EDITORIAL

With this first issue of JUFF (Journal of Union's Faculty Forum) we begin what we hope is a new dimension in the chronicle of scholarship, education, and pedagogy at Union. In keeping with the tradition of journalistic ethics, the editors would like to present for your comment and evaluation a few principles we believe inherent in the journal as envisioned by the Faculty Forum:

(1) We hold with Paul that Christianity and education are not only mutually compatible terms, but both are necessary ingredients for meaningful life on earth.

(2) We hold that showing and testing with each other our pedagogical philosophies, techniques, and approaches, as well as our creative, and innovative ideas, is not only desirable in fostering a spirit of camaraderie, but healthy in our growth.

(3) This journal we believe is a vehicle for such sharing, for such camaraderie, for such growth.

(4) We hold that this journal should solicit material for publication from Administrators, Faculty, and staff members (at present not from students nor those outside Union's family) and that such solicitation should emphasize scholarly poems, drawings, photographs, test and measurement techniques, musical compositions, scientific experiments, short stories, research findings, curriculum proposals, pedagogical evaluation—in short, anything that legitimately contributes to the twin goals of (1) professional development and (2) creative instincts.

(5) As an outlet for sharing ideas and techniques, we hold that previously published material or material composed for purposes other than this journal should not be a basis for exclusion.
(6) We will be guided (aside from the very subjected value of quality) by the criterion of variety, timely subjects, matter, length, representiveness, and appropriateness to the cause and intent of this journal.

(7) We solicit your suggestions and comments, evaluations, critiques of this journal--written, oral, dictated anonymous or otherwise--toward the aim of an improved publication.

A quick glance at the Table of Contents will reveal 3 broad categories of material:

(1) four articles on pedagogy and learning
(2) one illustration of faith
(3) several poems, photographs, drawings, one play excerpt--examples of creative as opposed to expository matter.

Of the first category, Kyle Hathcox deals with the concept of time, presents an interesting and unique way of getting a handle on time--a concrete method of calculating. In the second article, Thomas Haygood presents some calculations of another sort--those dealing with the drop in SAT scores, or the drop in students entering college, and some changes and aims in the future. However, Professor Haygood's conclusion is quite optimistic unless we misjudge his "Cheshire Cat." William Truex deals with calculations of still a third nature: the digital computer as it relates to mathematics instruction. Professor Truex does indeed see a role for the mechanical computer in instruction, provided the human element (the instructor) is willing to take the time and effort to adjust from his "conventional approach" to his courses. The sad fact is that the reluctance of math instructors is twice-fold applicable to the rest of us.

On a much more humanistic level Clyde Tilley provides our fourth calculation: the matter of gaging knowledge. "Learning," postulates Dr. Tilley, "is a never-ending task with a goal to be approximated in diminishing degrees."
The process of "unlearning" (dealt with at some length) and its relation to knowledge proves as illusive a term as "education" in Haygood's article, or "time" in Hathcox's, or for that matter as complex as Truex's "computer" is to your editors.

The second category in this issue is represented by Eugene Baker's account of a woman's account of the close breath of death. The report is timely in view of the recent almost preoccupation of the media with death and the verge of (e.g. two recent books published on studies of hundreds of "close calls" and what the near victims felt and thought). The husband's greeting to his nearly dead wife, "welcome back, darling!" is more than a flippant remark.

The third category is creativeness (i.e., poems, plays, photographs, drawings, etc.). Betty Foellinger's "A Grammar Lesson for Today" seems an appropriate follow-up to Kyle Hathcox's "lesson" concerning time. Betty Foellinger's "Kaleidoscope" and Lillian Schallenberg's "The Living Dream" are excellent preludes to Eugene Baker's account of near death, and his own poem "Insomnia--Unrealized Wealth" is a fitting postlude. Be it admitted immediately that Baker's other poem "Ode to a Skinned Knee" blends nowhere (or everywhere) and so was shifted around as space demanded.

Pat Pinson's art work provided us an additional dimension in form and adjustable subject matter in context. We defy a correct identity of the subject in photo #1 on page 38 however. Grove Robinson's drawings present yet another dimension for this publication and certainly add variety to his many talents. The excerpt from Union's sesquicentennial pageant, A Season and a Purpose, is entered without comment for obvious reasons. Already we are accumulating material for issue #2. We request your contributions and your suggestions.

In the words of Robert Southey, Lay of the Laureate, 1815, L'Envoi:

"Go, little Book! From this my solitude
I cast thee on the waters--go thy ways."
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VISUALIZING TIME

by

Kyle Hathcox

Space has no reality except as an arrangement of objects we perceive in it, and time has no independent existence apart from the order of events by which we measure it. Our concepts of space and time are generally limited to distances and time spans with which we are familiar in our everyday life. When we attempt to consider the true magnitudes of space and time as reported by scientists today, our finite minds are found to be incapable of such comprehension. The human mind can little comprehend the national debt much less the distance to some far away galaxy or the age of the universe.

In an attempt to aid students in visualizing the immensity of time, the following method was devised. First, the time scale chosen to be used was the age of the Earth, 4.5 billion years, as generally accepted by geologists, evolutionists, and anthropologists. The geologic time scale was chosen for its compatibility with the devised illustration. The illustration is not given in defense or support of this time scale but merely for assistance in mentally comprehending the enormous time span spoken of today.

With this method one is to imagine that the inhabitants of another planet use a super-telephoto lens and a time-lapse camera to record a moving picture of Earth since its beginning. This imaginary film was taken at the rate of one picture per year for the last 4.5 billion years. If we run this film on a projector at normal speed (24 frames per second), then 24 years of Earth history flashes by each second. The film will be run continuously from beginning to end, 24 hours a day. Thus, every day about 2.5 million years of Earth's past history is shown on the screen. In order to view the entire movie we must run the film continuously for five years. Let us suppose the film was begun on New Year's Day 1970 and let us note what will be seen.
The movie begins and runs throughout the first year, 1970, without showing any signs of life on Earth. Then, in May of 1971 we begin to see one-cell organisms appear. The single-cell organisms remain on the screen for the next 10 months, when in March of 1973 cells capable of photosynthesis appear. Over another year passes before multiple cell plant life begins to appear in April 1974. It will not be until November of 1974 that soft-bodied animals begin to become visual on the screen. These remain until March of 1975 when the first marine invertebrates show signs of life. From this point fish begin to develop and by June several species of fish are prevalent. By the end of June 1975 we begin to see land plants and by August insects start appearing.

After the insects appear, the amphibians are seen and in September and October we see reptiles, dinosaurs, and a few birds. By the middle of November, the dinosaurs begin to disappear and flowering plants make their appearance. In the last half of November the first primates and mammals are viewed and the Rocky Mountains are beginning to form. Late in December the Colorado River begins to cut the Grand Canyon. We suddenly realize the movie is almost over. It has been running nearly 5 years and man has not appeared, but finally, December 31 arrives and man is seen in his stone age caves late in the day.

About 11:45 a.m. we see man begin to use stone implements and cultivate the soil. Sixty-nine seconds before midnight the Christian era begins. Seventeen seconds before midnight Columbus discovers America and with two seconds left man discovers electricity.

Many aspects of this imaginary film are worth pondering. Life has existed on Earth for 3-1/2 of the five years; man has been here but part of one day. Dinosaurs dominated the movie for over 2 months, yet man was on center stage just a few hours. Of the few hours man was in existence there were only a few minutes of any "worthy" civilization. If the movie were continued, what would we see by the end of New Year's Day? By the end of January of 1976? It may be somewhat comforting
to think man has come such a long way in our civilized progress in such a short time; or on the other hand, it may be frightening to consider the fantastic rate of man's advancement. Can man cope with this rapid changes?

