general term "field trip."

These two completed filmstrips have been tested in classroom situations in both the junior high school classes for which they were prepared and in a college course in introductory earth science. The reception was gratifying. Not only were the groups attentive and inquisitive but also exact locations of

particular features were sought. It was evident that some members of the class were going to go out into the field and have the direct visual experience.

### Financial Considerations

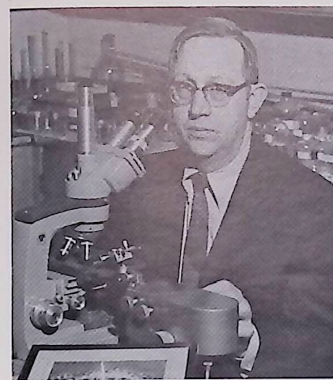
The cost of preparing the filmstrip from the photographic negatives is about \$350 and this would include about 100 copies of the strip which should be nearly adequate for the region. This, however, is the smallest part of the cost of production, the largest being the salary earned by the person doing the photographic work and preparing the correlated textual materials. Only rough estimates can be given here. Assuming \$1,000 per month is paid over the summer months for two years and \$200 per month each school term for part-time work on the preparation of the filmstrips and the texts, the total cost can be kept to about \$10,000 for salaries. If photographic equipment must be purchased the cost of it and the films may be \$300 to \$1,000. If in this period 10 filmstrips on the region are produced, the average cost may be about \$1,500 per filmstrip master. Throughout this period, however, the person preparing the filmstrips would be available for field trip work with the regional teachers and for workshops on the materials. The net result can be a tremendous upsurge in interest in the geologic features of the region and increased effectiveness in the classroom from two sources: the teachers will be presenting in detail a limited amount of material they have personal interest in; the students will be examining a relevant sample of the geologic record which they can supplement and reinforce by direct visual experience individually.

ever the algae forms show a positive relationship to light because light is necessary in their continuing photosynthesis. And since algae form the base of any limnetic food chain, the continued welfare of green algae is fundamental in a lake. However, some evidence has been accumulating that the activities of motorboats on lakes reduce light penetration and so lessen the productivity of lakes. Interference of the light penetration can greatly affect the quality of the water.

The present detailed study, in addition to the general survey, involves the thermal phenomena within the sediments of the bog at Lake Nuangola.

Solar energy is received on bog and lake surfaces and as the heat is slowly transmitted to the deeper sediments. The sediment at a depth of 25 feet has temperatures (ranging from 48 to 50 degrees Fahrenheit) which reveal a thermal lag of about four months so that the sediment is warmest in January and coolest in July.

Publication of the physical characteristics of the 25 lakes being surveyed is planned in conjunction with the Wyoming Historical and Geological Society. With that publication completed, the decks will then be cleared for a more careful study of the living organisms of the lakes.



Dr. Robert E. Ogren

Associate Professor of Biology

It was once said by Disraeli, "The more extensive a man's knowledge of what has been done, the greater will be his power of knowing what to do." So it is with the cell biologist. The reason for doing basic studies, according to Dr. Robert E. Ogren of the Wilkes College Biology Department, is "to advance knowledge." The more that is known about life of any kind, the more man will be able to understand his own life and health.

The cell biology laboratory at Wilkes represents an awareness that life depends upon the health of cells. The more that is known about the life of cells, the more will be known about the life of humans.

Does a cell biology laboratory have any particular significance for Wyoming Valley? Of course it does. It can and does give technical advice on microscopical and biological problems to other laboratories and education institutions. It provides a laboratory for professors and students to learn. Its awareness of new advancements gives aid to other interested persons.

### Advance Training

Through the National Science Foundation Summer Institute, it provides advanced supplementary training for teachers of science in secondary schools. The college's research into the microstructure of living things results in publications distributed throughout the world thus making Wyoming Valley bet-

## Life of Cells Studied In Wilkes Laboratory

ter known. There are, of course, other laboratories in the Valley doing diagnosis and research along medical lines associated with our hospitals. However, the Wilkes laboratory is unusual. It is one of the few in the world where a small tapeworm embryo is being used as a basis for cell studies.

The principles of "cell theory" were stated some 100 years ago as a result of studying a variety of living things. For this reason, research in cell biology does not require any particular organism. It makes use of the microscope in a variety of ways and then explains observations in bio-chemical terms.

For instance, most people know that coal consists of fossilized plants. Yet few persons realize that oncelivingplants were living bodies composed of cells. It is also common to remark that coal is made of the element carbon. Again, few people realize that this carbon was once in the atmosphere of ancient earth and that it was taken from the air by primitive green plants and then trapped in their body structure by the plant's living cells. Thus, for many years when "coal was king" in Wyoming Valley, the financial economy of the people was based on the functional economy of ancient green plant cells.

This example represents Wilkes' interest in the microstructure and function of life. It also shows that human economy depends heavily on the unique abilities of cells.

### Aids Important

How can the investigator learn he has new information? That his answer is original? He needs access to scientific publications. He needs the latest books on scientific exper-

iments. He needs a good library. At Wilkes he has the recently completed Eugene Shedden Farley Library, fully staffed and experienced in obtaining publications needed for research. As the result of learning what has been done elsewhere, the cell biologist then has a greater chance of discovery.

Findings from the Wilkes laboratory have been reported to national scientific meetings and publications. In the past school year, three articles, resulting from student-faculty research, have appeared in the "Transactions of the American Microscopical Society" containing facts revealed for the first time to science.

These advancements in knowledge will promote further studies that could aid in the control or treatment of worm diseases in animals and man. Requests for reprinted copies of these reports have come from all over the world from investigators, libraries, research institutes, universities and college and government laboratories. The work has been supported by grants from the National Science Foundation, Pennsylvania Academy of Science, Wilkes College and the Northeastern Heart Association.

It must be realized that such research at present is not full time. It is done outside a full teaching load, therefore it is slow work. However, each small item completed adds to the total; the new results explain the old. A favorite motto in the biology department at Wilkes explains the attitude of its faculty and students. It reads "It is the greatest of all mistakes to do nothing when you can do only a little. Do what you can."

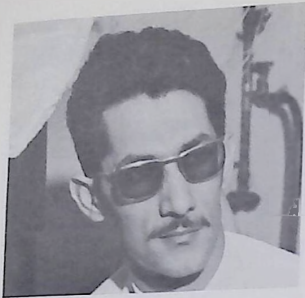
The people at Wilkes are doing just that!

### STUDY OF LAKES continued

Cohen has shown that certain people are allergic to phycocyanin (a chemical manufactured by blue green algae) and so recommends that these people not swim in the lakes so affected.

One study which is continuing under the direction of Wilkes College Associate Professor Donald Tappa concerns the vertical migration of small creatures in the genus Daphnia. The Daphnids tend to move into the upper level of the lake during the night and into deeper water during the period of daylight. Their movement is apparently a negative response to light. How-





# ELECTRONIC AND SPACE AGE NEEDS CHANGE EDUCATIONAL CRITERIA

The following article was written by Dr. Umid R. Nejib, a member of the Wilkes College Department of Physics. Assistant Professor of Physics.

The electronic and space age is one of the familiar phrases appended to the times in which we now live.

This is partly because progress in electrical engineering has had a profound effect upon almost every phase of modern-day living. Advances have gone beyond being just scientific developments. Instead, they have become an integral and important part of our home life.

The changes which have affected us are forcing a re-definition of the meaning and the needs of an electrical engineer, and this in turn, has to be projected into his educational and professional background.

Fundamental research and imaginative application of electromagnetic phenomena and the electric and magnetic properties of materials, such as transistors, are continually contributing to improved electric power generation, automatic controls, data processing, computers, wire and space communication on earth and in space, missiles, radio and radar.

Indeed, electrical engineers are busy with a broad range of projects throughout all the sciences and in industry.

The task of mastering this needed broad range is practically impossible for the student who follows a curriculum developed in the 30's or 40's. These first programs were developed to deal with specific details relative to those times. They were effective then because the range of electrical engineering was rather limited compared to today's.

Wilkes College is a good example of an institution that faced, developed and implemented today's demanding educational goals for an effective electrical engineering program.

In September of this year, Wilkes is adding an electrical engineering program to its already strong science curriculum, which will lead to a Bachelor

of Science degree. This program and a materials engineering program, which is also being added, are geared to educating engineers in modern techniques and science in these fields.

## Goals of Program Cited

The educational goals of an electrical engineering program in this modern day age must include four elements:

(1) The mastery of an unusual breadth of physical science and mathematics.

Wilkes College is aware of this fundamental emphasis, which is evident in its strong programs in physics, chemistry and mathematics. One cannot, for example, know how a type of transistor works unless he is familiar with the basic concepts of semi-conducting materials. Knowing these concepts will make it easier to comprehend and understand circuits and lasers. Furthermore, he will have the ability to develop new devices and understand the operation of new systems yet to come.

(2) The development of initiative, resourcefulness and inventiveness in applying scientific advances to challenging problems.

These characteristics of the engineer can be improved and implanted by means of seminars, individual research and independent study under guidance. This philosophy is already being practiced by Wilkes College, as junior and senior students are required to work on special projects on the undergraduate level, in addition to the requiring of professors to work on graduate level projects. This research helps a student pick up valuable new ideas and exploit them while they are ripe for use.

(3) Vital engineering analysis of real engineering problems for the main action of a certain thing.

## Recognition of Complex Problems

It is very important that the engineer

learn to recognize and reduce a complex problem to its simplest terms. Having the knowledge to do this, he then is in a position to apply the principles of engineering science to the problem and then obtain a solution.

Analysis should be emphasized by means of introducing carefully selected problems, such as those confronting space or underwater communications. These problems are complex in their general form, but solutions can be reached if they are reduced through analysis.

(4) Atmosphere at the institution of learning.

Rather than only emphasizing the program, it is important that laboratories and facilities be available and continuously updated. Wilkes College has planned all necessary laboratories, intermediate and advanced, for the four-year electrical engineering program alone, in addition to those already in existence. Courses are examined periodically and enhanced as demands increase. At the same time, advanced research is carried on by the staff to generate an atmosphere of academic and scientific progress for a further understanding of various phenomena and devices. Departmental boundaries should not limit their areas of interest; it is, rather, the inter-departmental movement and exchange of ideas and cooperation that give rise to the atmosphere needed for such a program.

Besides obtaining a precise and carefully constructed scientific background, the undergraduate at Wilkes receives a broad education in the arts as well. Courses to be included in the new four-year program are: electromagnetic fields, electronics, physical electronics, solid state devices, energy transmission and radiation, electromechanical energy conversion, logic and switching circuits, microwave circuits and devices, and engineering research.

## The Muhlenburg Lectures



DR. THOMAS J. MIZIANTY

Assistant Professor of Biology

A series of three lectures delivered at Muhlenburg College, Allentown, Pa., on February 10, 11, 12, 1969 at the annual Institute of Faith program entitled, "From the Hands of the Scientist, Deliver Us, Good Lord?"

### Lecture Number One

#### THE ETHICAL BASIS OF BIOLOGY

It is customary to begin a lecture with the presentation of a joke. With this, say those who are experts in the art of public speaking, you put the audience at ease, permit an air of joviality, and if the talk is an after dinner speech, help, I suppose, to aid in digestion. But to joke is entirely alien to the nature and purpose of this series of lectures. It is my purpose to arouse you to a sense of awareness, concern, shame, fright, and hopefully, action. We will not be speaking of pleasant things. If at times these lectures sound like the classic fire and brimstone sermons, they are intentionally designed so because, if one cannot be motivated by brotherly love, at least one can be activated by fear. These lectures are a distillation of a course that is offered at Wilkes College for the non-science major. It is our intention to acquaint these students with enough facts of biology so that they may qualify as scientific literates, and also to impress them with the fact that science is relevant to their lives and futures as ordinary citizens. My colleague, Dr. Donald Tappa, will be here tomorrow to aid in our discussions. Another colleague, upon hearing that I was scheduled to give a series of lectures, asked regarding their nature. When I told him that I would be speaking about the ethical basis of science, he said that, in effect, I would be, to paraphrase a German idiom, "feeding the horse the same old hay". This is an attitude that is quite common among professional people and students, and, it is an attitude which is one of the roots of the present crisis. Crisis? Yes, I said crisis! We are living in a revolution, a revolution that will change drastically our patterns of life — and most people are not aware of it. We have had industrial revolutions, scientific revolutions,

and now, we are in a biological revolution. Biologists are only dimly aware of it themselves! There are in the world about 200,000 biologists, each of them pursuing his own specialty without regard to the movement of the entire field. Only occasionally does a prophet arise to distinguish the forest from the trees and present to the biological community the direction in which it is headed. These prophets at present recommended courses of action to governmental agencies. These agencies rarely responded. If then there is professional and political neglect, one can hardly blame the public for its neglect. Moralists also can be included in this category, but theirs is a particularly sad lot. So far behind in their knowledge of what biology is doing, they cannot, therefore, comment on the morality of what is happening. They will be forced to change their ideas before they can adequately study them. Science will simply sweep them off their feet like some gigantic tidal wave, and if they wish to organize an opposing force, it will have to be of such a magnitude which knows no precedent in history. Since a great many theologians are still debating the thirteenth century, I doubt that this can happen. Gordon Rattray Taylor calls this revolution *The Biological Time Bomb*, the title of his recent book. Physics in the first half of this century underwent such a rapid growth of knowledge, much of it under the cloak of governmental secrecy, that it brought into the world the atomic bomb. No one ever asked the moralists or the public for their permission to enter the nuclear age. It was only after the fact, and after the horrible use of this knowledge in warfare that the public became concerned about the uses of atomic energy. Likewise, much of the work in biology is unheralded and secret, and soon a biological bomb (and Taylor means bomb in the allegorical sense) will explode in our society.

Let me digress a moment and build a little historical background. The scientific method arose in challenge to systems of authoritarian knowledge. Its chief tool is the experimental test, repeatable hence predictable, confirmed by others as objective fact. The scientific method gets down to brass tacks. It leaves alone questions that are unanswerable and it concerns itself with that which is answerable according to its own methods. This approach has been remarkably successful. It has been a brash approach looked upon with disdain by other academic disciplines. Ninety percent or so of all scientists who ever existed are alive today. It is quite easy to understand that there is a knowledge explosion. Whereas in the early days of science discoveries were centuries apart, important advances now occur daily. Coupled with this is the scientific emphasis on efficiency. The ordinary person in reaction to all of this develops an inferiority complex. There is simply too much to know. It takes years of specialized training to understand even basic concepts and to acquire the skills necessary for efficient productivity in the sciences. This attitude may have permeated society and created, some complain, a depersonalized world with an emphasis on facts. Facts are important because facts are practical. The truth becomes scientific fact. That is true which can be proven to be true. Religion, once the queen of sciences, has been dethroned. The traditional God concepts, when chal-



lenged from Copernicus to Darwin to Kornberg, have created a desire to prove in a scientific manner the validity of these concepts. The modern mind demands the removal of all that appears like superstition and magic from religious sentiments. The recent change in language format in the Catholic Church removed the abracadabra atmosphere of liturgical service. Other theological trends, such as the doubting of the virgin birth of Christ or his physical resurrection (both biological impossibilities) further illustrate the idea. God, the almighty, has become the God hypothesis, incapable of being proven.

Biology can be characterized as the steady march of mechanism. Whereas it was previously necessary to postulate the existence of spirits of animation, it became clearer that the most mysterious and biological processes can be explained in mechanistic terms. Biologists are confident that mechanism will continue to be a valid principle and no aspect of life will elude their knowledge and control. So obsessed by truth, as the stereotype goes, the scientist forgets all moral principles, and we have literature's Dr. Jekylls and Dr. Frankensteins. To counter this mistaken notion, Dr. Jacob Bronowski has taken up the challenge of restoring science's good name. In *Science and Human Values*, he analyzes the scientist's search for truth in terms of its effects on ethical systems. The body of scientists is a society based upon the principle of truth. We should inspect this society more closely to see if it can serve as a model for the rest of society. The men and women who practice science make up a company of scholars that has been more lasting than any modern state, and yet has evolved as no church has. The fellowship of scientists is free, uninhibited and communicative. From this pursuit of truth flow other values which include independence in observation and thought with the usual result being a variety of opinions. In any growing area of science, hypotheses abound and until the principle is proven conclusively, many schools of thought exist. This means that dissent is absolutely necessary in science but it is a disciplined type of dissent, one that must follow the rules of the game of science. The society of scientists must be a democracy, one in which many are able to practice, and upon which is based a tolerance of the work and opinions of others. Science respects those who have contributed to its formation even though their theories are not presently held. Science is kind to its fallen heroes, they are not ignored as heretics, or forced to recant under threat of excommunication, nor has any scientist ever been shot, exiled, or convicted as is quite probable in a political state. This does not sound like the image of science that we are used to. Instead it is a positive one, endorsing all those values traditionally regarded as humanistic ones. Bronowski points out that science flourished in two ages: ancient Greece and the period since the Renaissance. These were periods that brought forth democratic society. The correlation between the growth in science and the growth in democracy is more than merely coincidental. The scientific spirit is akin to the longing for freedom and justice. Science has nothing to be ashamed of in its basic nature. Applications of scientific knowledge by governments and other self interested groups is by far the major question. Dr. Bronowski's thesis was a

valiant defense by a scientist-humanist. There are too few of these. C. P. Snow popularized the idea of the two cultures to the point that it has become a cliché. It is not a question whether scientists and humanists can converse with each other at a cocktail party but the danger is being unaware of each other. Scientists feel all their experiments are for the good of mankind and humanists are not convinced that ethical problems arise from scientific research.

If perchance my present audience shares the same view, let me present a time schedule (from Taylor) of biological advances. It is predicted, for example, that by 1975 we will experience:

- extensive transplantation of limbs and organs
- test tube fertilization of human eggs
- implantation of fertilized eggs in the womb
- indefinite storage of eggs and sperm
- choice of sex of offspring
- extensive power to postpone clinical death
- mind modifying drugs
- memory erasure
- artificial placenta
- artificial viruses

By 2000:

- personality reconstruction
- enhancement of intelligence
- memory injection and memory editing
- test tube baby factories
- hibernation
- prolongation of youthful vigor
- first cloned animals
- synthesis of unicellular organisms
- man-animal hybrids

After 2000:

- control of aging
- synthesis of complex living organisms
- disembodied brains
- brain computer links
- gene insertion and deletion
- cloned people
- man-robot hybrids
- indefinite postponement of death

If all of these sound startling to you, then you are not familiar with the present trends in biology. Biologists have taken the first steps leading to the conclusions outlined and they are meeting remarkable success. Each new advance is heralded as a step in the right direction. In 1965, Charles Price, President of the American Chemical Society, suggested that the creation of life be declared a national goal. Fortunately or unfortunately, his suggestion was not adopted.

Let me pause here again so I can weave a new thread into the fabric of these lectures. Taylor's time scale seems to indicate that the future will be determined by the advance of science, that all these things will come to pass. Yet, many biologists feel that mankind will not survive the present century. There are factors at work which will limit the scientists in their researches and which will limit ourselves. They are just as biological but stem from neglect rather than planning. We need not turn our attention to the moral sensitivity of scientists but to the sensitivity of the average person.

One hundred years ago a man by the name of Charles Darwin proposed a theory of evolution. Although most people now give tacit approval, very few have an understanding of what Darwin tried to say. One hundred years without Darwin is enough! The essential blow of Darwinism attacks the human ego. The religious romantic fallacies which have placed man in control of creation, with animals and plants subject to his command, and which has supplied him with the view that he is some link between the world of protoplasm and the world of spirit prohibit man from fully accepting Darwin. To accept this view of evolution, man must view himself as a creature subject to the same laws of nature as other living forms, of having his origins among them, and the view that man is not an essential member of the biosphere. To an egotist, this is a big mouthful to swallow. Darwin did not speak of his idea as humbling, he spoke of grandeur in his view of life, of biological forms being most wonderful and beautiful. He pointed to evolution as a process; a process which continues to work today. There is indeed a nobility in the fact that man is aware of the process which shapes him. Unlike the rabbit or the oak tree which lives and dies and has no knowledge of the vast scheme which has given them their chance at existence, man can perceive the vast cosmic process. Sir Charles Lyell, founder of modern geology and friend of Darwin, likened this ability to that of the Spirit, which the poets say, animates the universe. This can hardly be described as a degrading view of man. The question before man now is: faced with the knowledge that man has an evolutionary future, what can man do to plan for that future? So far, we have done little planning. We worry if we can correct in time our past mistakes. The evolution which formed us was an entirely mechanistic process. No body was consulted to see if man would make a nice addition to the earthly scene. We are here as a result of an amoral process. Will we stay here? The new evolution will be moral because what we do or do not do will affect our chances of survival. If we can agree that survival of our race is a moral good and extinction a moral evil, a code of ethics can be based upon this norm. I am not the first to propose this; for it is a basic tenet of a philosophy called evolutionary humanism advanced by such distinguished gentlemen as Sir Julian Huxley and George Gaylord Simpson. Failure to follow this philosophy will certainly mean extinction, a most unusual aspect of this philosophical system. Tomorrow I will take a closer look at man's evolutionary problems and on Wednesday I will say a few words placing them into the Christian perspective.