A GRAMMAR LESSON FOR TODAY
by
Betty Foellinger

One of the greatest aspects of success in any project is positive action—the active voice, if you will. We cannot and should not operate in the grey area of apathy as the passive voice.

For the best fulfillment of our individual potential, we must break through into the verbs of action. Here is a list of what could be the eight most active verbs in your life.

Do more than Exist ... LIVE;
Do more than Touch ... FEEL;
Do more than Look ... OBSERVE;
Do more than Read ... ABSORB;
Do more than Think ... PONDER;
Do more than Talk ... COMMUNICATE;
Do more than Hear ... LISTEN; and
Do more than Listen ... UNDERSTAND
SOME OBSERVATIONS REGARDING
THE EDUCATION OF TODAY'S AND TOMORROW'S STUDENTS
by
Thomas Haygood

The College Entrance Examination Board released its analysis of the 1975 test results in September and the results are disturbing, but not unexpected. Test scores last spring dropped for the 12th consecutive year as the Class of 1975 scored ten points lower in verbal skills and eight points lower in mathematical skills than the high school graduates of the preceding year. The mean scores were the lowest in two decades. Since 1963, the plunge totals 44 points on the verbal exam and 30 points on the mathematical portion of the Scholastic Aptitude Test for which scores range from 200 to 800. It is also interesting to note that female students last year averaged 46 points lower than males in the math test and 6 points lower in the verbal exam.

Furthermore, since the peak year of 1971 when the total number of students enrolled in kindergarten through college reached 59.7 million, this figure has slightly declined to an expected 58.9 million for the fall of 1975.

A third item germane to this paper pertains to some figures from one of the reports of the Carnegie Commission on Higher Education which was established in 1967 for the advancement of teaching in the latter half of the 20th century. In 1900, only six percent of persons seventeen years of age graduated from high school and only four percent of the 18-21 age category were enrolled in higher education. By 1970, 75% of the 17 year olds graduated from high school and about 45% went on to college. However, based on the above figures and the decreasing birth rate in America, there will be both a fewer number of college-age persons to draw from and a lower percentage of them attending an institution of higher education. This second prediction is also affected by the sky-rocketing costs of higher education, the elimination of the draft, and the questioning of the relevance of a college education.
These substantial changes have far-reaching implications especially when considered within the context of the social climate of the campuses in the last two decades. From the more collegiate sub-culture of the 1950's the socio-academic environment was ushered into the student activist period in 1964 which peaked out with the 1970 Kent State and Jackson State shootings. It appears to this observer that a prevalent mood among many college students today is represented by this student's statement: "Perhaps I'm too pessimistic, but too many things have happened in my lifetime: Vietnam, Martin Luther King, the Kennedys, Kent State, Watergate, etc. I don't see the bright future for America she once had and it makes me sad." Another student responds,

When I first heard that there had been an assassination attempt on our president, it impressed me about as much as the United States launching another rocket.

In my generation, I have witnessed the slaying of one of our beloved presidents and others also. The way people are being murdered in the United States gives me a feeling of apathy, because there is not a single thing I can do about it anyway.

In recent years the uncovering of the politicians' use of graft, I would not put it past any of our leaders to have made these two "phony" assassination attempts to make Mr. Ford look good to the public. I am in no way saying this is the way it was, because I flat do not care.

I also am not saying that I do not care for the life of our president. It is Mr. Ford as a human that I do care for, not his rank.

The pessimism and cynicism of today's students cannot but affect their educational performance and achievement. In light of these problems, how can today's student be educated? What are the purposes of education?

According to the Carnegie Commission of Higher Education, the main purposes of college education today and for the prospective future are:
(1) The provision of opportunities for the intellectual, aesthetic, ethical, and skill development of individual students and the provision of campus environments which can constructively assist students in their more general developmental growth.

(2) The advancement of human capability in society at large.

(3) The enlargement of educational justice for the post-secondary age group.

(4) The transmission and advancement of learning and wisdom.

(5) The critical evaluation of society through individual thought and persuasion for the sake of society's self-renewal. 4

After completing the study, the Commission rated each of these five educational purposes as follows: (1) generally adequate, (2) superior, (3) unsatisfactory, but growing, (4) superior, and (5) uneven and uncertain. (For fuller treatment and explanation, please see the report entitled The Purposes and the Performance of Higher Education in the United States.)

The faculty has the more fundamental educational development responsibilities as indicated:

(1) General education

(2) Depth training in some special field

(3) Establishment of high standards of academic conduct

(4) Provision of access to adult members of the campus community and professional experts for advice and counsel.

(5) Provision of a stimulating cultural life for students
Then it should be possible for a student to construct for himself the following:

(1) Essential academic skills
(2) Competency to choose and then enter a career
(3) Basic capacity to perform his citizenship responsibilities
(4) Creative interests and capacities

In other words, there must be a dual responsibility in the process of higher education. The college faculty and the student share in this relationship. The college years are extremely important especially pertaining to the cognitive and affective development which responsibility rests primarily with the student. The primary direct responsibility of the college is to assist with intellectual and skill development because it is only one of the several environments within which the student lives. The college is the preeminent place for developing intellectual discipline, scholarship, and professional competence. Thus the college should particularly devote its attention to what it can do best and to what students cannot so well obtain anywhere else. Then the student will be more able to devote himself or herself to academic discipline. Therefore, having given up in loco parentis, the college should not now try to stand in loco discipuli.

That the intellectual and skill development is only a part of the total developmental aspect of the individual student is also clearly demonstrated from several study reports. Feldman and Newcomb's substantial conclusion from 1500 studies points out that a major amount of student development seems to occur apart from anything the college may try to do. The sobering truth is that, for the most part, student development seems to proceed in a fairly orderly manner no matter what we do to enhance or impede it. Other observers conclude that the changes usually ascribed to college education may be nothing more than the general concomitants of the growth of any motivated adolescent or young adult in the contemporary American culture.
One day in my social psychology class as we were covering the area of motivation, the formality of the lecture method eased into a very spontaneous interaction as to the purposes of college education and student motivation. A general comment, agreed upon by a rather substantial minority in the class, was that intellectual pursuits were secondary on the college campus. Although not expressing the identical point, Lehmann submitted that informal education is much more important than formal education. He continued by saying that only when students entered their major field of study do the formal courses really affect them.

Hopefully, if the college and the individual student cooperate in the developmental process, then the product will be a more aware, more effectively-functioning, and more creative individual. Barton described the educated man as possessing:

an independent and critical mind; well-informed about the nature of man and society; capable of responding emotionally to the arts, to others' feelings, and to social problems; and possessed of a set of values which have been formed through critical examination, broad knowledge, and emotional sensitivity.

Central to the educating of today's college student is an understanding and application of principles of motivation and learning in which area there still exists need for further research and testing. A maxim of learning theory is that reward is more powerful than punishment in changing behavior. From the framework of more extrinsic motivation, punishment and fear, although well-established in education, are the enemies of good instruction. By punishing behavior we wish to suppress, however, acceptable behavior is not specified. The student learns indirectly to avoid punishment by attempting to do such things as please the teacher, stay eligible, earn a scholarship and special awards, or get a better job by virtue of a high grade-average. These goals are of questionable reward value. The course grade is one of the most powerful incentives at the teacher's disposal. The anticipation of being graded will influence the student to learn material he
expects to be asked about on an examination. McKeachie suggests that the motivation to earn grades per se is so strong that it overrides the effects of most teaching methods.\textsuperscript{12} If students must memorize to earn the grade they desire or need, then they will memorize. If students are required to integrate, extend, assimilate, and evaluate, then they will work toward those ends. To utilize fully the incentive value of grades, the instructor must ask: Will a high score on this examination indicate that the student has met the instructional objectives I have set for this course?\textsuperscript{13}

From a more intrinsic motivational standpoint, the ability to relate subject matter with the student's own aspirations and values is probably one of the defining characteristics of the master teacher. Perhaps the best single example of intrinsic motivation is intellectual curiosity. Upon entering college, many (hopefully most) students have continuing interests in searching for concepts and principles that will integrate and provide meaning to diverse events and aspects of life. Therefore, if academic learning goals have been merely in the direction of good grades, what will remain when the last exam is handed in and the threat or promise of a course grade no longer looms to control and direct learning? These issues need careful consideration by the college teacher of today.\textsuperscript{14}

Perhaps we as teachers do not realize the potential power we possess motivationally for our students. Students learn what they want to learn and have extreme difficulty in learning that which they are not interested in. Our students are not poor learners; nor are they unmotivated. They are learning all the time, as McKeachie asserts.\textsuperscript{15} They are learning new dance steps, the status hierarchy of campus, football strategies, plus other more or less complex things. McKeachie continues,

One of the major sources of stimulation of motivation is the teacher. I presume that the
teacher's own enthusiasm and values have much to do with his student's interest in the subject matter. 16

The point is well-taken that we as teachers can do much either to affect our students or infect them toward more effective learning simply by our motivation.

Upon arriving for the first day of class, the student seeks to answer the following question concerning the teacher:

(1) Does the teacher care? Does he or she enjoy teaching and does he or she enjoy students?
(2) Is the teacher fair? The students are more likely to object to unfair treatment than to excessive demands in assignments and work load.
(3) Does the teacher know the subject matter?
(4) Is the course relevant? 17

Hence, it is obvious that the manner in which the teacher comes across to the students is very important, even from the first class day.

For the college teacher today to continue to endeavor to be an effective educator of today's student, he must also come to grips with future challenges as they develop. The Carnegie Commission presents some of the major changes predicted in the period from 1970 to 2000:

(1) There are new types of students, more of them drawn from among minorities and low-income families but more of them also coming from the more affluent classes--many in the former group are more vocationally oriented and some in the latter group are more inclined toward political activity than have been most students in earlier times.

(2) There are new interests among students,
regardless of their origin, as in service activity, in creative expression, in their "emotional growth," in social problems.

(3) There is more and more new knowledge to be introduced into each field and into the content of general education—often more than can be absorbed easily.

(4) There is a new job market, less capable of readily absorbing all college graduates, more fluctuating in its specific demands for trained talent.

(5) There are new social problems as a basis for research and service, such as the problems of the metropolis and the physical environment.

(6) There is new technology available, the most for higher education in 500 years. While these new developments will be working, there will also be some other forces which will seem to be working against change, such as:

(1) The rising age level of faculty members (the median age will rise by about one-half a year each year from 1970 to 1990) as fewer new hires are made and older persons are protected by tenure and seniority practices.

(2) The decline in enrollment growth and in the amount of new funds—change will need to come more as a replacement than as an add-on, and this is a difficult way to make change. (See chart at end of paper.)

(3) The advent of collective bargaining with its emphasis upon formal rules and policies, and its purpose of protecting established faculty interests.
(4) The current survivalist mentality of higher education, particularly among administrators but among many faculty members as well—to hang on to as much of the past as possible and to avoid trouble. 19

On the other hand, developments that seem to be more in favor of change are:

(1) Student activism, albeit at much lower levels than during the second half of the 1960's but still above historical levels both on-campus and in lobbying activities off-campus.

(2) Greater student choice among campuses as student-aid provisions, both federal and state, give students wider selection among campuses, and as students, in any event, become more mobile socially and geographically.

(3) The greater scramble for students as enrollment increases decline and then turn in decreases, as the sellers' market turns into a buyers' market and as the buyers have greater latitude in their choices.

(4) Greater public input, through governors, legislative committees and coordinating councils, into higher education, as external institutions have more to say about how higher education conducts itself. 20

Therefore, it is apparent that not only must the contemporary educator be aware of these changes and forces working either toward or against change, but today's teacher must within this dynamic framework seek to effectively motivate today's student in order to develop individual desire toward the educated, mature mind.
What does all this mean to Union University? For one thing, we as a faculty can hopefully get back down to our main business, i.e. educating our college students, now that our massive self-study is completed and we are now in our new academic complex. I contend, as others have, that our institution will not die if we simply see to "doing our main thing." Not only do we have to continue our professional advancements in our individual fields in order to become more knowledgeable and effective as educators, but we must continue to keep foremost in our minds our basic purpose for existence -- that of educating our students. I would hope that we would not only be concerned about communicating a course content of academic materials, but that we would keep abreast of the type(s) of students we are attempting to educate. Although I teach sociology, I also (and perhaps as importantly) teach students.

Now that it seems that we have passed from a few years of confusion (campus move, self-study, etc.) into a more stable era for the college, may we diligently move in the direction for which our college began. May we not be as Alice in Wonderland when she meets the Chesire Cat in the woods.

"Cheshire Puss," she asks, "would you tell me, please, which way I ought to walk from here?"

"That depends a great deal on where you want to get to," replied the Cat.

"I don't really care where," said Alice.

"Then it doesn't really matter which way you walk," said the Cat.

Unless we know, as a college, where we are heading, as the old Chinese proverb warns, we are likely to end up where we are heading.
References


5 Ibid., p. 4.


12 Ibid. (Quoted, p. 13).

13 Ibid.

14 Ibid., p. 8.


16 Ibid., p. 187.

17 Ericksen, pp. 2-3.


19 Ibid., p. 46.

20 Ibid., p. 47.
Total Enrolments Of Students In Higher Education

Projection I - as of 1971
Projection II - as of 1973
Projection III - 1973 projection
adjusted for additional non-
traditional students

Source: Carnegie Commission on Higher Education
THE ROLE OF THE DIGITAL COMPUTER IN MATHEMATICS EDUCATION
by
William Truex

I. Introduction

The purpose of this paper is to investigate the role of the digital computer in mathematics education. We will look at the question of whether or not computer-assisted instruction (CAI) and computer-augmented instruction in mathematics can add to the student's understanding of mathematical concepts without detracting from the student's skills. Our discussion will be illustrated by several examples of techniques that have been tried by others and a look at the success and failures they have experienced.

During the sixties and early seventies advances in computer technology have lowered the cost of computing to such a level that the smaller universities and colleges can now have computing capabilities that were previously financially out of their grasp. Just in the last year DEC has announced a system suitable for CAI for under $10,000. The question we wish to look at is whether or not the mathematics teacher can make effective use of these capabilities or should the computer even be allowed to replace the teacher in performing some tasks. Certainly the computer as a data processing machine has established a place for itself in the educational-administrative environment, but what of its role on the academic side?