#### Lecture Number Two

#### EUGENICS, EUPHENICS, AND EUTHENICS IN THE SHAPING OF MAN'S FUTURE

Yesterday, we placed an emphasis on man's future. Shall he neglect his evolutionary future, shall he control it intelligently, or shall it fall into a third category, that of diabolical control? The issue may soon be forced, perhaps within the next twenty years. There are a number of trends that so indicate this. The first that we shall consider is that of the population explosion. Surely, this

should not be unfamiliar to us. We have all heard of Thomas Malthus and he published his *Essay on Population* before Darwin about 150 years ago. Modern day news media have presented the public with much information. The information has been available. But, yet, we seem to think that it is not at all that serious, that there is plenty of land still available. Most of western U.S.A. is barren wasteland and it would take a modern pioneer of stout heart to settle there. Most of the American population is concentrated in three megalopolises; one extending from Boston to Richmond, Va., on the east coast, another in the Great Lakes region, and a third on the west coast. These areas are overpopulated and exhibit all the ills and symptoms of social congestion. Far beyond the borders of the United States, the rates of increase in other parts of the world are staggering. If you have ever seen a graph which plots the numbers of people living in the world versus the periods of human history, the rate of rise in this century is best described as exponential. People with mathematical leanings should get a clear picture. Asia and South America exhibit the greatest increases. These rapidly expanding populations consist of people who are still young, therefore, having their reproductive years ahead of them; they are poor and unable to care for their families; and they are for the most part illiterate, unable to cope with the nature of their problem and unable to communicate with others in an attempt to solve it. If we speak of education as a remedy and think it is really our only solution, we are engaging in high flights of fancy. There is no time to undertake the massive educational program and have it become effective before famine strikes. I am not saying that we should give up educational attempts but it will not save us at the last minute from disaster. We will see millions upon millions of people die because they have no food. When Pope Paul spoke to the United Nations, he said that we should not cut down the number of those who feast at the table of life but rather increase the amount of food on the table. This statement may be poetic but it is certainly unrealistic. Increased technology may temporarily relieve the problem but continuously rising birth rates will obliterate any technological advance. This does not attack the problem at its roots. Birth rates will have to go down or death rates rise. The moral choice seems plainly simple. Birth rates must go down and this means birth control. What will it be like living in a world in which millions of men, women and children will be undergoing the agony of starvation? Famine may not hit the United States as early as 1975. We need not fear ourselves being left to this horrible fate. I wonder if even when famine strikes other areas of the world, will we have learned our lesson? The news reports will come in, but after station identification we will soon forget about the problems of other people. I am not joking. How many of us really care about the starving people of Biafra? How do those pictures of starving children with their huge eyes, sorrowful faces, and bulging stomachs really move us today. These are tokens of things to come. I can envision a situation arising in which some organization, powerful enough and world encompassing, would have to, after the human population had taken a tremendous beating, take control

(continued on page 30)





Robert S. Capin, CPA, is a professor at Wilkes College, Wilkes-Barre, Pennsylvania, where he has taught full time since 1959. He has had supervision of the Wilkes Accounting Internship Program since 1960. In order to evaluate the performance of the students, visitations are made throughout the country to the offices where students are interning. He is a member of the Pennsylvania Institute of CPAs, the AICPA, the American Accounting Association and NAA.

# The Search for and Development of a Professional Public Accountant

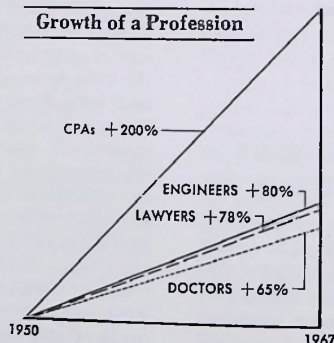
by Robert S. Capin, CPA

The author presents an excellent "picture-window" look into the internal structure, recruiting and training policies of the small, medium sized, and large CPA firms.

The tremendous and rapid growth of the accounting profession currently poses a manpower shortage, and within the very near future this shortage will become acute. It is therefore incumbent upon the profession to search for solutions by continuing to analyze the structure of the profession, the employer, and the professional staff. It is also necessary to study those factors that now affect and will affect the profession in the future, so that adjustments may be made where necessary; namely in pre-professional and post education, salaries, turnover, state laws governing entry into the profession and recruiting policies and practices. These problems, as they relate to public accounting, will be considered in this paper.

## Growth of the Profession

At present there are approximately 600,000 accountants in the United States, of which approximately 100,000 are Certified Public Accountants. Available data indicates that the number of accountants has at least doubled every 10 years for the past 40-year period. The following figures disclose the rapid growth in the past and projections for the next 12 years.



- 1800—Less than 50 public accountants listed in all the larger cities of England and Scotland.
- 1896—First CPA law passed in New York.
- 1900—About 250 CPAs in the U.S.
- 1920—About 5,000 CPAs in the U.S.
- 1940—About 20,000 CPAs in the U.S.
- 1960—About 50,000 CPAs in the U.S.
- 1970—(Estimate) About 110,000 CPAs in the U.S.
- 1980—(Estimate) About 230,000 CPAs in the U.S.\*

Based upon the relative growth rates from 1950 to 1960, the number of CPAs will exceed the number of each of the two leading professional groups: physicians and surgeons, and lawyers and judges.<sup>2</sup>

As indicated by the following graph, accounting is the fastest growing profession in the United States today.<sup>3</sup>

Demand continues to outrun supply, and the demands of the 1970's will cause this gap to widen. One of the major reasons for this situation is that the accountant is becoming increasingly involved in matters other than conventional auditing and problems of taxation. The accountant is being called upon and is gaining prominence in the area of management advisory services (business consultant). In 1967, 16,000 accountants were graduated, of which 8,000 became associated with industry, government, teaching, and other miscellaneous jobs. Public accounting firms required 12,000. Obviously, there was a shortage of 4,000.<sup>4</sup> This shortage, coupled with the growth of public accounting firms, indicates the seriousness of the situation.

The rate of birth of new businesses requiring cost controls and management analysis (e.g., budgets, return on investment analysis, alternative courses of action, work measurement, utilization of computers, search for executives, marketing), additional government control requiring more and new data, and the reporting of financial data to more investors, creditors, and to the public, contribute to the continued rapid growth of the profession. In addition, Public Accounting firms have expanded foreign offices in order to provide adequate service to American clients with foreign investments.

**The Structure of the Employer**  
Accountants have the opportunity of working in public practice (i.e., small, medium, or national accounting firms

or becoming an individual practitioner), for industry, for government, or teaching primarily at the college and university level. Are there advantages of one over the other? A brief analysis of the public, private, and government sectors of accounting is important before moving to the other areas of discussions. Following this analysis, the other areas of discussion will be limited to the public accounting sector.

## The Large C.P.A. Firm

The large CPA firms are often referred to as the "Big Eight." In alphabetical order they are: Arthur Andersen & Co.; Ernst & Ernst; Haskins & Sells; Lybrand, Ross Bros. & Montgomery; Peat, Marwick, Mitchell & Co.; Price Waterhouse & Co.; Touche, Ross, Bailey & Smart; and Arthur Young & Company. Other ranking national firms are Lavensthal, Krekstein, Horwath & Horwath; S. D. Leidesdorf & Co.; Alexander Grant & Co.; Hurdman & Crans-toun; Seidman & Seidman; Main La-frentz & Co.; Clarence Rainess & Co.; J. K. Lasser & Co. and Harris, Kerr, & Forster.<sup>5</sup> The large firm primarily deals with large company clients; however, medium size and smaller clients are also served.

The large firm offers a more formal training program, and indeed, insists that staff men participate. In addition, the firm helps the young staff men pass the CPA examination by offering special courses geared for the examination.

Although the large firm has a sophisticated personnel department, the very size of the firm prevents the staffman from getting to know many of his coworkers.

Large firms offer the opportunity for attaining the partnership level within the firm. On the other hand, large firms also make available opportunities with clients for staffmen who feel that they have reached their highest level with the firm, or consider the position with private industry a substantial advancement. In the latter case, both the large public accounting firm and the employee are satisfied because the employee has advanced himself, and the public accounting firm knows that it has one of "its own boys" working for a client.

## The Medium Size Firm

The medium size firm serves clients of various sizes and permits the young staffman to assume greater responsi-

bility at an earlier stage in his career. Closer working relationships, both within the firm and with clients, are developed because the structure is less formal than the large firm.

Partnership opportunities in this size firm are good, especially for one who can bring new clients to the firm. Experience acquired in a practice of this size opens "doors" for varied positions with other public accounting firms, industry, or self-practice.

## The Small Firm

The small firm offers the opportunity to become involved with all areas of accounting and taxation within a very short time after joining the staff. However, the caliber of work may not be as sophisticated as that of the medium or large firm. Because the number of staffmen may be very limited, many of the jobs will be conducted alone or with one assistant.

The opportunity for partnership exists; however, it may very well be predicated upon bringing new clients into the firm.

## Private Accounting

In most cases, the fledgling accountant in private accounting begins his career as a trainee. He will probably receive additional job-oriented schooling, and will certainly receive on-the-job training. He will probably be assigned to a specific job (i.e. cost accounting, budgeting, etc.) rather than one that is all-encompassing in nature, and may remain at the job for a period of time and then move on to the next assignment.

Advancement in these firms is relatively slow; however, excellent positions (i.e. controllerships) may develop if the person has the ability and is willing to wait long enough. He may, in fact, become an executive of the company in due time.

## Government Accounting

Practically every government agency is searching for accountants. The shortage is so great that the government will permit an almost unlimited number of aliens to enter this country to fill the available positions. In fact, Robert Half Personnel Agencies, Inc., the nation's largest agency specializing in financial and accounting personnel, is opening an office in Great Britain for the main purpose of recruiting British accountants for the United States.<sup>6</sup>

In recent years many of the state

and federal agencies have been engaged in upgrading their professional staff. They have hired many people who have passed the CPA examination, and have encouraged those who have not passed the examination to study and ultimately take the examination.

Much of the work in these agencies involves examination of financial data and a critical management analysis of operations where government money is being spent. These examinations are conducted to test the effectiveness of the particular agency, and to confirm that services being rendered by outside firms are being performed in accordance with contract stipulations.

Staff size will vary according to the size of the agency. The largest employers of accountants are the U.S. Internal Revenue Service and the U.S. General Accounting Office.

Starting salaries are competitive with medium-size private concerns; however, maximum salaries are not as high. An important factor is that job security in government work is much greater than in private industry, and the pressure from top management is not as great.

## Structure of Professional Staff Rank

Every effective organization attempts to assign responsibility by establishing a table of organization. This is accomplished in public accounting firms by designating rank to the professional staff based upon experience, assignment of responsibility, and longevity. Typical staff categories in the large firms are as follows:

- Assistant
- Semi-Senior
- Senior (after approximately 2 to 4 years' experience)
- Manager (after approximately 4 to 7 years' experience)
- Partner (after approximately 10 to 15 years' experience)
- (Average age of partners in the large accounting firms 1965, 1966, and 1967 was 37-38 years)<sup>7</sup>

Some large firms use the designation "supervisor" which would fit between senior and manager, and the designation "principal" which would fit between manager and partner.

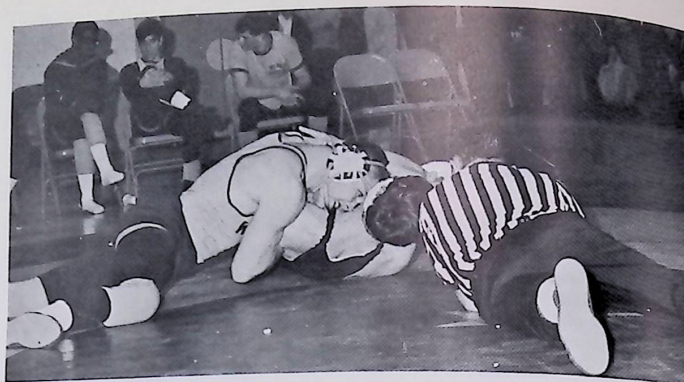
Obviously, the formality of staff rank is not as great in the medium size and small firms. As a matter of

(continued on page 34)



# Recap of 1968-69 Wrestling Season

GEORGE PAWLUSH '69



The Wilkes Colonel grappling squad continued its winning habits by finishing the 1968-69 season with a 14-1 seasonal log, one of the best marks in the school's wrestling history. Coach John Reese got good traction out of his squad as team members fired out to 103 match wins against 19 defeats.

The Blue and Gold's only loss of the year came at the hands of the Warriors of Lycoming College, 15-14. The Reesemen recorded big triumphs over such perennial nemises as Springfield, 27-0; New York Maritime, 17-16, and East Stroudsburg, 22-8.

Probably the top wrestling performance in Colonel history was chronicled by senior captain Joe Wiendl. The Wilkes Mr. Athlete posted a fine 15-0 dual record which boosted his lifetime output to an eye-catching 49-1. The 160-pound matman became the third Wilkes wrestler in history to ever capture a Wilkes Open crown. With relative ease he trampled through opponents, capping the journey with an 11-2

decision over Alex Steinbergh of the Penn Grapplers.

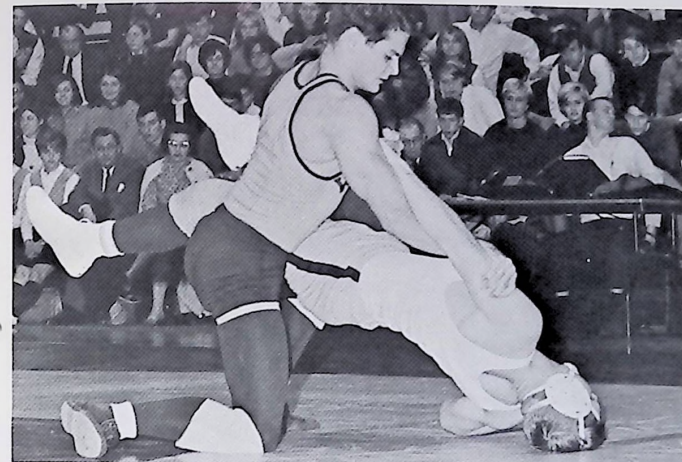
Another Colonel faring well in the "Rose Bowl of Wrestling" was 115-pounder Andy Matviak. The Easton bred bomber became the second Wilkes winner in record pages of the tourney by virtue of an 11-7 come-from-behind victory over Jim Fiore of Temple. In the second period of the match Matviak had been behind, 6-0.

The Middle Atlantic Conference wrestling championship trophy returned to the Wilkes campus after a one-year lapse and for the eighth time as the Reesemen captured the crown at the Conference championships at Muhlenberg College. The Blue and Gold were aided in their championship quest by staunch performances from John Marfia, Dennis Verzera, and Joe Wiendl, who all emerged as titleholders in the 130, 145, and 160-pound classes, respectively. Wilkes replaced Temple as the team champion. The Colonels had won the crown in 1966 and 1967.



## 1968-69 WRESTLING RESULTS

	Win	Loss	Draw	Pin	Decision	Forfeit	Team Pts.
Andy Matviak, 123	13	1	0	3	9	1	47-3
John Marfia, 130	11	1	0	1	10	0	35-3
Steve Kaschenbach, 137, 145	11	3	0	5	6	0	43-6
Dennis Verzera, 145, 152	10	3	1	2	8	0	34-17
Al Zelner, 152, 160	6	3	0	2	3	1	24-11
Gary Willets, 152, 160	13	1	0	3	10	0	45-3
Joe Wiendl, 160, 167	14	0	0	5	9	0	52-0
Rich Ceccoli, 167, 177	10	3	0	1	8	1	34-9
Ron Fritts, 177, 191, heavyweight	11	1	1	6	5	0	45-5
Bill Harris, 130	2	0	0	2	0	0	10-0
Ralph Tewksbury, 137	0	2	2	0	0	0	4-14
Tom Morris, 145	0	1	0	0	0	0	0-3
Tom Grant, heavyweight	2	1	0	2	0	0	10-3
Totals	103	18	4	32	68	3	383-77



Fresh from regaining the MAC title, the Wilkesmen traveled to San Luis Obispo, California, to participate in the NCAA College Division Tournament. The trip was financed by friends, faculty, alumni, and students who held a month-long campaign to raise \$2,500 needed for the team's expenses. Unfortunately, the change in climate proved too strong for the Colonels, as the charges of John Reese left the 20-degree Wilkes-Barre freeze for the balmy 75-degree weather of sunny California, which slowed down the squad.

Joe Wiendl made the trip worthwhile by regaining the 160-pound championship. The Wilkes captain swept easily through the pairings, edging by Rick Arnold of Cal Poly 3-2 in the finals. In winning the college tourney Wiendl joined former teammate John Carr as the only Colonels to ever win back-to-back national crowns.

Two weeks later, the Westfield, New Jersey, native closed out his star-

studded career by finishing fifth at the NCAA University Championships at Provo, Utah. Wiendl lost to Dave Martin of Iowa State 4-0 in the semi-finals.

## MEET RESULTS

Wilkes 97	.....	Buffalo 49
		*Oneonta 47
		*Montclair 41
Wilkes 34	.....	Kutztown 2
Wilkes 38	.....	C. W. Post 2
Wilkes 27	.....	Springfield 0
Wilkes 29	.....	Hofstra 10
Wilkes 22	.....	Elizabethtown 11
Wilkes 25	.....	Millersville 6
Wilkes 17	.....	N. Y. Maritime 16
Wilkes 14	.....	Lycoming 15
Wilkes 34	.....	U. of Mass. 2
Wilkes 22	.....	E. Stroudsburg 8
Wilkes 26	.....	Ithaca 5
Wilkes 42	.....	Delaware Valley 0

## \*Quadrangular

Overall final record — 14-1

Coach: John Reese, 135-25-6 (16 years)

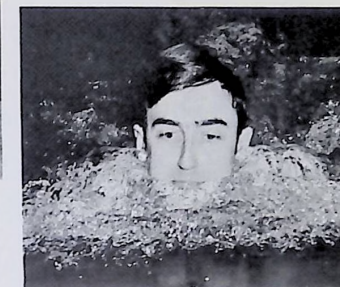
## Swimming Recap

GEORGE PAWLUSH '69

The Wilkes swimming team weathered through a dismal winter season in winning only one of 10 matches. The record, however, does not tell the whole story. As in the past, the squad was hampered by a lack of practice facilities. To add to the year's misery, the diving board at the YMCA broke during the Harpur meet, and the team was forced to forfeit diving events for the remainder of the home schedule.

The Colonels' only victory of the season came in an exciting 62-58 win over Philadelphia Textile. The outcome of the meet was decided in the final relay which Wilkes won. Key performances were turned in by senior co-captain Pat Burke in the 200-yard backstroke and by freestyler Jim Phethean.

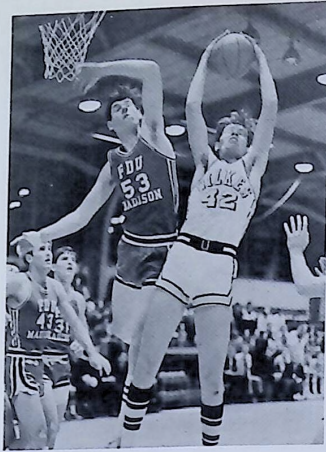
With only two squad members being lost through graduation, the Wilkes aquamen should be vastly improved to meet opponents next year.





## Basketball Replay

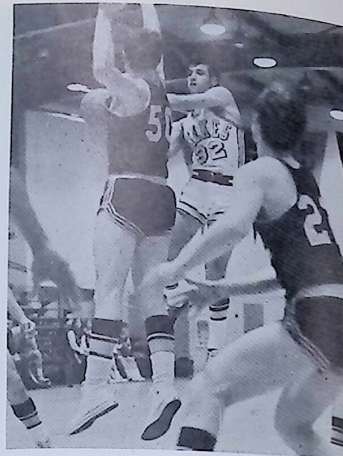
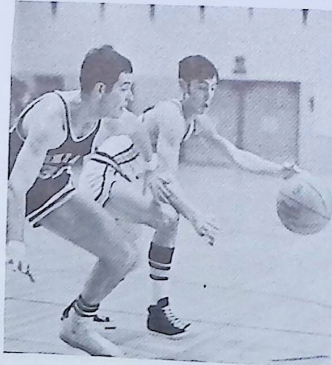
GEORGE PAWLUSH '69



The grin on Coach Ron Rainey continues to widen as his disciples burned the courts for a 13-11 record. It wasn't too long ago when 3-17 and 2-20 records were commonplace. The young mentor has finally succeeded in injecting a once hapless cage program with winning spirit.

This year's 13-11 log follows on the heels of the 12-11 mark of a year ago as the first winning season since the 1957-58 school year. To cite past records, the back-to-back winning seasons have only been accomplished once before in the 23-year history of the sport at Wilkes.

Again Rainey utilized a 1-2-2 zone defense to spread havoc among foes and instructed his team to run-run-run on offense. Midway in the season, after center Bob Ockenfuss sustained an injury and reserve center, Rich Davis, was kept out of action on account of mononucleosis, the mentor was forced to card a starting lineup with only one player over the six-foot barrier and yet



posted a 10-5 mark against squads well above the 6-2 average.

Junior forward Herb Kemp again led the Wilkesmen in most statistical departments. The Glenside native, who was named once to the All-East weekly squad, led the team scoring effort with 401 points and a 16.7 average per contest. After a sparkling sophomore year the Colonel mainstay slumped in the rebounding column but still managed to clear the nets for 10.7 rebounds per contest. Jay Reimel, sophomore playmaker, led in the assist department with 144, while fellow second-year man Bill "Wally" Umbach connected with 171 shots through the nets to establish himself as team leader. Umbach was the second highest scorer for Wilkes with 379 counters while captain and the only senior Bill Ryan produced 304 scores. "Cowboy" Bill Grick, Reimel's Montrose High teammate, complemented Reimel in the backcourt with 228 points and 86 assists.