The relationship of the computer to math education can be placed into three categories: (1) the study of the computer as a subject and the related question of curriculum in mathematics departments; (2) the use of the computer as a motivational tool and as a supplementary teaching technique in mathematics courses; (3) computer-assisted and computer-augmented instruction and testing and grading using the computer.
II. Computer Curriculum and Mathematics Departments

Several reports and articles have appeared in recent years dealing with the computer science curriculum. Since in many schools the computer science courses are taught under the mathematics departments and by mathematics teachers, the content of the computer science program should be of concern to the mathematics faculty. This discussion will not attempt to evaluate the actual content of a good computer science program, but rather will reflect on a disturbing trend appearing in many colleges and universities. Several instances have appeared in which the computer science curricula and the mathematics curricula were, for all practical purposes, disjoint. Writes Ronald Harrop, "The future nature of many mathematics departments may be very profoundly influenced by the attitudes of their members to the subjects outside the mainstream mathematics as generally understood today." He suggests that we must take a new look at what is expected of a mathematician in a college or university, criteria for promotion, the roles of scholarly activity and pure research, and teaching. (Harrop, 1975)

One reason for this division is the rapid development in abstraction in pure mathematics in the last twenty years making interdisciplinary communication unnecessary. This has led to even the applied mathematics courses, such as differential equations, to drift from a study of real world problems to a more theoretical problem-solving format. While more and more differential equations are being solved by numerical methods, the syllabus for many differential equation courses continues to stress special classes of differential equations for which mathematically exact solutions may be obtained. Such a rejection of numerical methods as being non-exact will only tend to isolate mathematicians as a group. It is not that abstraction in pure research should be abandoned, it is merely that the curricula of the mathematics departments should offer a student enough diversified training options at the undergraduate level so that the student is not forced into a
pure research environment at the graduate level because of lack of any other type of training. Much consideration has been given to the interaction of computer science and mathematics curricula at the undergraduate level and the reader may wish to consult such publications as Curriculum 68, published by the Association of Computing Machinery (ACM), and Recommendations for Undergraduate Programs in Computational Mathematics from the Mathematics Association of America (MAA) listed as references at the end of this paper.

III. Computer-Augmented Mathematics Courses

The question of curricula and the second point of interest, that of computer-augmented courses, are closely related. One of the first and most successful projects in computer-augmented courses was conducted with the freshman and sophomore-level calculus. This project was developed under a NSF grant to the Center for Research in College Instruction in Science and Mathematics (CRICISAM). The organization of CRICISAM took place in 1966 with Dr. Guenter Schwartz, a physicist from Florida State University, as director. By the end of 1969-70 CRICISAM had undergone successful test use on about 50 campuses. As a result of the CRICISAM Calculus project a highly readable and teachable text was produced. In this text enough computer-implemented problems were given to give the student a better understanding of algorithmic methods in convergent processes but not so many that the course degenerated from a general purpose calculus sequence to a cookbook course in computation.

One problem with teaching a computer-augmented calculus course is finding qualified faculty members to teach such courses. Florida State University reports that an average of 12 to 15 graduate students are supported by the Computing Center each year to help with computer-oriented instruction, counselling, help desk and programming activities. However, the elements of the basic calculus sequence are taught each
year only by full-fledged faculty members at the Ph.D. level. E. P. Miles reports that of approximately 40 regular faculty members who normally teach various parts of the calculus sequence, it is doubtful if more than 8 or 9 have had enough computer-related experience to feel at home teaching calculus with regular homework assignments involving computer use. (Miles, 1971).

As a possible alternative to the single-instructor problem for a computer-calculus course, team teaching may be a solution. One such project was attempted at Memphis State University in which the formal calculus material was taught by a regular faculty member of the mathematics department and a graduate student whose interests lay in the area of computer application handled the computer sections of the material. Although this may seem desirable and may be functional when well planned, it also has a disadvantage that the students may have difficulty in combining the material into a single, coherent subject. In this particular project it turned out that the students who were interested in the calculus material tended to consider the computer topics as a burden, while on the other hand some students were highly motivated by the computer techniques but did not do as well in learning the calculus concepts as they would have in a normal calculus course. To avoid such a situation, careful planning must be initiated at the outset of the course so that materials presented do not appear to be disjoint segments taught by separate people.

Another problem that occurs in teaching a computer-calculus course is exactly how much, if any, computer programming should be taught to the students. Several different approaches have been tried, some that involved teaching absolutely no programming skills at all but rather allowing students to make use of pre-written programs, to the other extreme that requires a prerequisite of a programming language before the student can even enroll in the calculus sequence. One computer-calculus course taught at the University of Iowa had the students write their own programs in any language they chose. One student actually used a programmable calculator. Those who did not know a language were taught basic
during the first four weeks of the course while the students who already had some programming skills performed other calculus related tasks during this period. The cost of this project was $60 per student per semester for the use of the time-sharing computer. (Hethcote & Schaeffer, 1972). Another approach to the same type of course at Harvard University used pre-written programs for the computer. The author reports that the intent and relevance of calculus courses can be greatly enhanced by better judicious use of computers. It was pointed out that using the computer in a basic math course does not transform the course into an applied mathematics course. The main purpose of this program was to make existence and uniqueness theorems and sequential convergents more vivid and convincing. (Birkhoff, 1972)

In both of the above cases the author reported some degree of success in achieving their desired goals. A more detailed report on the effects of a computer-augmented calculus course on the performance of the students is given by Frederick bell of the University of Pittsburgh. The primary object of his study was to stress the effectiveness of the computer-augmented approach to learning calculus fundamentals. In his study he tested the hypothesis that students using the computer-augmented approaches to calculus do not perform differently than do students who do not augment their studies with the computer. In this project Bell determined performance levels by administering both skills and concepts post-test immediately following instruction as well as retention tests given one month after instruction in both skills and concepts. This project was carried out in 1969 using freshman-level math courses at Cornell University. The control group consisted of 49 students while 46 students registered for the experimental computer group. Both groups were given lectures from a calculus manual prepared by the researcher. The only difference in the material was that the experimental manual contained six computer-augmented calculus projects to be completed by writing and executing computer programs. Since neither group had prior computer programming experience both groups were taught programming techniques at the beginning of the project. The researcher reports that analysis of covariance indicated no significant difference in the performance between
the control and experimental groups on either of the skill post-test or the skill retention test. However, analysis of covariance on data for both concept tests yielded significant differences in favor of the experimental group. Bell concluded that his findings supported the hypothesis that writing and executing computer programs does aid the students in understanding the concepts of calculus and does not interfere with their mastery of skills. (Bell, 1971)

In a publication sponsored by the AMS and MAA called "Calculus and Computing, the Influence of Computing on Mathematics Research and Education," it was stated that the motivation for using computers in teaching calculus stems from two attitudes: (1) that computing can be used in mathematically and educationally significant ways to teach calculus; (2) that calculus courses, by virtue of their position as an introductory course in the undergraduate curriculum make it a natural place to introduce a large number of students to computing. Certainly the first of these seems to be a common attitude of many of the articles on computer-augmented courses that have appeared recently. However, the second statement may be questioned. It certainly cannot be denied that if a lot of time is spent teaching computer techniques and programs, to students in calculus courses then the content of the calculus course itself will have to suffer. As in the above examples, when part of the course was devoted to teaching computer programming, that much time is certainly lost from teaching technique that would normally be taught in a calculus course. One possible solution to this problem is the introduction of a first-level programming course for freshman and sophomore students. Such a course may be as little as a one semester hour course and may be taken concurrently or prior to the taking of the calculus courses. Such introductory courses are recommended by both the ACM and the MAA curricula outlines in computers.

While numerous articles have appeared about computer supplemented calculus courses, little has been written about computer-augmented courses beyond the calculus level. A minor part of the original CRICISAM grant proposal to the NSF involved a preliminary assessment of courses beyond the
calculus which should also be modified to include computer-related material. The proposal indicated that the most likely courses to be considered for computer-related revisions would be differential equations and linear algebra. (Miles, 1971)

Once such course is described by H. W. Hethcote and A. J. Schaeffer in linear algebra. (Hethcote & Schaeffer 1972) Another course, in differential equations, is described by H. E. Williams and O. DeBoer of the University of Tennessee at Nashville as follows. During one semester of 1969, computer-oriented differential equations was offered to a small number of students in a special class at Vanderbilt University. Numerical techniques were intermingled with the presentation of ordinary differential equations using a standard textbook. The computer requirements were in addition to the regular requirements of the course. Special lectures and notes were prepared by the instructor, Professor Hugh Keedy, for the computer techniques presented in the course. At the end of the course the results were deemed satisfactory by the instructor based on informal discussions with the students and other interested faculty members. (Williams & DeBoer, 1973)

However, other than the examples cited above and a few other scattered projects reported occasionally in the journals, no organized large-scale project has been attempted in computer-augmented mathematics courses beyond the calculus level. It may take another CRICISAM-type project to have any effect on implementing computer techniques in the higher-level mathematics courses.

IV. CAI and Computer-Assisted Testing

Computer-assisted instruction in the mathematics community has been met with at best a general air of apathy. Little has been done in adopting computer-assisted instruction to the standard mathematics courses. Some projects at the high school and lower-level skill-type mathematics courses have been successful but at the college level no large-scale projects have been reported. Ronald Harrop challenges that "If too few of
us who are mathematics teachers or professors get involved in formulating a reasonable assessment of the potential of computer usage and in ourselves obtaining some firsthand experience in developing some CAI programs, we may find ourselves in a few years' time faced with a mass of second and third-rate material and not be in a position meaningful to assess it or to see if it can be improved." (Harrop, 1975) If for no other reasons than the ones that Harrop cites, we in the mathematics community need to be concerned with CAI at the college level. Whether or not we feel that it is of potential use in mathematics curricula, we may not be able to avoid its presence in the years to come.

Computer-assisted testing also has had difficulty in establishing a place for itself in the mathematics community. In testing large sections of algebra, I have used computer-assisted testing in an effort to give more tests through the course of a semester. During one such semester a multiple choice test was given each week to approximately 200 students. The students were given 20 to 30 minutes to work 20 basic algebra problems and indicate their answer on an optical-scan form for computer grading. The possible incorrect answers were chosen to represent the most common student errors and these incorrect choices were arranged in such a way as to allow a particular inadequacy of a student to be identified. The goal was to identify the student who made the same type of error consistently and then work individually with that student in his or her weakness. Because of the large number of students it was felt that use of the computer would permit closer tracking of the progress of an individual.

The overall outcome of this project was considered a success in view of the reduction of the total number of withdrawals and failures from an average of over 35% to less than 15% of the initial enrollment in the courses. However, I consider the approach to be a failure when considered in the light of the following two considerations. First, the additional time and work required to prepare and administer tests designed to meet the goals described above makes this approach unsuitable for permanent adoption. The test preparation alone took more time in the long run than the giving and grading of fewer
conventional-type tests to an equal number of students. Secondly, the decrease in the number of withdrawals and failures was largely due to the additional time spent with the individual students who were in trouble. It is true that the computer output helped to identify the needs of these students but as far as increasing their ability in algebra, it was the time spent out of class tutoring these students and not the additional tests given that prevented these students from quitting. The individual attention given also requires a good deal of extra effort on the part of the teacher and although effective, I have found very few teachers, including myself, willing to undertake such a project on a permanent basis.

One application of the computer as a testing-grading device that was reported to be successful is the Computer-Based Quizzing System (CBQS) implemented at the University of Texas. This system was developed by G. R. Wagner and M. M. McCants. The system operates on an interactive time-sharing system and is designed to be used in conjunction with a proctorial system of instruction. By having the computer administer and grade tests and keep the appropriate records on each student, the proctor was free to spend more time in a tutorial capacity. Thus it was possible to increase the proctor:student ratio from 1:10 to 1:20 with no decrease in the effectiveness of the proctors. (Wagner & McCants, 1973)

The authors reported that they, too, had to spend a "Tremendous amount of time" in preparing unambiguous questions with clearly defined answers that could be marked by the computer. They further reported that the students liked CBQS writing that "they showed less anxiety and prohibitions and liked the options to proceed at their own pace." This acceptance came in spite of the lower grades given by the computer because of its inability to give partial credit. It is interesting to note that the system was set up so that the computer would accept 80% spelling accuracy as being correct.

A third example of computer-assisted testing in which the computer analyzed the student's incorrect answers in an
attempt to identify common errors and then prompt the student accordingly was described by J. L. Caldwell of the University of Wisconsin and Douglas Polley of the University of Minnesota. The authors claim that their approach is a valid utilization of computer facilities because "it offers immediate individualized help to students in a manner that can be duplicated only by additional consultation with an instructor." The principle use of the program has been by pre-calculus and linear algebra students. The authors also report that they are having senior math education students create additional programs so that these students will better understand the types of errors a freshman student may make, thus they are gaining a double benefit from the project. (Caldwell & Polley, 1975)

V. Conclusions

In conclusion we have found that calculus seems to be the main area in which the computer has been implemented successfully in mathematics instruction. Although several efforts have been made in differential equations and linear algebra, no large-scale approach has been established. It is the general consensus that most math teachers do not wish to stray too far from the conventional approach to their math courses, and this more than any other single factor has delayed the growth of computer-augmented math courses at the college level. Because of the additional time and effort required to make a successful application of the computer to a mathematics course it is generally more convenient just to ignore the possibilities.

Also, only a little success has been achieved to implementing CAI and testing in mathematics-related areas using the computer. This may be one area mathematicians may not be able to ignore as was pointed out by Harrop.

It is generally agreed that the computer does have a place in the mathematics curriculum via computer-augmented courses. Also CAI could, if carefully written, prove to be a blessing to the overworked instructors and proctors. To see that these applications are useful and constructive, it will be necessary for the mathematicians to do the major part of the implementation work in the years ahead.
References


Recommendations for an Undergraduate Program in Computational Math. Mathematics Association of America Committee on the Undergraduate Program in Mathematics, May, 1971.

ODE TO A SKINNED KNEE
by
Eugene Baker

Screen door slammed
Admonitions echo
Offspring out—gone
Pursuing outside activity
Gone from being gathered close.
Maternal love—concern?
Unnecessary, surpassed—bypassed
By (over-rated) maturing process.

Yelp for help, tears, pain
Screen door smacking shut.
Offer of comfort
Accepted, welcomed.
Motherly attitude—
Gratitude?
Functioning normally
Gathering growing forms in
Skinned knee, skinned pride
Whatever
Functioning basically for me
Gratitude for a skinned knee
THE TASK OF UNLEARNING
by
Clyde Tilley

My son, David, was four. In the ordeal of learning to talk, he had been going through that awkward stage of believing that the past tense of all verbs could be formed by adding the "-ed" sound. One day he showed signs of having almost come out of this stage. His sister wanted to take one of his toys outside and play with it. "No, sister," he protested, "you'll get it lost and then it will be losted."

Almost--I say--but not quite. He had learned the new word "lost" but had not yet unlearned the one it was to take the place of: "losed."

Much of our learning appears to follow a similar pattern. It is simply not the case that the transition from the old to the new is automatic, that one concept neatly uproots and replaces another. The learning of new truth is seldom sufficient to dislodge persistent half-truths. This must have been at least a part of what Keynes had in mind when he said that "the difficulty lies, not in the new ideas, but in escaping from the old ones."