A Special Report

# Who's in Charge?

*Trustees . . . presidents . . . faculty . . . students, past and present:  
who governs this society that we call 'the academic community'?*

THE CRY has been heard on many a campus this year. It came from the campus neighborhood, from state legislatures, from corporations trying to recruit students as employees, from the armed services, from the donors of funds, from congressional committees, from church groups, from the press, and even from the police:

"Who's in charge there?"

Surprisingly the cry also came from "inside" the colleges and universities—from students and alumni, from faculty members and administrators, and even from presidents and trustees:

"Who's in charge here?"

And there was, on occasion, this variation: "Who should be in charge here?"

STRANGE QUESTIONS to ask about these highly organized institutions of our highly organized society? A sign, as some have said, that our colleges and universities are hopelessly chaotic, that they need more "direction," that they have lagged behind other institutions of our society in organizing themselves into smooth-running, efficient mechanisms?

Or do such explanations miss the point? Do they overlook much of the complexity and subtlety (and perhaps some of the genius) of America's higher educational enterprise?

It is important to try to know.

Here is one reason:

► Nearly 7-million students are now enrolled in the nation's colleges and universities. Eight years hence, the total will have rocketed past 9.3-million. The conclusion is inescapable: what affects our colleges and universities will affect unprecedented numbers of our people—and, in unprecedented ways, the American character.

Here is another:

► "The campus reverberates today perhaps in part because so many have come to regard [it] as the most promising of all institutions for developing cures for society's ills." [Lloyd H. Elliott, president of George Washington University]

Here is another:

► "Men must be discriminating appraisers of their society, knowing coolly and precisely what it is about society that thwarts or limits them and therefore needs modification.

"And so they must be discriminating protectors of their institutions, preserving those features that nourish and strengthen them and make them more free." [John W. Gardner, at Cornell University]

But *who* appraises our colleges and universities? *Who* decides whether (and how) they need modifying? *Who* determines what features to preserve; which features "nourish and strengthen them and make them more free?" In short:

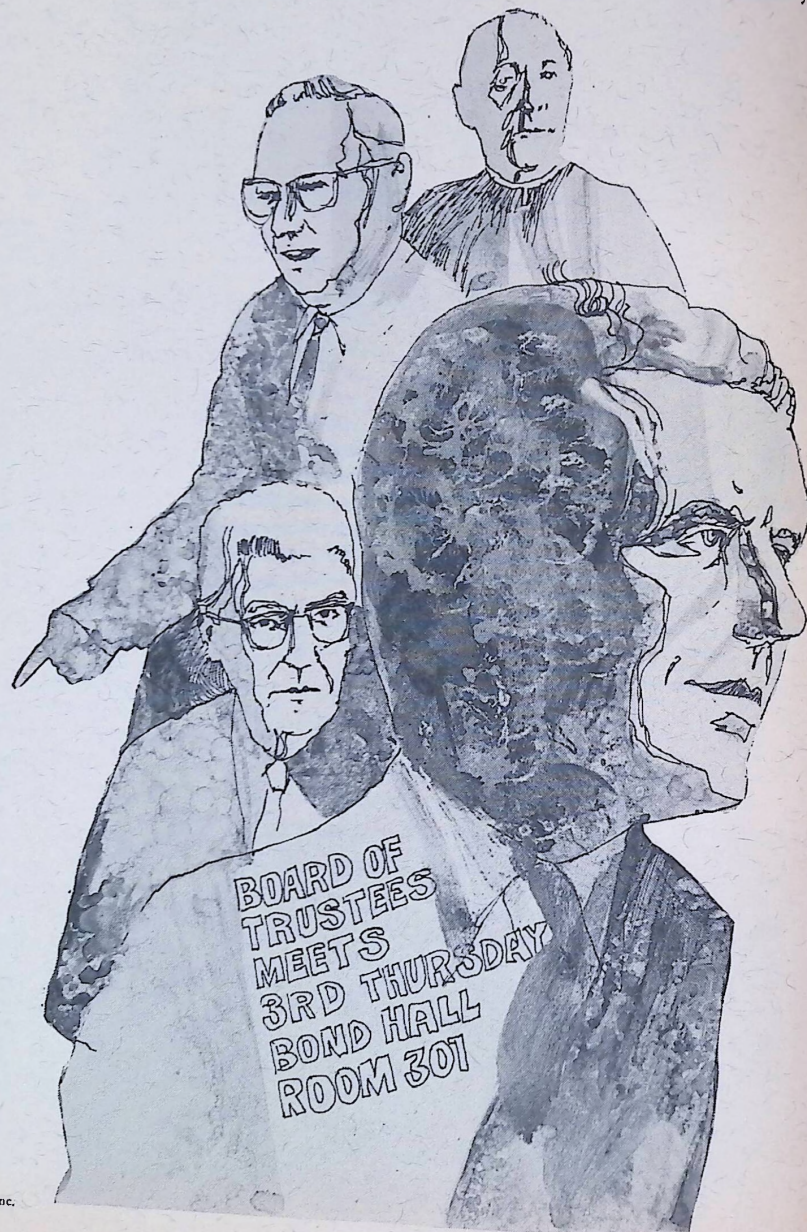
Who's in charge there?



## Who's in Charge—I The Trustees

**B**Y THE LETTER of the law, the people in charge of our colleges and universities are the trustees or regents—25,000 of them, according to the educated guess of their principal national organization, the Association of Governing Boards.

"In the long history of higher education in America," said one astute observer recently,



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"trustees have seldom been cast in a heroic role." For decades they have been blamed for whatever faults people have found with the nation's colleges and universities.

Trustees have been charged, variously, with representing the older generation, the white race, religious orthodoxy, political powerholders, business and economic conservatism—in short, The Establishment. Other critics—among them orthodox theologians, political powerholders, business and economic conservatives—have accused trustees of not being Establishment *enough*.

On occasion they have earned the criticisms. In the early days of American higher education, when most colleges were associated with churches, the trustees were usually clerics with stern ideas of what should and should not be taught in a church-related institution. They intruded freely in curriculums, courses, and the behavior of students and faculty members.

On many Protestant campuses, around the turn of the century, the clerical influence was lessened and often withdrawn. Clergymen on their boards of trustees were replaced, in many instances, by businessmen, as the colleges and universities sought trustees who could underwrite their solvency. As state systems of higher education were founded, they too were put under the control of lay regents or trustees.

Trustee-faculty conflicts grew. Infringements of academic freedom led to the founding, in 1915, of the American Association of University Professors. Through the association, faculty members developed and gained wide acceptance of strong principles of academic freedom and tenure. The conflicts eased—but even today many faculty members watch their institution's board of trustees guardedly.

In the past several years, on some campuses, trustees have come under new kinds of attack.

► At one university, students picketed a meeting of the governing board because two of its members, they said, led companies producing weapons used in the war in Vietnam.

► On another campus, students (joined by some faculty members) charged that college funds had been invested in companies operating in racially divided South Africa. The investments, said the students, should be canceled; the board of trustees should be censured.

► At a Catholic institution, two years ago, most students and faculty members went on strike because the trustees (comprising 33 clerics and 11 lay-

men) had dismissed a liberal theologian from the faculty. The board reinstated him, and the strike ended. A year ago the board was reconstituted to consist of 15 clerics and 15 laymen. (A similar shift to laymen on their governing boards is taking place at many Catholic colleges and universities.)

► A state college president, ordered by his trustees to reopen his racially troubled campus, resigned because, he said, he could not "reconcile effectively the conflicts between the trustees" and other groups at his institution.

**H**OW DO MOST TRUSTEES measure up to their responsibilities? How do they react to the lightning-bolts of criticism that, by their position, they naturally attract? We have talked in recent months with scores of trustees and have collected the written views of many others. Our conclusion: With some notable (and often highly vocal) exceptions, both the breadth and depth of many trustees' understanding of higher education's problems, including the touchiness of their own position, are greater than most people suspect.

Many boards of trustees, we found, are showing deep concern for the views of students and are going to extraordinary lengths to know them better. Increasing numbers of boards are rewriting their by-laws to include students (as well as faculty members) in their membership.

William S. Paley, chairman of CBS and a trustee of Columbia University, said after the student outbreaks on that troubled campus:

"The university may seem [to students] like just one more example of the establishment's trying to run their lives without consulting them. . . . It is essential that we make it possible for students to work for the correction of such conditions legitimately and effectively rather than compulsively and violently. . . .

"Legally the university is the board of trustees, but actually it is very largely the community of teachers and students. That a board of trustees should commit a university community to policies and actions without the components of that community participating in discussions leading to such commitments has become obsolete and unworkable."

Less often than one might expect, considering some of the provocations, did we find boards of trustees giving "knee-jerk" reactions even to the most extreme demands presented to them. Not very long ago, most boards might have rejected such

*The role of higher education's trustees often is misinterpreted and misunderstood*



## *A college's heart is its faculty. What part should it have in running the place?*

predominantly in the greatness of its faculty. But faculties . . . do not themselves build great faculties. To build great faculties, administrative leadership is essential."

Shortly after the start of this academic year, however, the American Council on Education released the results of a survey of what 2,040 administrators, trustees, faculty members, and students foresaw for higher education in the 1970's. Most thought "the authority of top administrators in making broad policy decisions will be significantly eroded or diffused." And three out of four faculty members said they found the prospect "desirable."

Who's in charge? Clearly the answer to that question changes with every passing day.

**W**ITH IT ALL, the job of the president has grown to unprecedented proportions. The old responsibilities of leading the faculty and students have proliferated. The new responsibilities of money-raising and business management have been heaped on top of them. The brief span of the typical presidency—about eight years—testifies to the roughness of the task.

Yet a president and his administration very often exert a decisive influence in governing a college or university. One president can set a pace and tone that invigorate an entire institution. Another president can enervate it.

At Columbia University, for instance, following last year's disturbances there, an impartial fact-finding commission headed by Archibald Cox traced much of the unrest among students and faculty members to "Columbia's organization and style of administration":

"The administration of Columbia's affairs too often conveyed an attitude of authoritarianism and invited distrust. In part, the appearance resulted from style; for example, it gave affront to read that an influential university official was no more interested in student opinion on matters of intense concern to students than he was in their taste for strawberries.

"In part, the appearance reflected the true state of affairs. . . . The president was unwilling to surrender absolute disciplinary powers. In addition, government by improvisation seems to have been not an exception, but the rule."

At San Francisco State College, last December, the leadership of Acting President S. I. Hayakawa,

whether one approved it or not, was similarly decisive. He confronted student demonstrators, promised to suspend any faculty members or students who disrupted the campus, reopened the institution under police protection, and then considered the dissidents' demands.

But looking ahead, he said, "We must eventually put campus discipline in the hands of responsible faculty and student groups who will work cooperatively with administrations . . ."

**W**HO'S IN CHARGE? "However the power mixture may be stirred," says Dean W. Donald Bowles of American University, "in an institution aspiring to quality, the role of the faculty remains central. No president can prevail indefinitely without at least the tacit support of the faculty. Few deans will last more than a year or two if the faculty does not approve their policies."

The power of the faculty in the academic activities of a college or university has long been recognized. Few boards of trustees would seriously consider infringing on the faculty's authority over what goes on in the classroom. As for the college or university president, he almost always would agree with McGeorge Bundy, president of the Ford Foundation, that he is, "on academic matters, the agent and not the master of the faculty."

A joint statement by three major organizations representing trustees, presidents, and professors has spelled out the faculty's role in governing a college or university. It says, in part:

"The faculty has primary responsibility for such fundamental areas as curriculum, subject matter and methods of instruction, research, faculty status, and those aspects of student life which relate to the educational process.

"On these matters, the power of review or final decision lodged in the governing board or delegated by it to the president should be exercised adversely only in exceptional circumstances. . . .

"The faculty sets the requirements for the degrees offered in course, determines when the requirements have been met, and authorizes the president and board to grant the degrees thus achieved.

"Faculty status and related matters are primarily a faculty responsibility. This area includes appointments, reappointments, decisions not to reappoint, promotions, the granting of tenure, and dismissal. . . . The governing board and president should, on

questions of faculty status, as in other matters where the faculty has primary responsibility, concur with the faculty judgment except in rare instances and for compelling reasons which should be stated in detail.

"The faculty should actively participate in the determination of policies and procedures governing salary increases. . . .

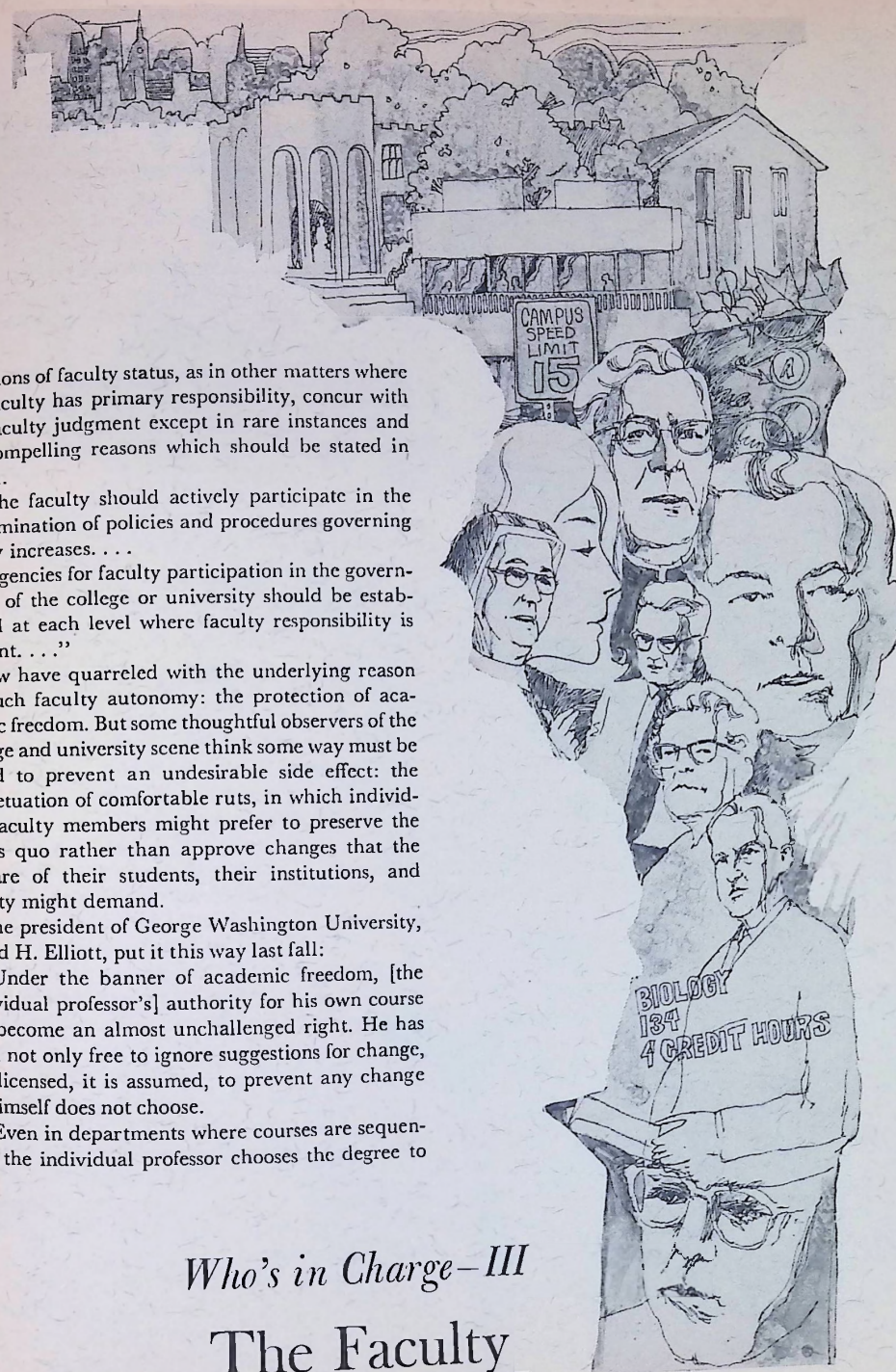
"Agencies for faculty participation in the government of the college or university should be established at each level where faculty responsibility is present. . . ."

Few have quarreled with the underlying reason for such faculty autonomy: the protection of academic freedom. But some thoughtful observers of the college and university scene think some way must be found to prevent an undesirable side effect: the perpetuation of comfortable ruts, in which individual faculty members might prefer to preserve the status quo rather than approve changes that the welfare of their students, their institutions, and society might demand.

The president of George Washington University, Lloyd H. Elliott, put it this way last fall:

"Under the banner of academic freedom, [the individual professor's] authority for his own course has become an almost unchallenged right. He has been not only free to ignore suggestions for change, but licensed, it is assumed, to prevent any change he himself does not choose.

"Even in departments where courses are sequential, the individual professor chooses the degree to

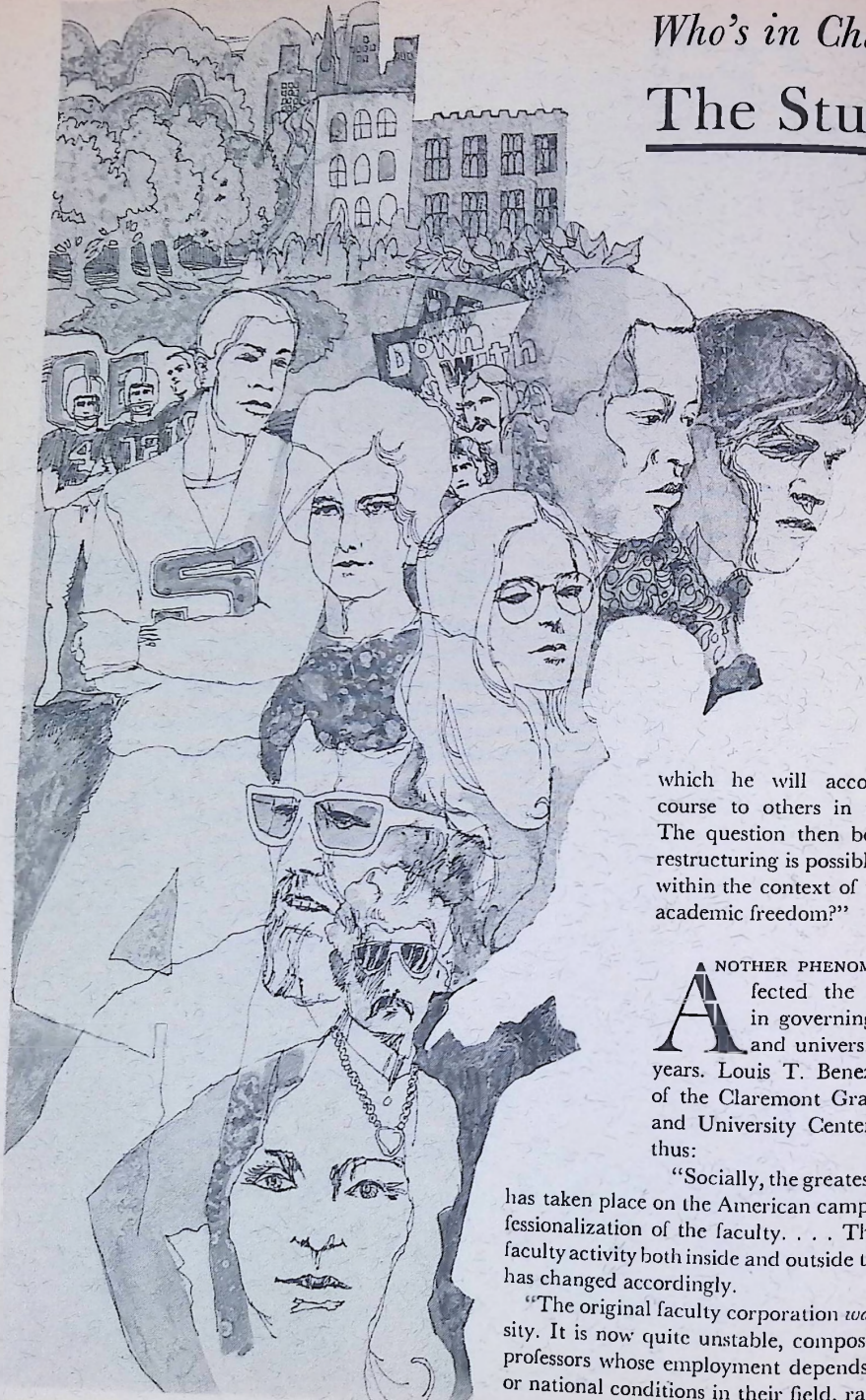


## *Who's in Charge—III*

# The Faculty



## Who's in Charge—IV The Students



which he will accommodate his course to others in the sequence. The question then becomes: What restructuring is possible or desirable within the context of the professor's academic freedom?"

**A**NOTHER PHENOMENON has affected the faculty's role in governing the colleges and universities in recent years. Louis T. Benezet, president of the Claremont Graduate School and University Center, describes it thus:

"Socially, the greatest change that has taken place on the American campus is the professionalization of the faculty. . . . The pattern of faculty activity both inside and outside the institution has changed accordingly.

"The original faculty corporation *was* the university. It is now quite unstable, composed of mobile professors whose employment depends on regional or national conditions in their field, rather than on an organic relationship to their institution and even

less on the relationship to their administrative heads. . . .

"With such powerful changes at work strengthening the professor as a specialist, it has become more difficult to promote faculty responsibility for educational policy."

Said Columbia trustee William S. Paley: "It has been my own observation that faculties tend to assume the attitude that they are a detached arbitrating force between students on one hand and administrators on the other, with no immediate responsibility for the university as a whole."