Ability to learn new ideas more rapidly than we unlearn old ones is capable of at least partial explanation. Our commitments to ideas are grounded not so much in conscious reasons for holding to them as in unconscious feelings and emotions, the former often being merely cover-ups for the latter. It is easier to learn new ideas which are conscious than to unlearn feelings and attitudes which are unconscious.

Along with this is the fact that the earlier and more forcefully we encounter an idea, the more deeply embedded in us it is likely to be. These earlier ideas, although usually containing an element of truth, frequently are oversimplified and incomplete statements of it. Because of this, it is possible for us to hold with almost equal devotion to ideas which prove upon closer examination to be at least partially inconsistent with one another. (Imperfect truths which are deliberately
taught for the purpose of paving the way for more nearly persons are said to be heuristic because they are intended to enable the "finding"---heurisko in Greek---of truth.)

Examples of unlearning are numerous in the realm of religious education. People sometimes retain aspects of childish conceptions of God---what J. B. Phillips² has variously characterized as the "resident policeman," the "grand old man," etc.--alongside of more integrative and less anthropomorphic conceptions of God encountered in later stages. In one's view of the scriptures, very strange combinations of emphases upon "the letter of the law" and "the spirit of the law" are sometimes found. Adequate carry-over from the general notion of more dynamic views of inspiration is often not in evidence in the more mechanical and literalistic ways in which particular passages are frequently dealt with.

The static and magical way in which salvation is often conceived in early years usually remains in an uneasy arrangement with more dynamic and moral understandings to which we are later exposed. For instance, the discovery that the notion of "being saved" has present ("I am being saved") and future ("I will be saved") references as well as past ("I have been saved") references in the New Testament is often not consistently observed in our interpretation of the experience of salvation in ourselves and in others. In spite of our broadened conceptual awareness we still tend to see particular instances of salvation as something only punctiliar as opposed to a continuing experience. Or one may accept the fact that eternal life is a present possession for the believer while continuing to think of a sharp break between time and eternity, i.e., eternity as beginning for us when time is over.

Again, we are all aware of the way in which people tend to accept general truths about our relationship to other members of the human family long before we are able to unlearn ideas about specific application of these general truths. This is vividly illustrated by a survey that was made several years ago. Southern white people were asked two questions: (1) Are all men created equal? (2) Are the Negroes equal to the whites? The first question was answered in the affirmative on 61% of the responses while the second question received
affirmative answers on only 4% of the responses.3

The gap between learning and unlearning is sometimes even more pronounced between idea and action ("conduct response") than it is between idea and idea or between idea and feeling. One is likely to find himself "mouthing" allegiance to a certain truth while his conduct betrays something on the scale between a lesser loyalty and an open defiance of the same truth. Is this not likewise a kind of failure to keep our unlearning current with our learning?

Of course learning can be so defined as to include both the learning and the unlearning aspects of the process. In other words there is a sense in which one hasn't really learned unless he has unlearned the idea, the feeling, or the behavior pattern which is inconsistent with the new truth of which he has become consciously convinced. Learning is thus no longer conceived as merely the mastery of new ideas but as the solicitation of a new and total response in terms of idea, feeling, and conduct. It is here that the adage of Socrates, "Knowledge is virtue," becomes true. Learning will now be regarded as a process within which there will be lags rather than as a series of acts between which there will be gaps. (But even here we must be careful lest we "learn" a new concept of learning without "unlearning" the old concept and find ourselves inconsistent in our understanding and usage of the word "learn").

Unlearning has been referred to in the title of this article as a "task." So far, it has been approached only as a problem, as a failure in the learning process which often produces an unwitting chasm. But wherever there is a problem, there is a task. What then may be done about this frequent failure to unlearn?

Insofar as the failure to unlearn produces a challenge, it is a challenge both to the teacher and the pupil. To deal with all of the pedagogical subleties of implementing this task would require an educational psychologist and a much larger article. Let us be briefer and more general in our observations and hope that greater research and writing shall be forthcoming as to specifics:
(1) The most obvious need to be met in implementing the task of unlearning is to make both teacher and pupil aware of such a need. As indicated earlier, it runs counter to "common sense" assumptions about learning that unlearning constitutes a distinct challenge. It is this need to which the thrust of this article is devoted.

(2) The task of unlearning can be further implemented by making the teacher and pupil aware of the inherent possibilities in the word "learning." If we can begin to conceive learning as a process which is inclusive both of learning in the traditional sense of "mastering new facts and ideas" and of unlearning in the sense of bringing our other ideas, feelings, and actions into accord with the new idea that we have mastered—or rather that has mastered us—we shall have gone a long way toward solving the problem. This will mean that the learning process is not complete until the student not only knows how to embody the idea in his life, but also actually does so. (In this sense, learning is a never-ending task with a goal to be approximated in ever diminishing degrees.)

(3) A new concept of learning must be accompanied by a new concept of knowledge. Just as learning has been traditionally conceived as the intellectual mastery of new ideas, even so knowledge has been conceived as the ever accumulating number of ideas and facts which have been mastered. That which we have learned has been viewed simply as our permanent unchanging possession to which other facts and ideas are to be added. Knowledge is regarded as a house to which other rooms are simply annexed.

But may it not be better to conceive of the increase of knowledge in terms of perpetual remodeling rather than of continual annexation to the house of knowledge? Knowledge is not something simply joined to other knowledge but must be related to other knowledge. Old knowledge and new knowledge must make the necessary adjustments to one another so that consistency may prevail. The increase of knowledge has a qualitative as well as a quantitative dimension. To change a metaphor,
knowledge does not so much "explode" as it ripens. The new idea permeates "the entire lump." With the addition of each new idea to the whole, one has not only a new part but also a new whole. When knowledge is viewed and consistently regarded in this manner, ideas from the previous collection sometimes have to be purged or modified in order to make room for new truth.

To the major point once again: Unlearning is a task which constitutes a challenge in the educational process. If learning is conceived in the more traditional and narrow sense, it constitutes a distinct challenge. If knowledge is conceived in a broader and more dynamic sense, it is a challenge which is integral to a process that is not complete until appropriate unlearning has been effected.


KALEIDOSCOPE  
by  
Betty Foellinger  

Shifting shards of colored glass  
Of somber hue and bright  
Make many splendid patterns  
When held up to the light.  

Happy moments, sad ones, too  
The ease combined with strife  
Make an ever-changing pattern  
In the Kaleidoscope of Life.  

THE LIVING DREAM  
by  
Lillian Schallenberg  

Who cannot see the Wonderment in Life?  
Who has not touched a Dream  
And held it closely to his Heart . . .  
Though he truly feared it would never be? . . .  
And yet,  
When that fair Dream was actually caught  
And laid secure in Reality's jar,  
The pleasure of it died so very soon,  
As a Butterfly when leashed from cocoon . . .  
And yet both Butterfly and Dream,  
Before they die,  
May produce the seed  
Of another Birth  
And another Dream.
MY SEARCH FOR STRENGTH

A personal account of one woman's search for inner peace during a traumatic event in her life

as told to
Eugene W. Baker

My finger tips were getting colder. Numbness was creeping up my arms. My feet felt like they were frozen. I heard someone say, "I can't find her pulse."

I felt my hand being picked up and rubbed. Then someone slapped my wrist. My eyes were open, and I knew what was happening, but I couldn't move. I was lying in a hospital emergency room and I was hurting all over.

Sensations of the automobile accident which had just occurred began flashing through my mind. I felt like I was floating and bouncing around in the car with pain punctuating every movement.