**Y**ET IN THEORY, at least, faculty members seem to favor the idea of taking a greater part in governing their colleges and universities. In the American Council on Education's survey of predictions for the 1970's, 99 per cent of the faculty members who responded said such participation was "highly desirable" or "essential." Three out of four said it was "almost certain" or "very likely" to develop. (Eight out of ten administrators agreed that greater faculty participation was desirable, although they were considerably less optimistic about its coming about.)

In another survey by the American Council on Education, Archie R. Dykes—now chancellor of the University of Tennessee at Martin—interviewed 106 faculty members at a large midwestern university to get their views on helping to run the institution. He found "a pervasive ambivalence in faculty attitudes toward participation in decision-making."

Faculty members "indicated the faculty should have a strong, active, and influential role in decisions," but "revealed a strong reticence to give the time such a role would require," Mr. Dykes reported. "Asserting that faculty participation is essential, they placed participation at the bottom of the professional priority list and deprecated their colleagues who do participate."

Kramer Rohlfisch, a history professor at San Diego State College, put it this way at a meeting of the American Association of State Colleges and Universities: "If we do shoulder this burden [of academic governance] to excess, just who will tend the academic store, do the teaching, and extend the range of human knowledge?"

The report of a colloquium at Teachers College, New York, took a different view: "Future encounters [on the campuses] may be even less likely of

resolution than the present difficulties unless both faculty members and students soon gain widened perspectives on issues of university governance."

**W**HO'S IN CHARGE? Today a new group has burst into the picture: the college and university students themselves.

The issues arousing students have been numerous. Last academic year, a nationwide survey by Educational Testing Service found, the Number 1 cause of student unrest was the war in Vietnam; it caused protests at 34 per cent of the 859 four-year colleges and universities studied. The second most frequent cause of unrest was dormitory regulations. This year, many of the most violent campus demonstrations have centered on civil rights.

In many instances the stated issues were the real causes of student protest. In others they provided excuses to radical students whose aims were less the correction of specific ills or the reform of their colleges and universities than the destruction of the political and social system as a whole. It is important to differentiate the two, and a look at the *dramatis personae* can be instructive in doing so.

**A**T THE LEFT—the "New Left," not to be confused with old-style liberalism—is Students for a Democratic Society, whose leaders often use the issue of university reform to mobilize support from their fellow students and to "radicalize" them. The major concern of sds is not with the colleges and universities *per se*, but with American society as a whole.

"It is basically impossible to have an honest university in a dishonest society," said the chairman of sds at Columbia, Mark Rudd, in what was a fairly representative statement of the sds attitude. Last year's turmoil at Columbia, in his view, was immensely valuable as a way of educating students and the public to the "corrupt and exploitative" nature of U.S. society.

"It's as if you had reformed Heidelberg in 1938," an sds member is likely to say, in explanation of his philosophy. "You would still have had Hitler's Germany outside the university walls."

The sds was founded in 1962. Today it is a loosely organized group with some 35,000 members, on about 350 campuses. Nearly everyone who has studied the sds phenomenon agrees its members are highly idealistic and very bright. Their idealism has

*'Student power' has many meanings, as the young seek a role in college governance*





## *Attached to a college (intellectually,*

led them to a disappointment with the society around them, and they have concluded it is corrupt.

Most sds members disapprove of the Russian experience with socialism, but they seem to admire the Cuban brand. Recently, however, members returning from visits to Cuba have appeared disillusioned by repressive measures they have seen the government applying there.

The meetings of sds—and, to a large extent, the activities of the national organization, generally—have an improvisational quality about them. This often carries over into the sds view of the future. “We can’t explain what form the society will take after the revolution,” a member will say. “We’ll just have to wait and see how it develops.”

In recent months the sds outlook has become increasingly bitter. Some observers, noting the escalation in militant rhetoric coming from sds headquarters in Chicago, fear the radical movement soon may adopt a more openly aggressive strategy.

Still, it is doubtful that sds, in its present state of organization, would be capable of any sustained, concerted assault on the institutions of society. The organization is diffuse, and its members have a strong antipathy toward authority. They dislike carrying out orders, whatever the source.

**F**AR MORE INFLUENTIAL in the long run, most observers believe, will be the U.S. National Student Association. In the current spectrum of student activism on the campuses, leaders of the NSA consider their members “moderates,” not radicals. A former NSA president, Edward A. Schwartz, explains the difference:

“The moderate student says, ‘We’ll go on strike, rather than burn the buildings down.’”

The NSA is the national organization of elected student governments on nearly 400 campuses. Its Washington office shows an increasing efficiency and militancy—a reflection, perhaps, of the fact that many college students take student government much more seriously, today, than in the past.

The NSA talks of “student power” and works at it: more student participation in the decision-making at the country’s colleges and universities. And it wants changes in the teaching process and the traditional curriculum.

In pursuit of these goals, the NSA sends advisers around the country to help student governments with their battles. The advisers often urge the students to take their challenges to authority to the

## *emotionally) and detached (physically), alumni can be a great and healthy force*

courts, and the NSA’s central office maintains an up-to-date file of precedent cases and judicial decisions.

A major aim of NSA this year is reform of the academic process. With a \$315,000 grant from the Ford Foundation, the association has established a center for educational reform, which encourages students to set up their own classes as alternative models, demonstrating to the colleges and universities the kinds of learning that students consider worthwhile.

The Ford grant, say NSA officials, will be used to “generate quiet revolutions instead of ugly ones” on college campuses. The NSA today is an organization that wants to reform society from within, rather than destroy it and then try to rebuild.

Also in the picture are organizations of militant Negro students, such as the Congress for the Unity of Black Students, whose founding sessions at Shaw University last spring drew 78 delegates from 37 colleges and universities. The congress is intended as a campus successor to the Student Nonviolent Coordinating Committee. It will push for courses on the history, culture, art, literature, and music of Negroes. Its founders urged students to pursue their goals without interfering with the orderly operation of their colleges or jeopardizing their own academic activities. (Some other organizations of black students are considerably more militant.)

And, as a “constructive alternative to the disruptive approach,” an organization called Associated Student Governments of the U.S.A. claims a membership of 150 student governments and proclaims that it has “no political intent or purpose,” only “the sharing of ideas about student government.”

These are some of the principal national groups. In addition, many others exist as purely local organizations, concerned with only one campus or specific issues.

**E**XCEPT FOR THOSE whose aim is outright disruption for disruption’s sake, many such student reformers are gaining a respectful hearing from college and university administrators, faculty members, and trustees—even as the more radical militants are meeting greater resistance. And increasing numbers of institutions have devised, or are seeking, ways of making the students a part of the campus decision-making process.

It isn’t easy. “The problem of constructive student

participation—participation that gets down to the ‘nitty-gritty’—is of course difficult,” Dean C. Peter Magrath of the University of Nebraska’s College of Arts and Sciences has written. “Students are birds of passage who usually lack the expertise and sophistication to function effectively on complex university affairs until their junior and senior years. Within a year or two they graduate, but the administration and faculty are left with the policies they helped devise. A student generation lasts for four years; colleges and universities are more permanent.”

Yale University’s President Kingman Brewster, testifying before the National Commission on the Causes and Prevention of Violence, gave these four “prescriptions” for peaceful student involvement:

► Free expression must be “absolutely guaranteed, no matter how critical or demonstrative it may be.”

► Students must have an opportunity to take part in “the shaping and direction of the programs, activities, and regulations which affect them.”

► Channels of communication must be kept open. “The freedom of student expression must be matched by a willingness to listen seriously.”

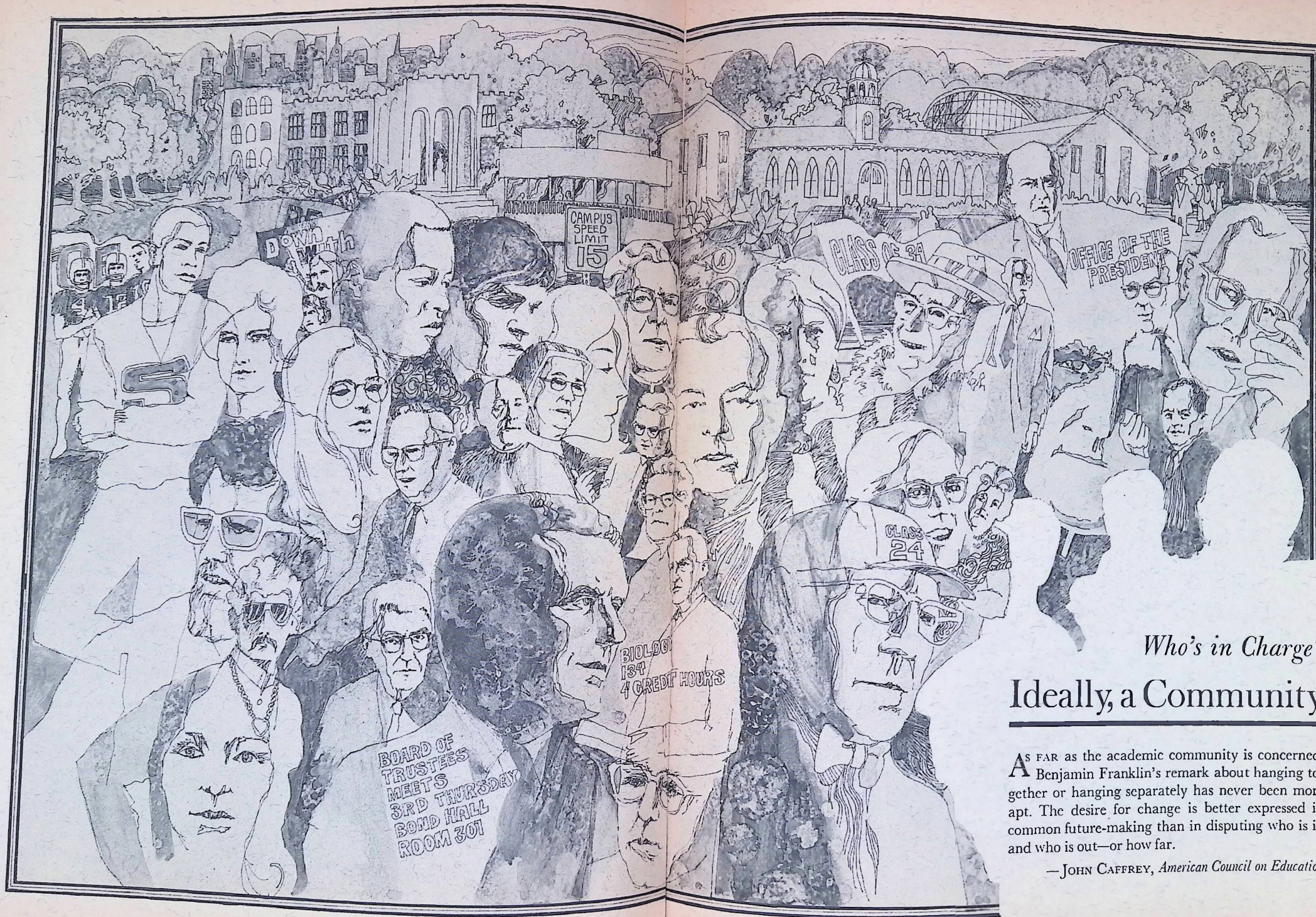
► The student must be treated as an individual, with “considerable latitude to design his own program and way of life.”

With such guidelines, accompanied by positive action to give students a voice in the college and university affairs that concern them, many observers think a genuine solution to student unrest may be attainable. And many think the students’ contribution to college and university governance will be substantial, and that the nation’s institutions of higher learning will be the better for it.

“Personally,” says Otis A. Singletary, vice-chancellor for academic affairs at the University of Texas, “my suspicion is that in university reform, the students are going to make a real impact on the improvement of undergraduate teaching.”

Says Morris B. Abram, president of Brandeis University: “Today’s students are physically, emotionally, and educationally more mature than my generation at the same age. Moreover, they have become perceptive social critics of society. The reformers among them far outnumber the disrupters. There is little reason to suppose that . . . if given the opportunity, [they] will not infuse good judgment into decisions about the rules governing their lives in this community.”





*Who's in Charge?*

## Ideally, a Community

AS FAR as the academic community is concerned, Benjamin Franklin's remark about hanging together or hanging separately has never been more apt. The desire for change is better expressed in common future-making than in disputing who is in and who is out—or how far.

—JOHN CAFFREY, *American Council on Education*



*A college or university can be governed well only by a sense of its community*

**W**HO'S IN CHARGE? Trustees and administrators, faculty members and students. Any other answer—any authoritarian answer from one of the groups alone, any call from outside for more centralization of authority to restore “order” to the campuses—misses the point of the academic enterprise as it has developed in the United States.

The concept of that enterprise echoes the European idea of a community of scholars—self-governing, self-determining—teachers and students sharing the goal of pursuing knowledge. But it adds an idea that from the outset was uniquely American: the belief that our colleges and universities must not be self-centered and ingrown, but must serve society.

This idea accounts for putting the ultimate legal authority for our colleges and universities in the hands of the trustees or regents. They represent the view of the larger, outside interest in the institutions: the interest of churches, of governments, of the people. And, as a part of the college or university's government, they represent the institution to the public: defending it against attack, explaining its case to legislatures, corporations, labor unions, church groups, and millions of individual citizens.

Each group in the campus community has its own interests, for which it speaks. Each has its own authority to govern itself, which it exercises. Each has an interest in the institution as a whole, which it expresses. Each, ideally, recognizes the interests of the others, as well as the common cause.

That last, difficult requirement, of course, is where the process encounters the greatest risk of breakdown.

“Almost any proposal for major innovation in the universities today runs head-on into the opposition of powerful vested interests,” John W. Gardner has observed. “And the problem is compounded by the fact that all of us who have grown up in the academic world are skilled in identifying our vested interests with the Good, the True, and the Beautiful, so that any attack on them is, by definition, subversive.”

In times of stress, the risk of a breakdown is especially great. Such times have enveloped us all, in recent years. The breakdowns have occurred, on some campuses—at times spectacularly.

Whenever they happen, cries are heard for abolishing the system. Some demand that campus authority be gathered into the hands of a few, who would then tighten discipline and curb dissent.

Others—at the other end of the spectrum—demand the destruction of the whole enterprise, without proposing any alternatives.

If the colleges and universities survive these demands, it will be because reason again has taken hold. Men and women who would neither destroy the system nor prevent needed reforms in it are hard at work on nearly every campus in America, seeking ways to keep the concept of the academic community strong, innovative, and workable.

The task is tough, demanding, and likely to continue for years to come. “For many professors,” said the president of Cornell University, James A. Perkins, at a convocation of alumni, “the time required to regain a sense of campus community . . . demands painful choices.” But wherever that sense has been lost or broken down, regaining it is essential.

The alternatives are unacceptable. “If this community forgets itself and its common stake and destiny,” John Caffrey has written, “there are powers outside that community who will be only too glad to step in and manage for us.” Chancellor Samuel B. Gould, of the State University of New York, put it in these words to a committee of the state legislature:

“This tradition of internal governance . . . must—at all cost—be preserved. Any attempt, however well-intentioned, to ignore trustee authority or to undermine the university's own patterns of operation, will vitiate the spirit of the institution and, in time, kill the very thing it seeks to preserve.”

**W**HO'S IN CHARGE THERE? The jigsaw puzzle, put together on the preceding page, shows the participants: trustees, administrators, professors, students, ex-students. But a piece is missing. It must be supplied, if the answer to our question is to be accurate and complete.

It is the American people themselves. By direct and indirect means, on both public and private colleges and universities, they exert an influence that few of them suspect.

The people wield their greatest power through governments. For the present year, through the 50 states, they have appropriated more than \$5-billion in tax funds for college and university operating expenses alone. This is more than three times the \$1.5-billion of only eight years ago. As an expression of the people's decision-making power in higher

*Simultaneously, much power is held by ‘outsiders’ usually unaware of their role*

education, nothing could be more eloquent.

Through the federal government, the public's power to chart the course of our colleges and universities has been demonstrated even more dramatically. How the federal government has spent money throughout U.S. higher education has changed the colleges and universities in a way that few could have visualized a quarter-century ago.

Here is a hard look at what this influence has meant. It was written by Clark Kerr for the Brookings Institution's “Agenda for the Nation,” presented to the Nixon administration:

“Power is allocated with money,” he wrote.

“The day is largely past of the supremacy of the autocratic president, the all-powerful chairman of the board, the feared chairman of the state appropriations committee, the financial patron saint, the all-wise foundation executive guiding higher education into new directions, the wealthy alumnus with his pet projects, the quiet but effective representatives of the special interests. This shift of power can be seen and felt on almost every campus. Twenty years of federal impact has been the decisive influence in bringing it about.

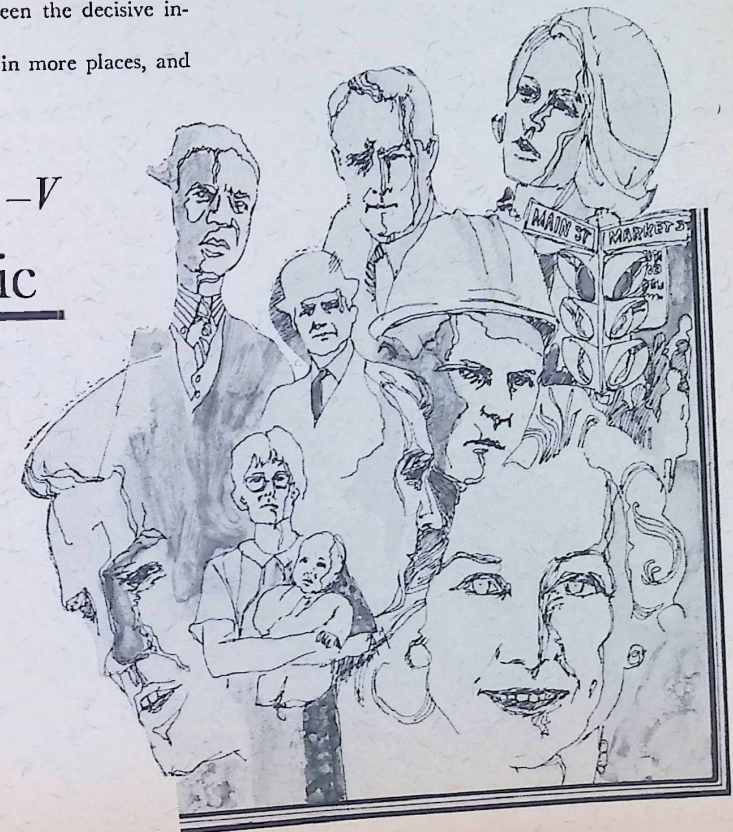
“Decisions are being made in more places, and

more of these places are external to the campus.”

The process began with the land-grant movement of the nineteenth century, which enlisted higher education's resources in the industrial and agricultural growth of the nation. It reached explosive proportions in World War II, when the government went to the colleges and universities for desperately needed technology and research. After the war, spurred by the launching of Russia's Sputnik, federal support of activities on the campuses grew rapidly.

**M**ILLIONS OF DOLLARS every year went to the campuses for research. Most of it was allocated to individual faculty members, and their power grew proportionately. So did their independence from the college or university that employed them. So did the importance of research in their lives. Clearly that was where the money and prestige lay; at

## Who's in Charge—V The Public



Illustrated by Jerry Dadds



many research-heavy universities, large numbers of faculty members found that their teaching duties somehow seemed less important to them. Thus the distribution of federal funds had substantially changed many an institution of higher education.

Washington gained a role in college and university decision-making in other ways, as well. Spending money on new buildings may have had no place in an institution's planning, one year; other expenditures may have seemed more urgent. But when the federal government offered large sums of money for construction, on condition that the institution match them from its own pocket, what board or president could turn the offer down?

Not that the influence from Washington was sinister; considering the vast sums involved, the federal programs of aid to higher education have been remarkably free of taint. But the federal power to influence the direction of colleges and universities was strong and, for most, irresistible.

Church-related institutions, for example, found themselves re-examining—and often changing—their long-held insistence on total separation of church and state. A few held out against taking federal funds, but with every passing year they found it more difficult to do so. Without accepting them, a college found it hard to compete.

**T**HE POWER of the public to influence the campuses will continue. The Carnegie Commission on Higher Education, in its important assessment issued in Decem-

ber, said that by 1976 federal support for the nation's colleges and universities must grow to \$13-billion a year.

"What the American nation now needs from higher education," said the Carnegie Commission, "can be summed up in two words: quality and equality."

How far the colleges and universities will go in meeting these needs will depend not basically on those who govern the colleges internally, but on the public that, through the government, influences them from without.

"The fundamental question is this," said the State University of New York's Chancellor Gould: "Do we believe deeply enough in the principle of an intellectually free and self-regulating university that we are willing to exercise the necessary caution which will permit the institution—with its faults—to survive and even flourish?"

In answering that question, the alumni and alumnae have a crucial part to play. As former students, they know the importance of the higher educational process as few others do. They understand why it is, and must be, controversial; why it does, and must, generate frictions; why it is, and must, be free. And as members of the public, they can be higher education's most informed and persuasive spokesmen.

Who's in charge here? The answer is at once simple and infinitely complex.

The trustees are. The faculty is. The students are. The president is. You are.

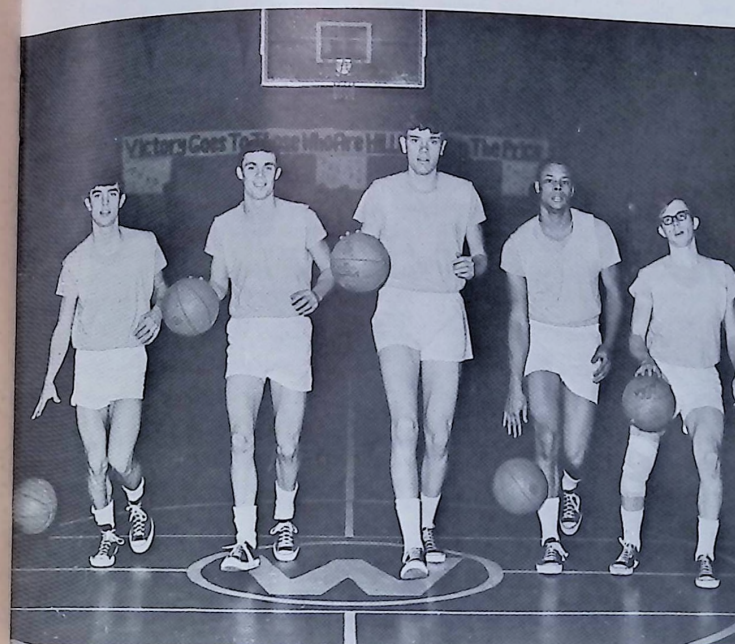
The report on this and the preceding 15 pages is the product of a cooperative endeavor in which scores of schools, colleges, and universities are taking part. It was prepared under the direction of the group listed below, who form EDITORIAL PROJECTS FOR EDUCATION, a non-profit organization associated with the American Alumni Council.

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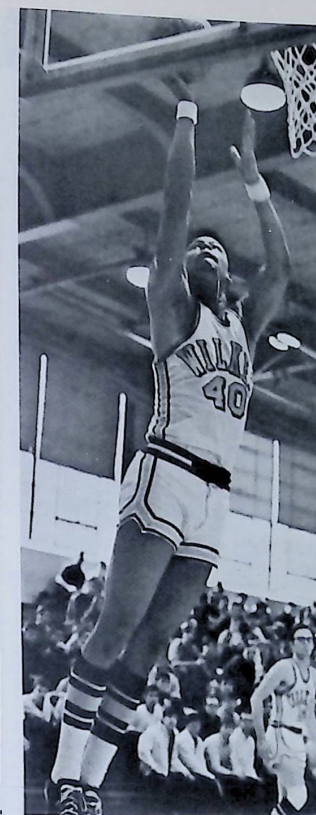
Some of the top game performances of the year were turned in against Ithaca, Delaware Valley, and Susquehanna. The Ithaca encounter was the initial game of the year for Rainey's Raiders. After trailing the Bombers 28-27 in the first-half play, the Blue and Gold staged a second-half scoring flurry to win handily, 69-61. The Colonels' winning effort was paced by 17-point performances from Bill Umbach and Herb Kemp, coupled with a defensive stranglehold over Ithaca's All-American center Gregg Albano.

The low scoring basketball games of 30 years ago came back to life against Delaware Valley. In a defensive stickler the Colonels only managed to score six goals and yet took the measure of the visiting Aggies, 29-27. Confronted with opponents measuring in at 6-9, 6-6, and 6-5, Coach Rainey was forced to keep the ball from the big guys and thus the game plan was laid. In the stall-down the Blue and Gold used four guards and one forward. The Aggies,

in their eagerness to get at the ball, committed 21 personal fouls and the Wilkesmen cashed in on 17 attempts. The halftime scoreboard read 13-13.

The 113-90 lacing of Susquehanna on February 11th found Bill Ryan reaching the zenith of his basketball career. Wilkes held a 51-46 lead at halftime intermission and no one in the Colonel gymnasium ever expected Ryan to hit 43 points after only a nine-point meager start. In the vesper stanza 5-10 Ryan was nothing short of spectacular as he exploded for 14 field goals and six fouls.

The junior forward went wild from every spot on the court. In one stretch Ryan scored his team's 89th through 97th points. With two minutes remaining, Coach Rainey, unaware of Ryan's closeness to Phil Sekerchak's all-time Wilkes scoring mark of 46 counters, removed Ryan and his former Chester High pupil became a sudden hero to a five-minute ovation from 1,000 fans present.



#### 1968-69 BASKETBALL RESULTS

Wilkes 69.....	Ithaca 61
Wilkes 65.....	FDU (Madison) 78
Wilkes 68.....	Philadelphia Pharmacy 55
Wilkes 99.....	Elizabethtown 121
Wilkes 95.....	Drew 50
Wilkes 89.....	Lycoming 109
Wilkes 76.....	Scranton 94
Wilkes 49.....	Lafayette 65
Wilkes 78.....	Kutztown 92
Wilkes 29.....	Delaware Valley 27
Wilkes 77.....	Albright 59
Wilkes 58.....	Delaware Valley 57
Wilkes 80.....	E. Stroudsburg 88
Wilkes 74.....	Wagner 97
Wilkes 94.....	Juniaata 88
Wilkes 105.....	Lycoming 98
Wilkes 64.....	Upsala 71
Wilkes 117.....	Susquehanna 90
Wilkes 101.....	Harpur 67
Wilkes 107.....	Moravian 63
Wilkes 80.....	Scranton 95
Wilkes 101.....	Rutgers of S. Jersey 70
Wilkes 79.....	Susquehanna 103
Wilkes 94.....	Lebanon Valley 85
Overall Record — 13-11	



# ALUMNI NEWS . . .

'42

**RICHARD CROMPTON**, M.D., has been elected president of the medical staff of the Nesbitt Memorial Hospital in Kingston, Pennsylvania. Richard and his wife, Amelia, and their three children live at 206 Carverton Road in Trucksville, Pennsylvania, where he also has his office.

'48

**JAMES WHITELY** was recently elected assistant vice president of the First National Bank in Worthington, Minnesota.

'49

**FRANCIS CARSON** is Mid-Atlantic regional sales manager for the Yarway Corporation of Cleveland, Ohio. Francis and his wife, Irene, and their two children live at 7650 Holyoke Road, Hudson, Ohio.

**WILLIAM DAVIES** has been decorated with the Distinguished Flying Cross for air action in Vietnam. He distinguished himself by extraordinary achievement as a C-7A Caribou aircraft commander at Landing Zone Evans. Bill was presented the medal during ceremonies at Dover AFB, Delaware, where he is now serving as a C-133 Cargo Master pilot in a unit of the Military Airlift Command.

**LEWIS WHITE** is Dean of Students at Mohawk Valley Community College in Utica, New York.

'50

**AUGUSTUS BUZBY** is president of the Consolidated Sales and Manufacturing Company in Medford, New Jersey. He lives at 75 North Lakeside Drive, Birchwood Lakes, Medford, New Jersey.

**ALBERT GORSKI** has been appointed manager of engineering facilities within the engineering division of Pitney-Bowes, Inc.

**JOSEPH BENDOCK** is an overseas insurance agent. He calls on military bases in the Frankfurt-Stuttgart-Heidelberg area and presents insurance programs of investment protection of benefit to servicemen and their families. Joe and his wife and four children live at 23 Murrhardter Strasse, Ludwigsburg, Germany.

'51

**JAMES MORSE** is manager at the Addressograph-Multigraph Company in Huntington, West Virginia. James and his wife, Beverly, and their three children live at 12 Seminole Road in Huntington.

**LEO GAVLICK** is a self-employed consulting civil engineer in Swyersville, Pennsylvania. Leo and his wife, Betty, and their three children live at 12 Creek Street in Swyersville.

**CHARLES JACKSON** is assistant principal at Upper Merion Senior High School in Pennsylvania.

'52

**JOSEPH F. MORAN** has been promoted to lieutenant colonel in Vietnam. He was also awarded the Air Force Commendation Medal for outstanding performance of duty during his previous assignment at the Pentagon in Washington, D.C.

'53

**THOMAS M. VOITAK** has been promoted to commander. He is the commanding officer of a 10,000-ton fleet supply ship, USS Altair, with a home port of Norfolk, Virginia. Tom and his wife, Rita, and their three daughters live at 3900 Elba Street, Virginia Beach, Virginia.

'54

**MARTIN J. MEYER** is a partner in the law firm of Mack and Meyer, at 11 West Union Street, Wilkes-Barre.

**LIONEL DANNICK** received his Ph.D. in sociology from Syracuse University in January. He is an assistant professor at Cazenovia College. Lionel and his wife, Faye, and their three children live at 303 Churchill Lane, Fayetteville, New York.

'55

**RALPH ZEZZA** is general agent for the Paul Revere Life Insurance Company in San Francisco, California. Ralph and his wife, Myrna, are now living at 1333 Gough Street, Apt. 13M, San Francisco.

**CHARLES CIESLA** has been named manager of accounting at the Ionac Chemical Company, a Division of Sybron Corporation in Birmingham, New Jersey. He is also an active member of the National Association of Accountants.

**ARTHUR IMDORF** has been appointed plant controller at Mack Trucks, Inc., in Allentown, Pennsylvania. Arthur and his wife and their three children live at 1048 Flexer Avenue in Allentown.

**JAMES NEVERAS** has been elected vice president of the Irving Trust Company in New York City.

**RICHARD GRIBBLE** received the Air Medal for air action in Southeast Asia. He is assigned at Tan Son Nhut AB, Vietnam, a unit of the Pacific Air Forces.

'56

**JAN OLENGINSKI**, D.D.S., has opened an office for the practice of orthodontics at Room 1221 in the Miners Bank Building in Wilkes-Barre. Jan and his wife, Patricia, and their four children live at Tisbury Terrace, West Nanticoke, Pennsylvania.

Barbara Hauze, the former **BARBARA BOOCK**, is a claims representative for the Social Security Administration in Hazleton, Pennsylvania.

'57

**WILLIAM TREMAYNE** has been promoted to director of tax administration in the Prudential Insurance Company's comptroller's department. Bill has been an associate director since 1966. He joined Prudential in 1957. Bill and his wife, Lora, and their two sons live at 424 Rivercrest Drive, Piscataway, New Jersey.

**JOSEPH SINCAVAGE** is associated with Page Communications of Washington, D.C. He is assistant program manager for construction of a Voice of America site in Kavala, Greece, where he is presently living.

'58

**ARTHUR TAMBUR** is a programmer with the El Paso Natural Gas Company. Art and his wife, Catherine, and their son, James, live at 7908 San Jose Road, El Paso, Texas.

**ALBERT MLYNARSKI** is an accountant with the Johns Manville Corporation in Manville, New Jersey. He and his wife, Carol, and their daughter live at 336 South Main Street, Manville.

**PAUL HAVIR** is teaching at Moore Junior High School in Redlands, California. Paul and his wife, the former **MARY WEST**, and their daughter live at 519 University Street, Redlands.

**RONALD RESCIGNO** is assistant principal at East Islip High School. Ron and his wife, Valerie, and their two sons live at 122 Sherry Street, East Islip, New York.

**THOMAS MYERS**, assistant business editor for The Miami Herald, became business editor of **TODAY** in March. Tom and his wife, the former **SHIRLEY BARODDY '59**, and their two children live at 1445 Venus Street, Merrit Island, Florida.

'59

**CARL ZOOLKOSKI** is associated with Bache & Company in Wilkes-Barre. Carl lives at 116 First Avenue, Kingston, Pennsylvania.

**ARTHUR ROGOVIN** is manager of the C.P.A. firm of Westheimer, Fine, Berger, and Company in New York City. Art and his wife, Sandra, and their two children live at 66-25 103rd Street, Forest Hill, New York.

**THOMAS RUGGIERO** is elementary principal at Madison Township Schools in Old Bridge, New Jersey. Tom is living at 5A Spruce Lane, Old Bridge.

'59 (Continued)

**ROBERT SLABINSKI** is an analytic engineer with United Aircraft in Farmington, Connecticut. Bob and his wife, Marilyn, and their four children live at 287 Plainville Avenue, Unionville, Connecticut.

**MARION KLAWONN** has been promoted from assistant editor to associate editor in the Water group of the **Engineering News Record** of McGraw-Hill, Inc.

**THOMAS LALLY** has been promoted to manufacturing superintendent at RCA in Mountaintop, Pennsylvania. Tom and his wife, Joan, and their son live at 22 East Pettebone Street, Forty Fort, Pennsylvania.

**GEORGE MORRIS** has been named manager of the Cleveland brokerage office of Connecticut General Life Insurance Company. He lives at 3314 Chalfant Road, Shaker Heights, Ohio.

**DAVID WASSERSTROM** is a member of the law firm of Pelino and Wasserstrom, with offices in the Architects Building at Seventeenth and Sansom Street, Philadelphia, Pennsylvania.

**EDWARD MIKOLAITS** has been appointed principal of the Perkiomen Valley Junior High School in Pennsylvania. Ed and his wife and their two children live at Highland Terrace, Schwensville, Pa.

'60

**RONALD KROSS**, formerly Ronald Kryznewski, is presently appearing in his first Broadway show, the new musical "1776". He is playing the role of Lewis Morris, delegate from New York. Ron is living at 342 E. 49th Street, Apt. 4D, New York, New York.

**GERALD KILLIAN** has opened his office for the practice of optometry at 14 South Mountain Boulevard, Mountaintop, Pennsylvania. Gerald lives at 131 West Noble Street, Nanticoke, Pennsylvania.

**RONALD PHILLIPS** is teaching at Hillsborough Township in Belle Mead, New Jersey.

'61

**LAWRENCE KUMITIS** is a management analyst with the Navy Department in Washington, D.C. He and his wife, Irene, and their daughter live at 6512 Potomac Avenue, Apt. B-2, Alexandria, Virginia.

**ROBERT CHEW** is a systems programmer at Stanford Research Institute in Menlo Park, California. Bob and his wife, Sally, and their two children live at 2124 Cornell Street, Palo Alto, California.

**THOMAS GRIFFITHS** is a computer specialist with NMCSSC, Pentagon, Washington, D.C. Tom and his wife, Joyce, and their two children live at 6709 Cabin John Road, Springfield, Virginia.

**ARTHUR REHN** is instrumental music supervisor at Montoursville High School, Montoursville, Pennsylvania. Arthur and his wife, the former **CAROL BRUSHKOSKI '62**, and their son live at R. D. #2, Montoursville.

**RAYMOND LITMAN** has received an appointment as a banking officer of the Philadelphia National Bank. He and his wife, Ann, and their two children live at 2057 Sierra Road, Plymouth Meeting, Pa.

'62

**DONALD BOGERT** is teaching at West Genesee Senior High School in Camillus, New York. Don and his wife, Mary Ellen, and their three children live at 604 Rolling Wheels, Elbridge, New York.

**WALTER UMLA** is choral music director at G.A.R. High School in Wilkes-Barre. Walter and his wife, Mildred, and their two children live at 43 North Landon Avenue, Kingston, Pennsylvania.

**FRANK MENAKER JR.**, is associated with the Dynalectron Corporation in Washington, D.C. Frank and his wife, Marita, and their son live at 2400 41st Street, N.W., Washington, D.C.

**GLENN HAUZE** is a mortgage loan officer with the First Federal Savings and Loan Association in Hazleton, Pennsylvania. Glenn and his wife, the former **BARBARA BOOCK '56**, and their daughter, Diane Barbara, live at R. D. #1, Sugarloaf, Pennsylvania.

'63

**CONRAD WAGNER** has been promoted to assistant manager in the Credit Department of the Chemical Bank New York Trust Company. Chemical New York is the fifth largest bank in New York City and the sixth largest in the nation. Conrad and his wife, Joan, and their two children live at 43-24 194th Street, Flushing, New York.

**HAROLD HARTY** is assistant professor of science education at the University of Scranton. He is also a staff member of the science-math improvement project at Wilkes College, and has recently been appointed to the board of directors of Pennsylvania Science Teachers Association for a three-year term. Harold and his wife, Jane, reside at 294½ Lyndwood Avenue, Wilkes-Barre.

**STEPHEN PHILLIPS** has been appointed assistant director of Columbia County planning which is in the Bloomsburg, Pennsylvania, area.

**ROBERT HERMAN** is head teacher at the Pringle Street School in Kingston, Pennsylvania. Bob and his wife, Carol, and their daughter, Greta Lynn, live at 21 Terrace Drive, West Wyoming, Pa.

**HARRY WEST** recently received his Ph.D. in chemical engineering at the University of Oklahoma. Harry and his wife, Betty, and their daughter, Deborah Jane, live at 2467 Haymaker Road, Montrose, Pennsylvania.

'64

**JEFFREY GALLET** is associated with the law firm of Seavey, Gallet, & Finger, with offices at 500 Fifth Avenue, New York, New York.

**GERALD WILLIAMS** received his Ph.D. from Washington University in September, 1968. He is a senior associate with the Planning Research Corporation of Washington, D.C. Gerald and his wife, Carol, and their two children live at 6470 Oakwood Drive, Falls Church, Virginia.

**NICK STEFANOWSKI** is teaching mathematics and is head wrestling and assistant football coach at Morristown School in New Jersey. Nick and his wife, Janis, and their daughter, Sharon, live at Whippany Road, Morristown, New Jersey.

**RICHARD PROBERT** is teaching voice and chorus at Wilkes. He received his M.M.E. degree from Indiana University in 1966. Dick and his wife, Bonnie, and their daughter, Kimberly, live at 1098 Rutter Avenue, Forty Fort, Pennsylvania.

Bonnie Turchin, the former **BONNIE LEWIS**, is teaching in the Allentown School District. Bonnie and her husband, Edward, live at 719 East Federal Street, Allentown, Pennsylvania.

**JOHN WILLS** is associated with the Metropolitan Life Insurance Company. He lives at 352 Race Street, West Pittston, Pennsylvania.

Inger Miller, the former **INGER THOMASEN**, received her M.A. degree from Penn State University in December, 1968. Inger is teaching at Wilkes.

**DONALD FINE** received his Ph.D. from Penn State University in December, 1968. Don is associate research scientist at Penn State. He and his wife, Judith, and their daughter live at 127 East Hamilton Avenue, State College, Pennsylvania.

**NEIL DOUGHERTY** is a counselor for Snelling and Snelling in Philadelphia. Neil lives at 1236 Old Lane, Drexel Hill, Pennsylvania.

**KATHLEEN BROOKS** is associated with Paul Levi, an advertising and public relations agent for major film companies. The agency is located in Boston. Kathleen lives in Allston, Massachusetts.

'65

**JOHN LORE** is assistant legislative counsel with the New Jersey Legislature. John and his wife, the former **JOAN STANZIOLA '67**, and their son live at 136 Mountain Parkway, Green Brook, New Jersey.

**BERTRAM ROSS** is an assistant professor in the Department of Mathematics at New Haven College.

**JEANNE FADUSKO**, first lieutenant, has received the U.S. Air Force Outstanding Unit Award. Jeanne is a flight nurse at Clark AB in the Philippines.

**DELMER GIBERSON** is teaching at Shoemaker High School in Philadelphia.

**JOSEPH DURAKO** has been promoted to accounting manager and assistant treasurer at the Commonwealth Telephone Company in Dallas, Pennsylvania. Joe lives at 90 Charles Street, Ashley, Pennsylvania.

**SUMNER HAYWARD** is drama coach at Skowhegan High School in Skowhegan, Maine. He and his wife, Barbara, live at R. D. #3 in Skowhegan.



## '65 (Continued)

**JOSEPH KLAIPS** is controller at Redi-Froz Dist. Co., a Division of Scot Lad Foods, Inc. Joe and his wife, Margie, and their son, Jeffery, live at 54631 North 28th Street, South Bend, Indiana.

**JAMES JENKINS** has been promoted to captain in the Air Force. He is stationed at Travis Air Force Base in California. James and his wife, the former **LESLIE TOBIAS**, live at 107 Texas Street on the base.

**GRACE JANES** is assistant director of nursing service at the Community Medical Center East in Scranton, Pennsylvania.

**WESTBROOKE EVANS** has been awarded the Bronze Star with the combat "V" device for gallantry against the Viet Cong. He is a member of the Navy's Black Berets and served 18 months in Vietnam, participating in 212 combat patrols on the inland waterways of the Mekong Delta and I Corps. At present he is on a tour of duty at sea between Spain and Greece.

## '66

**SUSAN EVANS**, after spending two years in the Peace Corps, is teaching at Hanover Township School District in Wilkes-Barre. Susan lives at 80 Graham Avenue, Wilkes-Barre.

**MARTHA DOMINGUEZ** is teaching math at Kahuku High School in Kahuku, Hawaii.

**DWIGHT GILES** is working for his master of divinity degree at Asbury Theological Seminary, Wilmore, Kentucky.

**ALFRED AIROLA** is teaching English at Massena Central High School in New York State.

**WILLIAM SCHNEIDER** is teaching and is assistant football coach at the Hazleton Area School District. Bill and his wife, Janet, live at 653 Grant Street, Hazleton, Pennsylvania.

**STANLEY OBEARENDER** is purchasing agent for Berwick Fabricating Corporation. Stanley and his wife, Beverly, and their two children live at 1200 East Fifth Street, Berwick, Pennsylvania.

**GENE HAVERLAK**, first lieutenant, is Deputy for Intelligence at Shaw AFB, South Carolina. Gene and his wife, Carole, and their son live at 113 Hurstwood Apartments, Sumter, South Carolina.

## '67

**JOEL SHER** is a systems analyst for UNIVAC International in Toronto, Canada. Joel and his wife, Diane, and their daughter live at 1400 Winding Trail, Townhouse #6, Cooksville, Ontario.

**EDWARD SHINER** is a music instructor at Towanda High School, Towanda, Pennsylvania.

**CHERYL TRAVERSE** is a team instructor for the Nutley School District in New Jersey. Cheryl lives at 500 Linwood Drive, Ft. Lee, New Jersey.

**JEROME KUCIRKA** is an instructor at Drexel Institute in Philadelphia. He lives at Apt. B-113, 59 E. Browning Road, Bellmawr, New Jersey.