I wanted to know about my children, about my husband who had been driving the car when we were hit. I yelled out, "Watch out for that car," but the words didn't sound the same as when I had shouted them a brief instant before our car was struck. This time the empty shadow of my voice just echoed in my throat and the people hovering over me searching for my vital signs didn't seem to hear me.

"She's going into shock," I heard a voice say.

Everything grew dark and still. I ached all over, I was cold and I felt so alone. Slowly I began to comprehend what was happening. I realized that I was not really alone for people were still at my side. Deep within me I knew that God's hand was guiding those who were laboring over me, but I couldn't feel Him. I began crying and then I started gasping for breath.
Suddenly I felt air being forced into my mouth. It seemed like my lungs would explode. I jerked my head away to stop this onslaught of air. I coughed and it hurt tremendously. Everything went black.

Once again I felt my tongue being pushed to the side of my mouth. Strange lips covered mine. I had the same sensation of bursting lungs, and I coughed again. It hurt so much.

"Fluids--both arms--hurry."

I opened my eyes. Tears blurred my vision, but I could see a surgeon friend of mine adjusting the intravenous solution bottle hanging on a metal stand. I watched anxiously as he pushed a needle into my arm. The fluid raced down the plastic tube, but I didn't really feel it. My clothes were being removed. A nurse was talking to me.

"Cut it off," the doctor said. They were having trouble with my dress. "No," the nurse replied. "It's too new." It was. I had just finished making it a few days before.

I turned my head to the side. There standing in the doorway was my husband. A look of anguish and concern marked his face. He took a couple of steps closer and forced a smile.

"The children are fine. Everything is going to be okay. I called Bob and he's here taking care of you."

It was his way of telling me not to worry. He knew how much I worried over various things and how little the worrying helped. Then he stepped back to the doorway and walked down the hall.

Just seeing him assured me and gave me confidence. But now he had gone. Why did he leave? I wanted him by my side. I needed his strength. I felt so alone. I was shivering and yet beads of perspiration formed on my forehead. The cold sweat bothered me as it ran down my cheeks. It felt strange.
My eyes strained as they searched the room. I was looking for some kind of strength to lean on. I looked at the doctor—the one my husband had summoned. The expression on his face alarmed me. I glanced at the others in the emergency room. They all bore similar expressions of concern. I knew that they were trying to help me, but why did their faces bluntly say they weren't sure what was wrong with me.

In agony I tossed my head from side to side. The pain began to increase. I was becoming nauseated and having another chill. The thin starched sheet did little to warm me. I tried to struggle with the nurse as she forced a cold tube through my nose.

"Please try to swallow. We must get this to your stomach," she told me firmly.

As I gagged she pushed it quickly down my throat. My intestines began cramping. My stomach was bubbling in pain. My ribs strained to spring back into place after being broken in the accident.

I thought back to the scene. The car which sped through the traffic light had hit at my husband's door and had thrown me across the car slamming my side into the steering wheel. The collision pushed our car into the next lane of traffic where we were struck by another automobile. This impact forced me against my door and before we came to a complete stop, another vehicle collided with us snapping my neck and slinging me against the dash.

People had been so helpful getting us out of the smoking car. Our children were scooped up in the arms of witnesses and two men helped my husband carry me to the side of the highway where they laid me down and covered me with my coat.

As my eyes continued to search the room where I was lying, I pleaded audibly for someone to stop the pain. I yelled at the top of my voice, but it seemed that no one could hear me. I wanted someone to help, to give me strength to get through this ordeal.
Pain was gnawing at my body. I shut my eyes and gritted my teeth. My clenched fists pounded the thin pad covering the table. Through my eyelids I could see the spider web appearance of the shattered windshield of the car. Something had hit it. Was it my head? It hurt so much.

My doctor friend continued examining me. He punched and pushed on my stomach and struck a long needle in it.

"Looks like a rupture," I heard him say. "Prepare her for surgery. I'm going to O.R." I followed him with my eyes as he hurriedly left the room. It worried me that he had gone. Did he have to go right then? I felt alone again. He was my friend. I knew he was an outstanding physician, and that he could help me, but he was gone. Flashing sensations began to shoot through my body. The pain was growing unbearable, and I was getting colder.

I heard strange sounds. It sounded like someone yelling for help. It was the voice of someone hurting. I listened intently and realized it was me. They were moving me off the emergency room table onto a rolling cart-like bed. It hurt as they laid me back. I tried to bend my body someway to alleviate the pain, but strong hands gently forced me down.

Then I was moving--out into the hallways. My husband, where was he? I felt abandoned. He was my strength. I leaned on him for everything. I always felt safe when I was in his arms. How I longed for them to comfort me now. I needed him. Without him I was alone. My body hurt so much. I began to shiver again.

Then the rolling stopped. I looked up and there was a brightly beaming light. It illuminated the several masked figures in the room. It wasn't a hot light, but I felt heat radiating from it.

They covered me with a green sheet. A man behind me put a green cloth over my hair. It was silly, I guess, but I was thinking of the permanent I had had the day before and I didn't want him to mess it up.
I knew where I was and that they were fixing to operate on me, but no one had told me why. I became panicky. I needed strength to fight my fears.

My husband wasn't present. His strength was gone. I couldn't identify my surgeon friend behind the masked faces. I wanted someone to help me. All sources of strength seemed unreachable.

The suddenly all activity in the room ceased. I couldn't sense any motion from anywhere. At this moment I thought to myself, "How foolish and selfish I'm being." I had been grasping for human strength, but that really wasn't what I needed.

My mind raced through God's promises and I dwelled momentarily on the thought that He was always present for me to call on. I started crying within my soul and asked God to forgive me for searching for strength from other people. I had acted too human. I had let my mind and thoughts slip from dependence on Him. Pain was my excuse, I guess.

As I gradually made this renewed commitment to God, a sense of well being and security blanketed me. It calmed my panic and a feeling of peace subdued my pain. My apprehensions were abated. I no longer wished for my husband's strength. I felt God's strength within me. A feeling of confidence overwhelmed me. God was in control and I had found my strength.

Then I felt another sensation--more like a relief. I began to get drowsy. My pain was growing less. I grasped hold of the strength which encompassed me and went to sleep.

I clung to that strength--to that feeling of well being, through the many days I lay in the intensive care ward. It nursed me and encouraged me daily.

A week later a familiar touch awakened me. I opened my eyes to see my husband smiling happily. He squeezed my hand lightly as his lips brushed my cheek. "Welcome back, darling."
I still hurt a little. I was very weary, but I wasn't cold any more. I wasn't alone any more and I knew I had found the greatest source of strength in the world. I re-committed my life to God and was assured that He would be my strength always. This experience had changed my life.

I smiled at my husband and held his hand tightly. "It's good to be back. It's good to be alive." My search for strength was over. I had found it in complete reliance in God.
INSOMNIA—UNREALIZED WEALTH

by

Eugene Baker

Body tired
Eyes awake
Mind racing
The quietness?
Noisy!
Covers rustle on children
Soft breathing close by
Faucets dribble
Autos mobile
Quiet?

The all-day every-day clatter
Chatter, volume, --all quiet!
A chance for listening--thinking
Is the private ideas.
Putting time to use.
An unexpected gift
This curse of sleeplessness.