**HIROKO ITO** is working on her Ph.D. in chemistry at Brown University, and is also a member of the chemistry department at the University. She lives at 436 Brook Street, Providence, Rhode Island.

**MARK BAUMAN** is studying for his Ph.D. in history at the University of Chicago. He and his wife, the former **SANDRA WOLF** '66, live at 2909 178th Place, Hammond, Indiana.

**JOSEPH ADOMIAK** is a teacher and assistant basketball coach at the Newark Valley School in Newark Valley, New York. Joe and his wife, Carol, and their daughter live at Whig Street, P. O. Box 516, New Valley.

**RENALD DAVENPORT** has been named supervisor of warranty and product improvement at the Piper Aircraft Vero Beach, Florida, plant.

**HAROLD MAGER** has been named manager of manufacturing for the Decatur, Alabama, plant of Climacrol Industries, Inc., a division of Worthington Corporation.

**DOUGLAS WEBER** received his Master of Business Administration degree from Lehigh University in April, 1969.

**JOSEPH BAKER** is advanced research and development programmer at UNIVAC, a division of Sperry Rand, in Blue Bell, Pennsylvania. Joe and his wife, the former **SUSAN WEST**, live at Sussex Square, Apt. S-5, Plymouth Road, Plymouth Meeting, Pennsylvania.

**JOHN KOTCH** is associated with Naveen and Naveen, CPA, in Wilkes-Barre.

**SHARYN YANOSHAK** is an associate programmer with IBM in New York City. She lives at 435 E. 79th Street, Apt. 7C, New York City.

Evelyn Matelski, the former **EVELYN MORENKO**, is a position analyst with Bell Telephone Laboratories in Murray Hill, New Jersey. Evelyn and her husband, Leon, live at 34 Nottingham Road, Edison, New Jersey.

**HERMON GEORGE, JR.**, is teaching Spanish at Wartburg College, Waverly, Iowa. George and his wife, Susan, live at 319 11th Street, N.W., Waverly.

**DAVID FOGLIETTA** is a claims representative with Aetna Life and Casualty of Haddonfield, New Jersey. Dave lives at 107 Drakes Lane, Old Forge, Pennsylvania.

**DAVID SPEICHER, SR.**, is working toward a Ph.D. in finance and accounting in the College of Business Administration at Syracuse University.

## '68

**BEVERLY SHAMUN** is teaching at the Frank L. Meagher Elementary School in Kingston, New York. She lives at 29AB Miller's Lane, Kingston, New York.

Charlene Brandy the former **CHARLENE COLLINS**, is teaching at the Robert Louis Stevenson Elementary School, Merritt Island, Florida. Charlene and her husband, Robert, live at 216 Canaveral Beach Boulevard, Cape Canaveral.

**LINDA CLARKE** is teaching at Lake Katrine Elementary School, Lake Katrine, New York. **ALICIA RAMSEY** is teaching at Kingston Senior High School, Kingston, New York. She is living at 29AB Miller's Lane, Kingston, New York.

**MARTIN HURLEY, III**, has been assigned to Keesler AFB, Mississippi, for training and duty as a musician.

**JEAN KARDOS** is teaching at the Benjamin Franklin School in Norwalk, Connecticut. Jean is living at 105 Beers Road, Easton, Connecticut.

**GENE SANTARELLI** is teaching English and is the drama coach at Quibbletown Junior High School, Piscataway, New Jersey. Gene lives at 333 Second Street, Dunellen, New Jersey.

**FRANKLIN GOLD** has been commissioned a second lieutenant in the U.S. Air Force upon graduation from Officer Training School at Lackland AFB, Texas.

Patricia Wanalista, the former **PATRICIA IANNUZZO**, is teaching at the George Washington Senior High School in Mangilao, Guam (Marianas Islands). She is also studying at the University of Guam. Her address is Box 120, Div. 23, U.S. Nav. Comm. Sta., FPO, San Francisco, California.

**SAMUEL WOLFE, III**, is with the U.S. Army in Long Binh, Vietnam.

**MELVIN MILNER** is a financial analyst with National Cash Register in Dayton, Ohio. Melvin and his wife, Sharon, live at 99 Patterson Village Drive, Dayton.

**JOSEPH ROSZKO** has been awarded the Bronze Star Medal for heroism in combat against hostile forces in Vietnam.

**STANLEY URBANOWICZ** is a radar operator at Homestead AFB in Florida.

**V. RUSSELL BITTLER** is an industrial engineer for IBM in Owego, New York.

**JOHN LADOMIRAK** is a purchasing agent with the U.S. Army in Philadelphia. John lives at Ford Road, Windsor Park Apt. L-51, Bristol, Pennsylvania.

**MARGARET KLEIN** is a social worker at New Jersey State Hospital at Ancora, Hammonton, New Jersey. She lives at Box 311, Hemlock Hall, Ancora Branch, Hammonton, New Jersey.

**ARMANDO SALAVANTI** is teaching physics and math at Cathedral High School in Scranton, Pennsylvania. He lives at 707 Fallon Street, Old Forge, Pa.

**ALLAN PETERFREUND** has graduated from a U.S. Air Force technical school at Sheppard AFB, Texas, and will remain there for further training.

**EDWARD LENAHAH** has been assigned to Sheppard AFB, Texas, for training in the data systems field.

## '68 (Continued)

Barbara Wisniewski, the former **BARBARA LIPINSKI**, is teaching kindergarten classes in both Mehoopany and Tunkhannock, Pennsylvania.

**BEVERLY BRATOSZ** is an instructor at the Hartford Hospital School of Nursing in Hartford, Connecticut. She is living at 66 Maple Street, Meriden, Conn.

**JAMES MURRAY** is a pharmaceutical representative in Delaware and Maryland. Jim and his wife, Ellen, and their daughter, Lesley Anne, live at 334 East Main Street, Apt. A-9, Newark, Delaware.

## DOWN THE AISLE



## '61

**RONALD ROSKI** was married to Elaine Vishnefski. They are living at 4 West Shawnee Avenue, Plymouth, Pennsylvania.

## '63

**DAVID MEINSTER** was married to Martha O'Connor. David is doing graduate work on his Ph.D. at Brown University and is on the faculty of Temple University in Philadelphia.

**PETER KUNDRASON** was recently married to Rosalie DeAngelo. Peter is assistant personnel manager at Narco Avionics in Fort Washington, Pennsylvania. Rosalie is a graduate of Rider College and is attending Trenton State College. They are living in Levittown, Pennsylvania.

## '64

**LOUIS ZAMPETTI, JR.**, was married to Margaret Whyte. Louis is an engineer with RCA in Mountaintop, Pennsylvania. Margaret is a graduate of the Pittston Hospital School of Nursing. They are living at 211 Elizabeth Street, Pittston, Pennsylvania.

**MARIE YONOK** became the bride of Stephen Zemank in April. Marie is a pediatric instructor at Nesbitt Memorial Hospital in Kingston, Pennsylvania. She and her husband are living at 37 Wesley Street, Forty Fort, Pennsylvania.

## '65

**CAROL WEBER** became the bride of David Silberg. Prior to her marriage Carol was teaching in the Binghamton School District in New York. David is production manager and member of the firm of Carlen Manufacturing Company in Hazleton, Pennsylvania, where they are living.

**THOMAS PIRNOT** was married to Ann Wawrzak. Tom is working on his doctoral degree in mathematics at Penn State University. Ann is a graduate of Immaculate College and is working on her doctoral degree in Pennsylvania history at Penn State.

## '66

**MARIE PERSIC** became the bride of George Hulse. George is a graduate of Villanova College. They are residing in Burlington, New Jersey.

**STUART KRANSON** was married to Cindy Heller. Stuart is pursuing his doctorate in child psychology at Temple University.

**PATRICIA CLARK** was married to Daniel Young. Pat is a medical technologist at the Allentown Hospital. Her husband is attending Muhlenberg College.

**THOMAS CROP** and **SUSAN SWAN** '68 were married in June, 1968. Susan is teaching third grade at the Judd School in North Brunswick, New Jersey. Tom is teaching history at the Franklin Township School. They are living at Bartle Court Cedar Lane Apts., 28A, Highland, New Jersey.

## '67

**PAUL PURTA** and **DANA CHARLES** '68 were married in January. Dana is a school nurse for the Wyoming Valley West School District. Paul is a member of the faculty of the Central Luzerne County Jointure, Mountaintop, Pennsylvania, where he coaches football and track.

**RUSSELL WRIGHT** was married to Penny Miller. Russell is a senior at Louisiana Polytechnic Institute, Ruston, Louisiana, where they are living.

**SUSAN BAKER** became the bride of James Lowcavage. James attended Wilkes and is now associated with the Bendix Corporation in Mountaintop, Pennsylvania.

## '68

**JOYCE ADAMCHESKI** became the bride of Joseph Kearney in November. Joyce is associated with the federal government. Her husband is a senior at King's College majoring in economics.

**MICHAEL MATTHEWS** was married to Aliene Crockett. Michael is associated with Matthews Wood Products in Luzerne, Pennsylvania. They are living at 99 Page Street in Kingston, Pennsylvania.

**SONI STEIN** became the bride of Terry Baltimore in February. Soni is teaching at Exeter Junior High School in Exeter, Pennsylvania. Terry is a graduate of Boston University and is national sales manager of WBRE-TV in Wilkes-Barre.

**FREDERICK BROWN** was married to Linda Ann Bell. Fred is teaching sixth grade science in the Pottstown School District. They are living at 246 Chestnut Street, Pottstown, Pennsylvania.

**PAUL JONES** and **SHEILA CARR** were married in May. Paul is a member of the management staff of Bellevue Hospital in New York City. They are living in Little Ferry, New Jersey.

**MICHAEL STEFANICK** was married to Kaye Harding. Michael is in the U.S. Air Force attending a 52-week class concerning study of computers. They are living at 218 Magnolia Street, Apt. 4, Biloxi, Mississippi.

**DAVID ROSSI** was married to Kathleen Wolfenden in October. Dave is teaching at the Ethel Road School, Piscataway, New Jersey. They are living on Oak Tree Road, Edison, New Jersey.

**DONALD KRONICK** was married on May 25, 1968. Don is an accountant with Lavenhol, Kreckstein, Horwath & Horwath in Philadelphia. He and his wife Susan are living at 1026 Fanshawe Street, Philadelphia, Pennsylvania.

**JOSEPH GATTO** was married to Lillian Smith in February. Lillian will graduate from Wilkes in June, 1969. Joe is teaching advanced chemistry and is assistant basketball, football, and golf coach at Perkiomen School, Pennsbury, Pennsylvania.

**THOMAS ROKITA** and **LAURA TARITY** were recently married. Tom is a factory sales representative for Wallace Brothers Manufacturing Company, Wilkes-Barre. They are living at 101 North Artherton Avenue, Kingston, Pennsylvania.

**THOMAS TOMKIEWICZ** was married to Carol Chipolet. Tom is a counselor and case worker at the White Haven State School and Hospital, White Haven, Pennsylvania.

**ROGER BREWER** was married to Barbara Miller. Roger is attending the Officer's Candidate School at the U.S. Navy Base, Newport, Rhode Island. Barbara is attending Trenton State College.

**ANNE MARIE HEINEMAN** became the bride of Stephen Batory in February. Marie is a member of the Mental Hygiene Educators' Association. Stephen is a graduate of King's College and is an ensign stationed at the U.S. Naval Base at Norfolk.

**MARY SOKASH** became the bride of Richard Challenger. Mary is associated with the United States Naval Depot at Mechanicsburg, Pennsylvania.

**ALBERT STOFKO** was married to Alice Daniels. Albert is on the faculty of Carson Long Institute, New Bloomfield, Pennsylvania.

**MARY FOGLI** became the bride of John Hertenstein in November. Mary is teaching in the Cumberland Valley School District, Camp Hill, Pennsylvania. John is a senior at Ohio State University where he is majoring in history.

## '69

**GLORIA SHINDEL** was married to Harold Gellis in March. They are living at 2001 East Seventh Street, Brooklyn, New York.



## THIS BRIGHT NEW WORLD



### '53

a son, Paul David, on January 7, 1969, to Mr. and Mrs. Paul Warnagiris. They live at 135 East 6th Street, Wyoming, Pennsylvania.

### '56

a daughter, Emmy Lind, on August 14, 1968, to Mr. and Mrs. Norman Philipp. Mrs. Philipp is the former **NANCY SCHMALZRIEDT** '58. They live at 16 Sandalwood Drive, East Brunswick, New Jersey.

### '58

a son, Arthur James, to Mr. and Mrs. Arthur Tambur, Jr., on August 7, 1968. They live at 7908 San Jose Road, El Paso, Texas.

### '59

a son, Scott Keith, on September 20, 1968, to Mr. and Mrs. Arthur Rogovin. They live at 66-25 103rd Street, Forest Hills, New York.

### '60

a daughter, Sharon Ann, on May 2, 1968, to Mr. and Mrs. Ronald Phillips. Mrs. Phillips is the former **BEVERLY BUTLER**. They live at 15 Logan Drive, Somerville, New Jersey.

### '61

a son, Andrew, on February 4, 1969, to Mr. and Mrs. Robert Chew. They live at 2124 Cornell Street, Palo Alto, California.

a daughter, Dawn Michelle, on July 2, 1968, to Mr. and Mrs. Lawrence Kunitis. They live at 6512 Potomac Avenue, Apt. B-2, Alexandria, Virginia.

a son, Arthur James, Jr., to Mr. and Mrs. Arthur Rehn on October 27, 1968. Mrs. Rehn is the former **CAROL BRUSHKOSKI** '62. They live at R. D. 2, Montoursville, Pennsylvania.

### '62

a daughter, Susan Elizabeth, on October 22, 1968, to Mr. and Mrs. Walter Umla. They live at 43 North Landon Avenue, Kingston, Pennsylvania.

a daughter, Diane Barbara, on October 2, 1968, to Mr. and Mrs. Glenn Hauze. Mrs. Hauze is the former **BARBARA BOOCK** '56. They live at R. D. #1, Sugarloaf, Pennsylvania.

a son, David Colin, on January 18, 1969, to Mr. and Mrs. Frank Menaker. They live at 2400 41st Street, N.W., Washington, D.C.

### '63

a daughter, Jill, on December 26, 1968, to Rev. and Mrs. Howard Hockenbury. Mrs. Hockenbury is the former **CAROL MEYERS** '64. They live at 62 State Street, Nicholson, Pennsylvania.

### '64

a son, Douglas Edward, on June 20, 1968, to Mr. and Mrs. Al Barzoloski. Mrs. Barzoloski is the former **DONVEE MILLER**. They live at R. D. #6, Danville, Pennsylvania.

### '65

a son, Scott, on February 16, 1969, to Mr. and Mrs. Delmer Giberson. They are living at 1601 B, Patricia Drive, Yeadon, Pennsylvania.

a son, Ryan Matthew, on February 14, 1969, to Mr. and Mrs. John Lore. Mrs. Lore is the former **JOAN STANZIOLA** '67. They live at 136 Mountain Parkway, Green Brook, New Jersey.

a son, Robert Evan, to Mr. and Mrs. Robert Eurich, on February 2, 1969. Mrs. Eurich is the former **BARBARA KEMPEL**. They live at 424 Armistead Street, Alexandria, Virginia.

a son, Edward Jason, on October 31, 1968, to Mr. and Mrs. Edward Reese. Mrs. Reese is the former **ARLENE SIANO**. They live at 421 East Oak Street, Medina, New York.

### '66

a son, Lawrence Jay, on September 25, 1968, to Mr. and Mrs. Robert Gelb. Mrs. Gelb is the former **LOIS BOGANOVITZ**. They live at 540 Tioga Avenue, Kingston, Pennsylvania.

a daughter, Barbara Ellen, on February 18, 1969, to Mr. and Mrs. Ted Cousland. Mrs. Cousland is the former **BARBARA LEWIS**. They live at 140 Eagle Street, Emmaus, Pennsylvania.

### '67

a son, Andrew Ellis, on December 31, 1968, to Mr. and Mrs. Ellis Myers. Mrs. Myers is the former **CLARE DRAPER** '65. They live at 654 East Main Street, Nanticoke, Pennsylvania.

a son, David Andrew, on January 21, 1969, to Mr. and Mrs. Charles Stoltz. Mrs. Stoltz is the former **BONNIE HERZOG**. They live at 1110 Manocacy Street, Bethlehem, Pennsylvania.

a son, Kenneth Alan, on November 27, 1968, to Mr. and Mrs. Joseph Sabatini. Mrs. Sabatini is the former **CAROL BRUSSOCK**. They live at 2256 Apoe-pae Street, Pearl City, Hawaii.

### '68

a son, Arthur Reese, on February 15, 1969, to Mr. and Mrs. Arthur Trevethan. They live at 170 East Dorrance Street, Kingston, Pennsylvania.

## An American Civilian In Vietnam: The Views of an Alumnus

JOHN FANECK '50  
Written January, 1969

The ink that's been used to print all the words written on the subject of Vietnam could probably be measured in megatons. But now that a bombing halt has been declared and a search for a permanent, peaceful solution to a complicated political situation goes on, I'd like to add my impressions and experiences. I have no intentions of airing my opinions on the political problems, however, as that's the domain of the experts, and they're having plenty to say. By the time this goes to press, I'll have had very nearly completed my contract with an American engineering-construction firm in South Vietnam — 18 months in country — and I'd like to tell the story of one American civilian who witnessed the TET offensive first hand, and who had to take refuge in a sandbagged bunker when VC rockets came hurtling into a beach perimeter near the DMZ.

My base of operations is Cam Ranh Bay. I work on the staff of the project manager for a firm whose essential reason for being here is to build electric power plants, but who has a number of other diversified contracts as well. Even the casual reader of events knows that South Vietnam is shaped like a crescent with its convex side facing east to the South China Sea, and its concave, or inner side, facing west bordering on Laos and Cambodia. The southern tip of the country is just north of the 8th degree parallel north, and its top at the 17th parallel, or DMZ. The 12th degree parallel cuts right through Cam Ranh Bay, thus putting us at roughly the midpoint of the curving coastline, measuring about 900 miles along its entire sweep.



Cam Ranh Bay is as beautiful a location as you'll find in the whole country, and during hostilities, one of the most secure. It's a well-sheltered harbor having had considerable strategic importance during the fighting. Beside the normally placid waters of the South China Sea, the mainland rises up into the Central Highlands to some of the highest peaks in Vietnam. The coastline has some of the finest beaches in the world, white glistening sand spotted with deep green shrubbery, and in many places, tall, stately, cocoa-nut palms. Further developed, it would be a Hilton dream.

But, I'll come back to Cam Ranh Bay later; I want to get on with my story. It was Tuesday, January 20, 1968, when I had occasion to go to one of our outlying jobsites near a community called Bien Hoa (Bien Wah), located some 25 miles north of Saigon. I flew down to the capital city with intentions of staying overnight, and then driving out to Bien Hoa in the morning. I checked into a hotel near our Saigon liaison office at about 6 p.m., then walked to a neighborhood French restaurant for dinner. It was dusk when I returned to my hotel. Celebrations of the three-day TET holiday had already begun as youngsters shot off firecrackers and donned grotesque masks. TET is the Asiatic New Year, the all local nationals celebrate a common birthday, and something like our Halloween and July 4th all wrapped up in one. We had heard rumors that the Viet Cong had planned a TET attack, but nobody, not even the military, had any idea of its impending tary, had any idea of its impending scale. It so happens that my hotel was the only about four short blocks from the American Embassy and about the same distance from the Vietnamese presi-



dential palace. I had an early-morning call so I turned in early, about 9 o'clock.

The sound of distant artillery was common in Saigon those days, so you got used to it. Despite this, coupled with the noises of the celebrants down on the streets, I slept a sound sleep. At about 3 a.m., a thunderous noise almost knocked me out of bed. The force of the concussion rattled my hotel door and shook my venetian blinds. I couldn't see much looking out my window (leaving the lights off, of course) as it overlooked small courtyards, not the street. The sound of the blast seemingly came from the opposite side of the hotel in the general direction of the Embassy. Within minutes, the sky was full of helicopters sweeping low over the buildings, many of which were dropping flares. Sporadic gunfire could be heard, mostly automatic weapons. My first guess was that this was more than just another VC hit-and-run raid because of the helicopter sweeps. But I had no way of knowing that the VC had launched their now-famous TET offensive and that the blast I heard was the breaching of the U.S. Embassy wall. I could only sit and wait.

Just before dawn, I walked the block and a half to our Saigon office fully expecting ground transportation out to Bien Hoa as I originally planned. It wasn't quite light, and helicopters were circling the city. In every direction I could see flares dropping. I watched fascinated as one came zig-zagging down, giving off its brilliant yellowish-white light and trailing a plume of black smoke, then falling into a courtyard just several doors away. By 7 a.m., a few of the office em-

## In Memoriam

John Selego '66

Died in May 1969

He was a teacher in the Pittston Area School District at the time of his death.

John graduated from Old Forge High School before attending Wilkes College. He was a former owner of the Selego Golf Driving Range on the Scranton-Daleville Highway.

John is survived by his wife, the former Lottie Gerlak of Dupont, two daughters, Mrs. Leo Grady of Wheaton, Maryland, and Rosalie, at home. Also one granddaughter. He is also survived by three brothers, Stanley and Joseph of Old Forge, and Edward, who is serving in the U.S. Army, and two sisters, Mrs. Michael Leshinsky of Old Forge and Mrs. Joseph Young of San Diego, California.

Donald Todd Jones '62

Died January 3, 1969 after a long illness.

He was a prominent musician, and a member of Wilkes College faculty.

Donald graduated from Coughlin High School in Wilkes-Barre before attending Wilkes College, where he graduated with honors. He received his master's degree in music from the Eastman School of Music. He taught music at Michigan State University, and was first oboist with the San Antonio Symphony Orchestra before returning to Wilkes College.

In addition to his parents, John Todd and Catherine Koons Jones of Wilkes-Barre, Donald is survived by his wife, the former Nancy Thomas '62 of Plymouth, two daughters, Lori Ann and Megan. Also his sister, Mrs. Jerome C. Sorenson of Cedar Grove, N.J.

Dr. Vincent E. Wall '44 — Wynnewood, Pa.

Died April 30, 1969

Vincent graduated from Scranton Central High School before attending Wilkes College. He also was a graduate of Hahnemann Medical College in Philadelphia, and served his internship at Scranton State Hospital. Since 1955 he had practiced in Philadelphia and served as a member of the staff at Doctors Hospital. He was a member of the Philadelphia Medical Society, Pennsylvania Medical Society, and the American Medical Society.

Vincent is survived by his wife, the former Beverly Murray of Avoca, daughters, Malissa and Pamela, and a son, Martin. He is also survived by his mother, Mrs. Jessie Miskovich of Scranton, and a brother, Zenon Wall '46 of New York City.



ployees arrived, some carrying portable radios. The regular five-minute news summaries on Armed Forces Radio had already been expanded into virtually full-time coverage. First reports were sketchy, incomplete, and often contradictory. Still, we didn't know a full-scale offensive had been launched even though there was clearly a heavy increase in military traffic on the city's congested streets. The office had a direct telephone link with Bien Hoa, and at about 8 a.m., after we finally got a call through the over-worked switchboard, we learned that the highway from Saigon to the site was closed to all but essential military traffic. Leaving word for a call as soon as the road was opened, I returned to my hotel.

Back in the lobby, other American personnel were huddled around radios. One person had a short wave receiver so we were picking up broadcasts from Perth, Tokyo, Bangkok, even Peking, in addition to our local Armed Forces station, telling the world what was happening. A week would go by before I got out of that hotel, and I never would reach my destination of Bien Hoa. A little thing like a war stopped me.

For the remainder of the day, I stayed indoors watching the hustle-bustle going on in the streets through curtained lobby windows. Convoys of troops, ammunition trucks, and ambulances sped by. Tanks churned up the asphalt. Most of the traffic was heading in the direction of Tan Son Nhut air field, the international terminal serving Saigon. Vietnamese citizens on foot, bicycles, and pumping pedicabs, scurried for safety. Helicopters patrolled low over the city. Horns blared and army officers shouted to clear the way. Saigon traffic, with the rules of the road having been inherited from the French, is a menace to life and limb under the best of circumstances, and how, during those frantic emergency hours, there was no crushing collision at the intersection outside is something I'll never understand. Inside, we were glued to the radio. By now, we had a good account of how the U.S. Embassy, only four blocks away, had had its wall breached with a hole measuring some five feet by five feet, blasted by one of the biggest rocket launchers the Viet Cong had, and at point-blank range. We learned that 19

VC had been slaughtered in their futile effort to storm and take the grounds. Suicide squads they were called. But as far as we were concerned, people on the other side of the globe knew as much as we did.

Saigon hotels, like most hotels in Southeast Asia and the Far East, serve continental breakfasts of miniature loaves of French bread and coffee. We not only had it for breakfast, but for the other meals as well. Food was becoming a minor problem. During TET, most of the retail shops are closed for the celebrations. Although the hotel portion of our building was complete and doing business, the restaurant-bar section was still under construction. Fortunately, the beer supply was abundant. At least our thirsts were slaked. By Wednesday evening, the hotel owner (Chinese) knew of our plight, so he arranged for fried rice dinners to be served in the hotel lobby. It wasn't bad at all, even as a steady diet for five days.

Sometime before noon Thursday, two tanks pulled up and stopped at an intersection just outside the lobby. The cannon of one was pointed up the street in the direction of an old French cemetery not far away. Each tank carried four or five American GIs. They were dirty and tired. They told us that they had seen more than 24 hours of continuous action at the Tan Son Nhut airbase, a major target of the VC. Their officer in charge had received a neck wound in that engagement but they didn't know how serious it was. They had been ordered to our location to intercept any VC who might be flushed out of the cemetery where a force was supposed to be holed up. A short time later, several prop-driven aircraft made dive-bombing runs at the cemetery and skimmed the top of our hotel building in pulling up out of their dives. During this half hour of action, many of the Vietnamese coming from that direction were stopped and questioned but their papers seemed to be in order. I saw only one person questioned who could not produce satisfactory identification. He became surly, so the GIs had to tie his hands behind his back and forced him to sit on the curb. Even with the aid of a hotel employee serving as an interpreter, he couldn't—or refused—to explain himself. He was considerably darker than most Vietnamese, and his feet were

bloody and raw. What's more, he was in rags—a prime suspect. The GIs detained him until the Vietnamese police came along and took him away. Whether he was actually a VC, or some poor, misguided montagnard (a generic term meaning mountain people), I'll never know. Shortly after this incident, a 15-man squad of Vietnamese police conducted a house-to-house search of the entire block diagonally across the street, looking for suspects, American tanks ringed the block, but I didn't see anyone detained.

When this frenzied pace, which lasted most of the afternoon, slowed down, we carried buckets of hot water and hotel towels out to the GIs. They stripped to the waist and took sponge baths right there beside their tanks in the street. They were grateful. We then sent out a case of beer. They were grateful for that, too.

By week's end, the heavier action was concentrated in three places, all at a considerable distance from the hotel: the air field, about four miles away; the race track, about two miles away; and in the Chinese colony of the city, called Cholon, about four miles to the south. The momentum of the attack in Saigon proper, the American Embassy, the presidential palace, police stations, power stations, etc., had withered away. (I speak only for Saigon. Other cities under attack, notably the ancient imperial capital at Hue, several hundred miles to the north, would eventually be flattened before the last of the VC were driven out.) The TET holidays were over, but strict curfew laws were still in effect and travel was curtailed. But, by the following Tuesday things were quiet enough to permit daytime travel. I managed to get a car out to Tan Son Nhut where traffic was snarled for miles at every gate while identification was being checked. A Vietnamese policeman wasn't satisfied with my travel orders so I had to call in the aid of a U.S. military policeman standing nearby.

My plane was the first flight north since the offensive began. I was the sole passenger except for a courier who made the trip regularly with mail and sealed documents. The pilot took liberties with his regular flight plan. We circled low over Cholon to see what we could see. Whole blocks were smoking ruins, leveled by the fury of war. I later learned that allied forces

were still mopping up stubborn pockets of VC. Cam Ranh Bay never looked better. I was told that for the first time in the war, Cam Ranh Bay air field had been hit by about a half dozen rounds of mortar fire from across the bay. There were no reported casualties and little damage. It was kind of a nuisance raid—nuisance that is if you're not in the immediate vicinity of a screaming rocket.

It was routine for about two months at Cam Ranh Bay.

In mid-March, the company was asked to do a rush job at a location near the DMZ. At the time, the North Vietnamese and VC had sizeable forces in the northern quarter of the country. The army wanted to build an invasion beach, and if necessary, hit the enemy in the rear in a pincers movement not unlike that in the Inchon invasion during the Korean War. Because of the heavy equipment and other logistics involved, we moved north by ship, a voyage taking 19 hours. We anchored at a point just south of the DMZ. We disembarked at night in a cold, steady drizzle. The first order of business when we got ashore was to establish a campsite and dig in. The area assigned to us was located some three-quarter mile from the water's edge. We set about in feverish effort to build bunkers, filling, tying, and tossing sandbags. Events within a few days would prove this a worthwhile effort. The army's entire field of operation was a perimeter of about one and a half miles from a point on the sandy shore. The perimeter was protected by elements of the 1st and 5th Cavalry divisions, the 101st Airborne, and later by elements of the Marines who were returned to the perimeter from their 11-week siege at Khe Sanh, about 30 miles inland. The area outside the perimeter was VC country, and as yet unsecured. Each vehicle that left the perimeter was equipped with a loaded M-16 rifle in the cab, and vehicles moved only in convoy. At night, the VC had the unfriendly habit of mining the dirt roads leading out. In the morning, it was the job of the Corps of Engineers to clear the roads of mines. Convoys could not move until the roads had been cleared, sometimes 9 o'clock, sometimes 1 o'clock, sometimes not at all. They'd just turn around from their marshaling point and return to their units. Al-

though there were several instances of military vehicles having been blown up by undetected mines and their occupants killed, there were no known civilian casualties.

Several times, usually about 2 o'clock in the morning, the VC sent rocket rounds into the perimeter, but their targets most often were the freighters riding at anchor off shore. We felt reasonably safe in our bunkers which were protected with heavy wooden beams, steel airstrip matting, and then three tiers of sandbags. During the day as our time permitted, we used to stand on top of the bunker watching the action off in the distance. Civilians work for contractors all over Vietnam, but we were told by the army that we were the first ever to penetrate that far north for any sustained stay.

The area of the perimeter was flat, dull, and uninteresting. But as you moved inland, a certain raw beauty became evident. Vast stretches of green rice paddies were broken up by stands of tall, willow trees. The weather was variable from hot, muggy sunshine to cold, steady rains. Morning ground fog was common. For a month, we ate only army "C" rations and slept on army cots in metal CONEX boxes. There were no comforts. We bathed in a shallow creek, usually midday when it was the warmest. When it rained, we didn't bathe. Naturally, we used outdoor latrines of the home-made variety. I remained there a month before I was recalled to Cam Ranh Bay. For those who stayed, things gradually improved. The site was supplied by an aircraft flying out of Cam Ranh Bay twice a week to Quang Tri City, a tortuous 18 miles away by road from the beachsite. We convoyed every Tuesday and Friday to Quang Tri to meet the aircraft. A screened-in mess tent with an army field range was set up and hot food was eventually served. An enclosed shower was rigged up using empty fuel oil drums and a makeshift movie screen was erected. Elements of comfort and civilization had crept into our beachsite.

How would I appraise the Vietnamese people? First of all, Cam Ranh Bay is essentially rural. Although we employed hundreds, our labor market was not a metropolitan one, thus we met few, educated, sophisticated citizens

such as you might meet in Saigon or other large, urban centers. Nha Trang, the fourth or fifth largest population center in South Vietnam, is about 35 road miles north of Cam Ranh Bay. Those Vietnamese who could speak passable English and serve as foremen and interpreters usually came from Nha Trang. Because of our location, we hired mostly unskilled, or at best semi-skilled, workers. For most of them it's the first time in their lives they've experienced the regimen that goes with a regularly paying job with a fixed starting and quitting time. And although our absentee rates have shown a substantial progress, some of them just can't take it and they quit. But on the whole, most stay. Even by their own standards, most are wretchedly poor. Because of our labor market, they're in the lower range of job classifications, and consequently pay ranges, provided us by the Vietnamese government, are based on their civil service codes. Thus a waitress gets paid about \$70 American money a month; a janitor perhaps \$80; and an office worker perhaps \$100 a month. Overall, they're a polite, friendly people with a keen sense of humor, prone to be shy and retiring with Americans.

What will come out of the Paris peace talks? I don't know. How will an eventual peaceful political settlement, if one ever comes, affect American civilians working and residing in Vietnam? I don't know. But there is much rebuilding to be done: roads, harbors, power plants, railroads, schools, bridges, not to mention some kind of housing for the hundreds of thousands displaced by the war. Hue, the ancient imperial capital I mentioned earlier, having so much historical and cultural value, will most certainly have to be rebuilt, perhaps stone by stone. With peace and foreign aid, Americans can be in Vietnam for a long time to come. And being here opens up all of Southeast Asia and the Far East for pleasure trips. I have already twice been to that perfectly charming city, Bangkok, capital of Thailand, with its perfectly charming people. Singapore, Taipei, Hong Kong, Tokyo, Penang, and Manila, to mention a few, all beckon, all fabulous and exciting, and all within a few hours' flying time from Saigon. That feeling of wanderlust is strong indeed. I may just hang around for a while.







let's go. He selects intelligence and cooperativeness as the desired traits; encourages voluntary artificial insemination as the means, and suggests benevolent geneticists as the controlling group. New areas of research open the possibility of gene insertion of desirable genes and gene deletion of undesirable ones. The process of transduction, the changing of genes in a host organism by means of a viral vector, is well studied in bacteria and some examples are known in humans. Joshua Lederberg feels that this method will become an important tool in the future and has coined a new term for its use in changing the genetic information, euphenics.

Is man really on the genetic decline? Will he become a pitiful sort of creature, dependent on artificial devices to keep him alive and functioning? It is true that due to the actions of modern medical techniques, defective genes are kept in the gene pool and are passed on to future generations. It is also true that the mutational input of new defective genes is increasing. Yet it is not an immediate serious problem. Population and pollution will demand the attentions of our race long before genetic detrimental symptoms prevail. If, as I have suggested, a powerful organization might have to come to grips with the above problems, why not consider the possibility of improving the quality of the race if it has to limit the quantity? Why not?

#### Lecture Number Three

#### SCIENCE AND CHRISTIAN REVELATION

With all the portents of doom as described in the preceding lectures, one wonders if there is any salvation for man. Truly he will have to be shocked into action, and if he acts now the amount of suffering can be reduced; but hopefully once he is convinced of the necessity of action he may save himself from eventual extinction, or at least prolong his stay on this planet. Alfred North Whitehead states, "The fact of the religious vision, and its history of persistent expansion, is our one ground for optimism." The purpose of this final lecture is to analyze a bit more closely the role of religion in face of the things to come. How do all of these things, the condition in which man finds himself today, fit into the scheme of revelation as perceived in Christian thinking? Science and revelation constitute two different forms of knowledge. So different are they that a firm believer in one often has a resentful attitude toward the other. Science is knowledge achieved by testing. It is based on faith in man's abilities to uncover the mysteries of nature. Revelation, on the other hand, is knowledge given to man by a superior intelligence. Supposedly, it is knowledge that man could never attain even with all the resourcefulness of his mind. Revelation may be of various kinds. It may be personal, in which God or some supernatural spirit communicates directly with the individual, as for example the conversion of Saint Paul on the road to Damascus, or the mandate to take up arms in defense of France given to Joan of Arc by supernatural voices. Revelation may be more formalized and constitute sacred inspired writings, such as the Bible or the Koran. Revelation may be of a third type, a type called institutionalized revelation. The Roman Catholic Church believes

that the Holy Spirit constantly guides the institution and will not permit it to fall into error, and official *ex cathedra* teachings of the Popes and Ecumenical Councils constitute divine revelation. We may react with a degree of skepticism to claims of revelation. Many people claim to have daily conversations with God. More than one church claims itself to be the one true religion. The vast multitude of Christian sects seems to attack the idea that there is a single Christian message. But if we put aside all superficialities such as modes of worship and esoteric doctrines of no great consequence, it is possible to see in Christianity a single unified theme. Christianity is evolutionistic in approach. It seems ironic that Christianity reacted so harshly to the Darwinian idea (some sects still don't know what to do with it), but evolution is most at home within a Christian framework. Christians see a historical continuity with gradual glimpses into the Divine Plan. God reveals himself slowly. In the Old Testament, God is the all-powerful father, protector of the Hebrew people, creator and ruler of nature. With the coming of Christ, a different aspect is revealed. Christ exemplifies the merciful and loving aspects of the deity. He is a God who submits to rather than controls the forces of nature. In Christ, God's love expands to the universal family of man. To Christians, Christ is the personification of the abstract deity. The Holy Spirit guides the continued growth of the Christian message under the third and final stage of revelation. When this growth and work were to be essentially accomplished, Christ would return to a world ready to receive Him. This is a straight-line development idea with ever-increasing stages of development. The religions of the East, Hinduism and Buddhism, are not based on this idea but are cyclic. Life goes round and round in cycles of reincarnation. The external world is something to be despised and transcended. The classic Buddha, sitting and contemplating, illustrates the priority given to introspection and self-control. There is room for introspection in Christianity; it has its cloistered monks, nuns, and mystics, but Christianity is not basically an introspective religion. It is a religion of action, of involvement with the world, of tackling the world's problems and attempting to solve them. Christ sends his apostles to teach; to labor in the vineyard; to build his church. The Christian work is dedicated to the greater glory of God as the motto of the Jesuits says. The humble, ordinary actions of life are endowed with spiritual meaning. Birth, marriage, death have their sacraments. The flocks and fields are blessed, grace is said before meals, Christmas trees and Easter baskets are secular manifestations of spiritual meaning. Ordinary things become inspired symbols: bread, wine, candles, the cross. The earth is not to be despised. It is to be encountered and made holy. Although the Christian is aware of God's plan, he is convinced that he must do things to help to accomplish the Divine Will. In other words, it will not be done for him. The Christian Church has changed but changed rather slowly. The question before us is not whether the church will accommodate to the changes wrought by science, but if it will change fast enough. Christianity is almost 2,000 years old and has accumulated some unessential accessories that it seems unwill-

ing to shed to return to the simplicity, vigor, and flexibility of its youth.

In my first lecture, I stated Bronowski's thesis that humanistic values of freedom and liberty flowed from the pursuit of science. I wish to extend that idea. Science was inevitable in a Christian culture. The official church may have reacted harshly to the first advances of science, not because these advances were in contradiction to the Christian message, but because they threatened the political authority of the church. The recent birth control issue is a case in point. Pope Paul's decision to ignore the advice of his special committee has created a conflict as to the nature of papal authority. Many theologians feel that the voice of the Holy Spirit is more accurately perceived from the developing sentiments of the people; that changes in attitude will come from the bottom up rather than from the top down. The New Dutch Catechism feels that the spreading of the Christian message cannot be measured by church attendance, Sunday collections, the number of schools built or missions financed. It is rather the Christian concern penetrating, like leaven, the fabric of society. There are a number of signs indicating this. Many scientists are concerned about the moral implications of their work. Theodosius Dobzhansky has coined the phrase, "The Biology of Ultimate Concern," for moralistic biology. Many people are horrified at the idea of using biological organisms in warfare. On March 4 of this year, the faculty of M.I.T. has declared a one-day strike on research to emphasize the point that science should be turned away from military pursuits. There is an increasing number of young men who question the premise that serving one's country in a military capacity is always right. The Vietnam War with its nebulous moral basis has highlighted this point. The new student activism is not without some Christian merit in its search for relevance and honesty. The issue of racial equality is indicative that some of the members of society feel guilty about social conditions and others feel deprived of justice. Many of these movements were not sponsored by an official church. They sprang from the people with little guidance from the clergy. Of course, there are exceptions as in the case of the late Martin Luther King, but for the most part the official church has become accommodating. It is regrettable that the concern for Christian values is to a great extent separated from the official churches. It is hoped that these churches undergo an examination of conscience so that they once again can become effective moral leaders. I spoke of the necessity of some organization coming to grips with the problems of world population and pollution, and I added that I hoped that this organization would be benevolent. Rather than a political state as the view given in *Brave New World*, a better view would envision a role for the church, much like that fictionalized in Morris West's novel, *The Shoes of the Fisherman*.

There are two ways the Christian can view the future. He can assume that the earth is in its final stages and all the evils described in the Apocalypse will come to pass. The four horsemen will ride through the human population spreading war, famine, pestilence, and death. Surely, from my lectures, this seems like the case. But there is another view, and this view is really more Christian

than the first. It is the vision of Teilhard de Chardin. He predicts for the future the following major advances: the organization of research which will study every aspect of nature; the recognition of the human personality; and the reunion of science and religion. Instead of calamity, Teilhard pictures the final end of time as a peaceful union with God. This will not come easily. Man must still work to accomplish this. It will be an evolution. He says, "How many failures have there been for one success, how many days of misery for one hour's joy, how many sins for a solitary saint?". All of these ideas truly embody the Christian theme outlined in this talk. The Teilhardian synthesis represents a major step in bringing science back into the framework of Christianity.

It is useless to point an accusing finger and blame religion as being the cause of our ecological and genetic dilemmas as Lynn White, Jr., has done. True, the problems stem from man's selfish nature but this nature is not derived from Christianity. It is part of the human condition. It may be man's original sin. White does suggest an alternate view and this view is that of St. Francis of Assisi. To St. Francis, all of nature constituted his brothers and he addressed every animal of the forest in a personal fashion. Many legends grew in connection with St. Francis. It is said that birds flocked to hear his sermons and wild animals became tame in his presence. It doesn't matter if these stories are true but they do teach an important lesson. We are as much a part of creation as the animals. To be kind to them is to be kind to ourselves. To be kind to our environment is to be kind to ourselves. To be kind to our genetic endowment is to be kind to our race.

This is clearly the position of modern man. He should respond to any exploitation of our natural resources with decisive action. The legislatures and moral authorities should give these matters prime attention. In correcting the abuses of the past and in the planning of bold, new experiments for the future, man would be fulfilling the Christian vision. It seems hard to understand why there is little commitment with today's youth or why they should ever complain of boredom. Man faces the greatest challenge he has ever faced. With Christian hope, we would like to think that we will overcome our problems and meet the challenges which nature presents but with a Christian sense of reality, we know that we have to work to accomplish it.

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fact, a staffman could be an assistant on one job and a senior on another, depending upon the size and scope of the engagement.

Salaries

It is basically a seller's market. A qualified young person entering the profession discovers that positions with the large firms are available anywhere in the country at salaries that are averaging approximately \$740 per month (\$8,880 per year) in the larger metropolitan areas. Salaries are scaled downward in areas outside of the large cities, and would not be as high in the medium and smaller size firms. An indication of what has happened in the past 13 years is indicated by the following salary information, which might be considered typical of the large firm.