"Being still and knowing."
Hasty daylight prayers lengthen
To the soul searching plateau.
Straighten out the mental rooms,
Making sense of non-sense.
An instant blessing--
Finding tomorrow's strength
Being alone with God--tonight.
A SEASON AND A PURPOSE
by
Ernest Pinson

Scene VII

Union and Evolution (1921 to 1926)

2nd Narrator  The 1920's was an age not only of fast living, the charleston, material wealth, but also an age of controversy, The State Legislature of Tennessee passed a law in 1925 forbidding the teaching of the theory of evolution in public schools. Some citizens of Dayton, Tennessee, decided to challenge the law. John T. Scopes, a young biology teacher, agreed to test the law. He was indicted in May, 1925, and the famous Scopes trial was held. The Union campus itself was not untouched by the evolution controversy.

(On stage center is seen an old man who leans heavily on a cane, has spectacles on nose. He is Dr. Ralph Rains teacher of Biology at Union. On his left are faculty members in a meeting and on his right a group of students are meeting. Light spots on him and the sides darken.)

Dr. Rains  (to the audience) I happen to know about this matter. You see, it happened to me. My name is Rains and I was at the center of the evolution controversy at Union in the early 20's. I had originally been employed by Union University to teach agriculture, but since there wasn't enough students taking subjects in that field, I was asked to change over to Biology. In 1921 a certain student of mine (who incidentally failed my course, and ironically English as well) began spreading malicious rumors on the campus, in church, and around town that I was an evolutionist and preached the Devil. Now, of course, these charges were false and unfounded, but he had printed up what he claimed were notes from my lectures and handed them out. They included quotations from Darwin, a chart showing man descending from apes and certain other drawings and
statements. Well it turns out that back in 1917 this same student published in the Baptist Flag an article identifying evolution elements on Union's campus. He was immediately brought before the faculty.

(Scene shifts to faculty with student before them. Dr. Rains goes over and joins them on the left.)

1st Professor Now you say you wrote this article?

Student Yes.

Professor Would you swear that these charges are true?

Student No sir.

Professor Would you swear that they are false?

Student No sir. I don't swear to anything. I just write what God lays on my heart.

Professor Are these charges then from God?

Student I don't know sir, I'm just his servant.

Professor Now son, these are serious times and I think you'd better understand the gravity of this situation. Why did you choose to publish your statements in the Baptist Flag?

Student Quite simply because the Baptist Reflector and the Jackson Sun refused to publish them.

Professor Why?

Student They said my word wasn't enough and I needed some support for such charges.

Professor And did you furnish such proof?

Student No sir, God needs no proof if we take Him at His word.
Professor  Do you repent then these charges?

Student  I repent of having found them in existence, not of having said them. I regret their validity.

Dr. Rains  (leans forward) Uhhhhh, Professors, Humf! I wonder if I might ask the student a question?

Professor  Of course, Dr. Rains.

Dr. Rains  Son, do you know the meaning of evolution?

Student  Sure! It means man descended from apes.

Dr. Rains  And I said that in my lecture, right?

Student  That's correct!

Dr. Rains  Gentlemen, what I actually said was that early man, because he was the hunter, the man of nature, lived like the apes in search of his food. Now it is obvious to me (if not to those present at this hearing) that this student has unknowingly misheard my lecture and I move therefore that he be excused from this hearing upon affixing his name to a written statement that he will cause this institution no further embarrassment in the matter.

Professor  I take that to be an act of generous grace on your part, Dr. Rains. (Turns to the President) Mr. President, I concur in the motion of Dr. Rains.

1st Narrator  But the matter would not die, either on the campus, nor in the community. The now former-student persisted in his efforts to have articles published and circulars printed at his own expense and passed out. The Jackson Sun and other area newspapers refused to print the charges as unfounded. But in 1922 an article accidentally slipped by the editors of the Memphis Commercial Appeal for which the editor sent the President, Dr. Watters, a letter of apology. Some of the printers
also refused to print the circulators, which charged Dr. Rains with teaching "lies and using textbooks not conducive to the furtherance of the Christian religion" together with certain other vague charges and insinuations according to Union's paper, The Cardinal and Cream.

2nd Narrator The faculty and student body ignored these later charges at first, but following the appearance of the 3rd circular, it was decided that silence might be misunderstood and damage the university's image. The editorial staff of the college paper circulated a questionnaire among the students which asked:

3rd Narrator (reads)

"1. Can you say that so far as your personal knowledge goes, the teaching of science in Union University is satisfactory from a Christian standpoint?

2. Do you know of any teaching in Union University that you think would undermine the faith of a clear-minded student?

3. Is there any teacher in Union University whose teaching or conduct has created a question in your mind as to his or her Christian character?"

When only one student gave an "adverse" answer and that without giving a name or any explanation, it was hailed as "a remarkable unity and solidarity of the student body that has perhaps never existed in Union University before, and such as no doubt exists in very few schools in the land."

1st Narrator To help calm matters the following resolution was unanimously adopted by the faculty: (Have Professor read it to the faculty meeting on stage.)

Professor The faculty of Union University, in view of the many false and slanderous statements and circulars
being sent out and broadcast by said student, feel that the public ought to know that when said student applied for admission into Union University last September we unanimously declined to admit him as a student for the following reasons:

"First, he had been a student here for the past four years, and each year had given much trouble and annoyance through his disloyalty and insubordination, being suspended for the same year.

Second, because of his unreliability as to truthfulness, he having circulated false reports about the school, or its teachers, on different occasions, and in different years, and for other grave reasons which we do not care to publish. Notwithstanding said student has been publishing many false and slanderous statements about the school and teachers, we have refrained from making any statement in reply, excusing him on the ground of his irresponsibility mentally and otherwise."

3rd Narrator (looking at audience) Now this is the resolution we propose to have published in the Cardinal and Cream, the Jackson Sun and the Commercial Appeal. All those who favor--(interrupted by male student in back of audience who screams out and runs down aisle)

Student No--No! You can't do this. What I have said about old man Rains is true. It's true I tell you. I heard his pack of lies for one whole year. You must not do this!

3rd Narrator Unless I hear further objections the resolution is adopted.

Student (yells) Objection, objection, objection, I object to this whole procedure. You got no right--It's against the will of God! You got no--no (begins to choke and cry) you got (choke) you got no righttttt (and kneels in aisle sobbing--then gets up and walks out, slowly and gagging).
(Scene shifts back to faculty meeting and Dr. Watters standing before them)

Dr. Watters  I have just received a resolution from the Nashville Baptist Pastor's Conference commending the way we have handled the evolution situation and assuring us of their support of Union. I also have a report from the committee appointed by the Tennessee Baptist Convention to investigate the matter and that committee exonerates completely the teaching of Dr. Rains having found no evidence whatsoever to sustain the charges against him. It seems that the evolution question has been settled at last here at Union.

1st Narrator  However, the final conclusion of the controversy did not come until 1926 when the matter reached all the way to the Southern Baptist Convention meeting in Houston, Texas. There a resolution was presented on the floor and received unanimous approval:

2nd Narrator  (reads)
"Since the faculty at Union University has at different times in the past gone on record as to the question of evolution, therefore be it resolved that the present faculty of Union University note with gratitude the action of the Southern Baptist Convention at Houston in regard to this issue and that we hereby express our sincere and hearty concurrence in the sentiment expressed by the Convention in the words of its president as follows:

'I am happy to believe that this convention accepts Genesis as teaching man was the special creation of God, and rejects every theory, evolution or other, which teaches that man originated in, or came by way of, a lower animal ancestry.'"

1st Narrator  The Board of Trustees finally brought an end to the issue, trying to safeguard the future by requiring "all new recruits to the teaching staff of the University shall give their personal assent to this declaration."
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--Ernest Pinson (Co-editor)