Average Starting Salary <sup>1</sup>							
	1955	1958	1962	1965	1967	1968	
4-year degree	\$300	\$400	\$546	\$599	\$675	\$740	
Graduate Degree	350	450	600	684	786	850	

Little analysis is required to note the significant and dynamic changes that have taken place over a short span of time.

The primary reason for the difference in salaries being paid by the large firms is attributable to the fact that

they engage in campus recruiting and bid against each other in order to acquire the superior student.

The table following presents prevailing salaries for accountants for the years 1968 and 1967. It is interesting to note that these recent figures have already been outdated by the beginning salary offers made to June, 1968 graduates. Offers of \$9,600 per year have been made for positions in New York City to beginners holding the undergraduate degree, and approximately \$11,500 to those holding the graduate degree.

The College Placement Council, which publishes an annual survey of beginning salaries, reported that salaries paid by public accounting firms during 1966-67 to beginning accountants were higher than the previous year; and disclosed the greatest increase in any field. The average monthly salary in public accounting was \$646, while the average in private industry was \$637.<sup>2</sup>

According to the table, starting salaries are generally higher for the beginner in public accounting firms; however, salaries seem to level off at the senior level, increases in salary are based primarily on experience and ability rather than educational background.

Mobility, Retention, and Turnover

Mobility can be examined both from an internal and external point of view. Internally, a discussion of mobility must be related to size of firm because it is the larger firms and some medium size firms that have offices throughout the United States and overseas.

As a general practice, most firms do not offer promotion based upon a move from one office to another. Transfers are based upon desire and willingness of the employee to move, and staff requirements of the firm.

As to external mobility, movement from one large firm to another can be accomplished during the early stages of an accountant's career. Thereafter, mobility is restricted because most firms are concerned about the adverse effects on staff effectiveness and morale if a person is hired for a position above those who have been with the firm for a period of time and are looking forward to advancement.

As to turnover, I think it is appropriate to examine some statistics relating to the motivation of students toward accounting and later relate this information to some turnover statistics.

Why Students Choose Accounting

Several recent surveys revealed some interesting facts about what college students consider important today in selecting their careers.

One such study<sup>3</sup> asked accounting honor students around the country to indicate the specific factors that motivated them in choosing accounting as a major. The answers:

Employment Opportunities	30%
Interest and Aptitude (without reference to potential employment)	29
Salary Potential	27
Social Prestige	5
Parental or Social Pressures	2
Other	7
	100%

There are certain large firm personnel policies that directly affect retention and turnover of staff. One such policy is that a person cannot be a career professional below the partner level. In other words, the policy is "up or out." It seems somewhat harsh to think that the accountant with a large firm cannot be a happy senior for the duration of his accounting career. However, the firms cite salary limita-

tions and the thwarting of ambition as reasons for this policy. In addition, it makes it possible to keep lower staff levels open and permits the attraction of new "blood." This policy is not as formal in the medium size firms, and in many cases may not be applicable to the small firms.

Why do they join the big firm, what are the reactions of the staff to the firm, and why do they leave? The following statistics of two large firms (typical of the big eight) are of interest in examining the factors of retention and turnover.

One firm recently made a detailed, firmwide survey of its staff, and analyzed approximately 2,500 replies to a detailed questionnaire. One question relating to goals of the staffers was answered as follows:

To become a partner	47%
To acquire experience and leave the firm	10%
Not yet sure of goal	22%
(Only significant percentages are cited) <sup>12</sup>	

It is obvious that almost half of the staff looks forward to becoming a partner; however, it is also obvious that the firm has a great deal of "selling" to do if it wants to retain the majority of the staff.

This same firm asked pertinent questions about the strong points and weak points of the firm. The following results were obtained:

Strong Points	
Opportunities to learn	26%
Excellence of professional development program	18%
Opportunity for advancement	14%
Concern, attention and respect of individuals	12%

Weak Points	
Compensation	21%
Lack of communication	18%
Too much overtime and travel	17%
Professional development program	10%
(Only significant percentages cited) <sup>13</sup>	

It is interesting to note that although 47% aspire for the partnership level, only 14% cited advancement as a strong point. The statistics also point out the weakness of "bigness" and the importance attached to concern for the individual.

Accountants leave their employment for many and varied reasons. The most significant reason why a staff person voluntarily leaves is a more attractive

position. However, here again the "human" aspects such as a dislike of the requirements of the profession and living conditions play a part in staff turnover.

On the other side of the picture, involuntary termination of employment is attributable primarily to lack of personal qualities and lack of technical ability.

Another firm made a survey of approximately 7,500 professional employees that were hired from 1945 to 1966. They discovered that 85% of the staff was retained at the conclusion of the first year; 38% at the conclusion of the fifth year, and 18% at the conclusion of the tenth year. Of those who remained after five years, 13% became managers and 27% became seniors. After 10 years, 3% became partners.

Of approximately 4,400 out of 7,500 employees who left this firm, 61% left on their own volition and 39% left at the firm's suggestion. The following reasons and percentages are cited relative to turnover of this firm. These reasons and figures are not the exception; rather they might be considered reasonably normal for all large firms.

Left on Own Volition	
26% Offered more attractive positions	
9% Desired to live in smaller community or near relatives	
13% Disliked requirements of public accounting — overtime, travel	
7% Dissatisfied with progress	
2% Ill health	
4% Advanced study	

Left at Firm's Suggestion	
13% Lacked technical ability	
23% Lack of personal qualities	
1% Unwilling to make personal sacrifices	
1% Initially hired for limited period with understanding firm would assist in finding industry position	
1% Unprofessional conduct <sup>14</sup>	

Turnover statistics are not available for the medium size and small size firms; however, it is a known fact that many young men joining these firms see that they cannot reach the partner level and therefore use the experience as a "stepping stone" to a better position.

An interesting point is that it is less difficult to move from public accounting to industry or government than it

is to move the other way. The primary reasons are that age precludes entry into public accounting if a number of years have elapsed since graduation, and the practice of not hiring a staffman at a higher level than junior accountant.

Recruiting Policies and Practices

Many firms, regardless of size, have found it easier to secure new clients than to recruit competent staff men. The shortage is in qualified people — not numbers of people.

Most recruiters emphasize two major points in their recruiting policy, and an able recruiter can use these points to great advantage.

1. The ability of the firm to attract top people.
2. The use made of the human resource once hired.

Most of the interviewers from the large firms may have had some training in recruiting prior to actually engaging in recruiting activities. Up to the present, the large firms have developed staff accountants as recruiters because they are of the opinion that a potential employee should meet and speak with a recruiter who knows about, and has actually engaged in, the professional work. He would best be able to answer technical questions. Recently, a number of firms have hired professional personnel people to carry on the recruiting function because of their experience as specialists in the personnel field. In addition, it has been discovered that prospective employees seldom ask technical questions. Rather they ask questions pertaining to personnel policies.

It is obvious that the large firms have highly organized personnel departments. What about the medium size and small firms? Again, the formality of the personnel policies and recruiting personnel will depend upon the size of the firm. In the smaller firms, the partner-owner will actually handle the personnel function.

What are the recruiting procedures commonly employed? The large firms engage in a great amount of campus interviews which are primarily used as a screening process. Most firms do not limit the student from seeking an interview even though academic averages do not meet the requirements of the firm. If the student is considered a potential staffman, he is invited to the

PREVAILING SALARIES FOR ACCOUNTANTS<sup>2</sup>  
1968 AND 1967

The compilation below represents country-wide statistics and is probably the largest cross-section of data available on accountants' salaries.

	LARGE FIRMS		MEDIUM FIRMS		SMALL FIRMS	
	1968	1967	1968	1967	1968	1967
Public						
Beginner	8,000- 9,000	7,200- 8,000	7,000- 8,000	6,000- 7,000	6,000- 7,000	5,500- 6,500
1/2-1 yr.	8,500-10,000	7,500- 8,500	7,500- 8,500	7,000- 8,000	7,000- 8,500	6,500- 7,500
1-3 yrs.	9,500-12,000	8,500-11,000	8,500-12,000	8,000- 9,500	8,500-10,000	7,500- 9,000
Senior	12,000-16,000	11,000-15,000	12,000-15,000	9,500-13,000	10,000-14,000	9,000-14,000
Manager	16,000-35,000	15,000-35,000	15,000-30,000	13,000-25,000	—	—
Internal Nite						
Student	6,000- 8,000	5,700- 7,500	6,000- 7,500	5,500- 6,800	—	—
Beginner	8,000-10,000	7,500- 8,000	7,500- 8,500	6,800- 7,500	—	—
1-3 yrs.	10,000-12,000	8,000-10,500	8,500-10,000	7,500- 9,000	—	—
Senior	12,000-15,000	10,500-15,000	10,000-16,000	9,000-15,000	—	—
Controller						
Assistant	20,000-27,000	20,000-25,000	13,000-25,000	12,000-25,000	11,000-13,000	10,000-13,000
Full	40,000-60,000	35,000-60,000	18,000-40,000	17,000-40,000	13,000-20,000	12,000-20,000

NOTE: For public and internal accountants, add 10% to the salary shown for a graduate degree and an additional 10% for a CPA certificate.



firm's office for an interview in depth. This interview affords the firm the opportunity to introduce the potential employee to other staff people and partners, and to show their office facilities.

The accounting internship program is used by accounting firms, regardless of size, as a recruiting device. This is a program where senior college students, majoring in accounting, spend a specified amount of time with an accounting firm, and are scheduled on work assignments as members of the professional staff. They are paid at a rate which is below that of a junior accountant; however, it is more than adequate to meet their expenses while they are away from home. Typical salaries paid by the large firm in 1968 were \$525 per month (plus overtime in excess of 35 hours) in New York City and \$500 elsewhere. Of course, these salaries were scaled down depending upon size of firm and location of office. Some colleges require the completion of the program in order to fulfill the requirements for graduation. Other colleges do not require the program for graduation, and permit only their very good students to participate in the program. Still other colleges do not engage in the program under any circumstances. There are arguments for and against such a program; however, it does permit the accounting firm to see if the intern is really someone whom they would want on their professional staff. On the other hand, it permits the student the opportunity to decide whether that particular firm and location is what he wants, or if public accounting is really the career he wishes to pursue.

Medium size and small firms have attempted, through their various state professional organizations, to establish a list of firms that is circulated to the various college placement offices in the hope that they will attract personnel. This procedure is of questionable effectiveness. Additions to the staff of small firms come primarily from personal referrals, recommendations, or through external mobility.

#### Pre-Professional Education

In 1963, the Carnegie Corporation of New York and the American Institute of Certified Public Accountants sponsored a commission to study the Common Body of Knowledge for CPAs.

The Commission was composed of an attorney, a banker, a stock exchange official, two deans of colleges, two professors of accounting and five practicing CPAs. The results of their study were published in a book entitled, "Horizons for a Profession," and was written by Robert H. Roy of Johns Hopkins University, and James H. McNeill of Fordham University.

Generally speaking, the report indicated that the CPA should have (1) a broad education in the humanities, (2) a more thorough knowledge of economics, the functional fields of business, and the behavioral sciences, and (3) a thorough knowledge of English, both written and spoken, and of accounting concepts, principles, and techniques.

There is general agreement that the responsibility for preparation of aspirants for the profession should rest with the colleges. There are many who feel that the apprenticeship system in the profession does not produce the background required to meet the challenges of the profession. True, much of the practical knowledge of the profession is learned while "on the job"; however, formal education is a primary and minimum requirement in order to develop an adequately prepared, present-day accountant.

The profession has not established a "fixed" curriculum for accounting students. There has not even been a formal recommendation as to the required number of accounting courses that should be taken. It is a fact that the various states have established required curricula in order to take the professional examination; however, it is the opinion of the profession that these requirements leave something to be desired. The profession takes a stand which indicates that there is no single program that should be considered as "The Program." It is suggested that a basic core with flexibility in the remainder of the curriculum is desirable with a de-emphasis of "how to do" courses.

The foregoing is not meant to suggest that the "status quo" is acceptable. The dynamics of the profession, and of business, require constant evaluation and adjustment as a consequence of changing times. (Note: A follow up study to "Horizon for a Profession" was published in the December 1968 issue of *The Journal of Accountancy*. This study proposed, in detail, a

recommended curriculum for undergraduate accounting students.)

#### State Requirements Governing Entry Into the Profession

In many states the law permits the practice of public accounting, even though the practitioner does not hold a "Certified Public Accountant" certificate granted by a state. In some states the non-CPAs are subject to a licensing regulation. However, if a person wishes to call himself and be known as a CPA he must pass an examination given by the respective state board of examiners. In addition, some states require that the CPA obtain a license if he engages in public practice. The examination is of 2½ days' duration (3 days in some states) and is a test of proficiency in the areas of Accounting Theory, Practical Accounting Problems and Taxation, Auditing and Commercial Law. The Uniform CPA Examination is constructed by the American Institute of Certified Public Accountants and is administered twice a year; in May and November on the exact same dates in the 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands. Although the examination is generally marked by the AICPA, the individual states actually communicate the results to the applicants.

Although there are professional organizations of national scope and a uniform professional examination adopted by the examining boards of 53 jurisdictions, there is no uniform federal law pertaining to requirements for entry into the profession. Each jurisdiction has its own examining board, usually appointed by the governor, which administers the provisions of a state law pertaining to the profession. The laws are by no means uniform. For example, the laws vary as to the requirements in order to sit for the examination. As of January 1, 1968, 27 of 54 jurisdictions passed laws requiring the baccalaureate degree (or its equivalent). Another eight jurisdictions required two years of college (or the equivalent) and 19 others did not require any college education. Other requirements range from U.S. citizenship to no citizenship requirement; one-year residence requirement to no residence requirements; over 21 years of age to minimum of 19 years of age, and two to six years' experience with

some states requiring that the experience be obtained within that state.

Most states have reciprocity arrangements whereby a CPA relocating in another state is able to obtain a reciprocal certificate. However, once again, the requirements are not uniform and therefore present serious problems. A case in point is a situation whereby a partner in the St. Louis office of a major public accounting firm transferred to the New York office but was not able to be classified as a partner because the New York law states that a partner must hold a New York CPA certificate.

#### In-Service Training Program

Commencement exercises at the conclusion of college unfortunately signal the end of formal or semi-formal education for many accountants.

Public accounting firms, regardless of size, are interested in the continued educational development of staff. The two approaches taken to further this aim are: (1) the structuring of a firm-sponsored training program, and (2) the encouraging of staff members to take advanced college courses and/or participation in the American Institute of CPA's Professional Development Program. The importance attached to this goal may be indicated by the fact that a major accounting firm has allocated 10% of gross fees for formal training.

Firm-sponsored training programs have ranged from courses conducted in the office to courses given in complex training centers such as the Sterling Institute developed by Peat, Marwick, Mitchell & Co. This complex, located in Washington, D.C., is considered to be the ultimate in design for educational activities. In some cases, firms have arranged for the use of college facilities for continued-education purposes. For the most part, instructors are members of the professional staff; however, professors and outside experts are also utilized. These programs are varied and frequent. Some are mandatory, but for the most part firms encourage attendance on a voluntary basis.

The professional societies, such as the American Institute of Certified Public Accountants, the National Association of Accountants, and the American Accounting Association, began to take cognizance of the need

for continuing education, and in consideration of the dynamic changes in business and the profession, developed a professional development program. The American Institute of Certified Public Accountants Professional Development Program began in 1958. The course materials fall into two general classes — those that are directed to immediate improvement in performance, and those directed toward "updating" and comprehending new developments. These programs consist of special courses, seminars, lecture programs, and training programs, and are available to individuals and to groups at various specified locations for one or more days. An indication of the growth of these programs is shown by the following statistics accumulated by the American Institute since 1959.

Year	Number of Participants
1959	2,193
1960	2,573
1961	3,945
1962	7,549
1963	11,659
1964	14,481
1965	15,090
1966	16,578
1967	21,489*

It is estimated that the enrollment during 1968 will exceed 25,000. These figures indicate considerable growth; however, the total number of enrollees in relation to the total number of potential participants (61,000 were members of the AICPA in 1967) emphasizes that there is much work to be done in encouraging many professional accountants to profit from this program, which is geared to meet the challenges of the profession.

#### Conclusion and Criticism

Both the profession and many high school guidance counselors share the responsibility for the lack of attraction of more qualified aspirants for a career in accounting. There are some guidance counselors who, because of a lack of knowledge about the accounting profession, feel that the "commercial course" background is sufficient for the further study of accounting. This is an erroneous concept and has led to the misguidance of potential candidates for the profession. Part of the problem stems from the fact that since the launching of Sputnik by the Russians, there has been a tremendous emphasis upon the natural sciences

and a de-emphasis of the business-oriented subjects. On the other hand, the profession has not put forth enough concerted effort toward "educating" the guidance counselors. It is a fact that there are various committees within the professional societies whose responsibility it is to communicate with schools and colleges and to help "sell" accounting as a career; however, this program has not been sufficiently effective on the high school level. Much work remains to be done in this area.

There are those who are advocating a five-year college accounting program. This program would offer specialization in accounting in the fourth and fifth years with emphasis on the liberal arts and other subject matter in the first three years. While this may be worthwhile for some, it has the disadvantages of being too expensive for many students and postpones entry into the profession. The professionals convey mixed reactions on the subject.

It is necessary that the profession maintain continued and increased communication with the educational community. Joint examination of accounting programs may be in order so that modifications may be made according to the recommendations in "Horizons for A Profession." However, technical accounting training continues to be necessary. The experiment conducted by one firm to make "instant accountants" out of liberal arts majors did not prove to be satisfactory.

Aid to education should be examined in order to determine if the support is too widely and thinly spread and whether it might be wise for a number of public accounting firms to pool resources in support of grants to colleges, seminars, scholarships and faculty advanced study and research.

Salaries being offered by major accounting firms have been most inviting to the new entrant, but they have also presented problems. Morale of currently employed staff has been affected because of differentials in pay. Substantial adjustment of salaries have been made in order to alleviate the problem.

Increased salaries result in increased fees to clients. Clients are very much concerned about this problem, and in some cases it may result in strained client-accountant relationships.



The national and international growth of the profession and the increase in mobility both internally and externally, requires immediate concern for the need to develop uniformity in state laws pertaining to entry into the profession. A first step in this direction has been taken with the organization of a National Association of State Boards of Examiners.

More women should be attracted to the profession. While the problems of travel, working hours, and location of audit sites, present limitations in hiring women, adjustments in scheduling of jobs could permit the utilization of more women in the profession. We have permitted our cultural background, with regard to women, to

overshadow the need to employ our human resources to their fullest extent.

There are indications that in the past there were subtle prejudices that restricted entry of certain minority groups into the profession. Today this is generally not true; however, public accounting firms have experienced difficulty in hiring qualified Negro staff. Many of the firms have conducted a concerted effort to add Negroes to the staff; however, they would like to be assured that they are hiring a capable person; for should that person leave the firm, for whatever reason, the firm may find itself subject to criticism on a civil rights issue. Few problems have developed pertaining to client acceptability.

#### Footnotes

<sup>1</sup>Mimeographed material printed by a public accounting firm for high school recruiting purposes.

<sup>2</sup>Howard F. Stettler, "CPA's/Auditing/2000+", *The Journal of Accounting* (May, 1968), p. 55.

<sup>3</sup>David W. Thompson, "A Career for the 70's: Public Accounting," *World, Peat, Marwick, Mitchell & Co.*, Winter, 1968.

<sup>4</sup>Thompson, p. 28.

<sup>5</sup>Robert Half, "The Staff Man's Future," *The Practical Accountant* (Jan./Feb., 1968, Vol. 1, No. 1), p. 56.

<sup>6</sup>Half, p. 59.

<sup>7</sup>Data furnished by one of the "big-eight" accounting firms. Anonymity requested.

<sup>8</sup>Ibid.

<sup>9</sup>*Salary Survey*, The College Placement Council (Bethlehem, Pa., Report No. 2, March, 1968), p. 2.

<sup>10</sup>Half, p. 55.

<sup>11</sup>"Career Choices Among Beta Alpha Psi Members," Prof. Ray M. Powell, CPA, *The Accounting Review*, Vol. XLI, No. 3, July, 1966, pp. 531-532.

<sup>12</sup>Data furnished by one of the "big-eight" accounting firms. Anonymity requested.

<sup>13</sup>Ibid.

<sup>14</sup>Ibid.

<sup>15</sup>"Education of Certified Public Accountants," position paper submitted by A.I.C.P.A. planning committee, *The Journal of Accountancy*, (April, 1968), p. 48.

<sup>16</sup>*Professional Development News*, American Institute of Certified Public Accountants (New York, March/April, 1968), p. 3.

<sup>17</sup>*Professional Development*, American Institute of Certified Public Accountants (New York, 1968), p. 2.

<sup>18</sup>Thompson, p. 25.

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Roy, Robert H., and James H. McNeill, *Horizons for a Profession*, New York; American Institute of Certified Public Accountants, Inc., 1967.

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The development of a non-professional group to perform menial accounting tasks may help relieve the pressure for additional professional staff. Firms cannot afford to charge, and clients cannot afford to pay, for "high-priced" help to do bank reconciliations, vouching and checking of figures. In many cases the burden of this work has been thrust upon the accountant because the clients have not solved their own manpower problems.

Projected growth rates of the profession demand that the search for a professional accountant be continued at an accelerated rate, and that the continued education of the professional be emphasized and developed both qualitatively and quantitatively.

Stettler, Howard F., "C.P.A.'s / Auditing / 2000+",

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Mimeographed material printed by a public accounting firm for high school recruiting purposes.

NOTE: The writer of this paper is indebted to a number of accounting firms and their personnel for making various information available during personal interviews. They have requested that the names of the firms not be disclosed.

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