

PROCEEDINGS ISSUE

The JOURNAL of the NATIONAL ASSOCIATION OF COLLEGES AND TEACHERS OF AGRICULTURE

... Dedicated to the Improvement of College Teaching of Agriculture

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"To Be or Not To Be"

NACTA Presidential Address

HAL B. BARKER

Louisiana Polytechnic Institute

In April 1955 a group of individuals assembled on the campus of Southeast Missouri State College to draft a constitution for the newly created organization known as the National Association of College Teachers of Agriculture. This meeting had been preceded by an organizational one in March of the same year on the campus of Central Missouri State College in Warrensburg. Today we are indeed happy to convene the full convention of NACTA on this campus. This is the fourth of our twelve annual meetings to be hosted by a Missouri State college group.

President Scully, Dr. Schowengerdt and Mrs. Schowengerdt, the agriculture staff, many others on this campus, and many persons in the City of Cape Girardeau have planned long and well for this occasion. We wish to express our deep appreciation to you for inviting us to this campus and to Cape Girardeau.

It is always a pleasure to be in the presence of these young men representing the agriculture honorary fraternity, Delta Tau Alpha. You continue to amaze me with your zeal and enthusiasm for your organization, and I admire the efficiency with which you operate. We are delighted to be associated with you.

At this time on our program it is customary for the president to report to the members concerning the state of the association. I must say that I feel like the Egyptian mummy, "pressed for time". I have only twenty minutes and I hardly know where to begin. Someone told me to begin at the nineteenth minute. Nevertheless, each one of us has a job to do in the next few minutes. Mine is to talk and yours is to listen. My hope is that you will not finish your job before I finish mine. Last year President Lloyd Dowler addressed his presentation under the general title, "A Backward Glance and a Forward Look". I thought his choice of words was most appropriate. It was my interpretation that President Dowler was proportioning his emphasis to a mere glance at the past, with a real long look toward the future. We must always look to the future, using the past only as a foundation.

Our accomplishments in NACTA have not been so very illustrious or earth-shaking. It would be my hope

that this statement can be accepted as a humble expression of fact with no idea of minimizing the tremendous efforts that have been expended by so many people in this audience.

The fact that we have survived the first ten formative years, and are now in our second decade, is indicative of our stability. History bears out the fact that many organizations fold up within the first ten struggling years; but if an organization continues for ten years and is willing to make periodic progressive adjustments thereafter, as times dictate, such an organization is likely to continue in existence.

The original membership in NACTA consisted of individuals in agricultural teaching and administration primarily in four-year state and private colleges commonly referred to as the Non-Land-Grant Agricultural Group. Many of these agriculture, schools and departments had been functioning successfully for more than fifty years; however, apparently there had been very little formal communication among these colleges with the rare exceptions of state organizations.

At the time of our beginning, there was a nation-wide concern about some decline in the prestige position of agriculture on college campuses. There was also concern over the declining enrollment in numbers of students pursuing agriculture. Most curricula were oriented almost entirely toward production agriculture, coupled with a nation-wide concern over surpluses and subsidies. There also existed excessive duplication in course content and proliferation of curricula. These coupled with many other criticisms prompted individuals concerned with higher agricultural education to take a realistic look at the situation. Much research has been conducted. Mr. Charles F. Kettering, one of the best known of industrial researchers, has defined research as that which we do when we cannot keep on doing what we are doing. In response to this suggested need for change, many have read, thought, raised questions, discussed, sought more information, planned, and finally placed some plans into action designed to improve agricultural teaching at the college and university level. The book entitled, *The College of Agriculture, Science in Public Service*, authored by Charles E. Kellogg and David E. Knapp, was

recently published by McGraw-Hill. One of the conclusions by these authors from this three-year study, was that institutions offering higher education in agriculture can make fully as great a contribution to our society in the future as in the past. Although they recognized the vital role of higher agricultural education in the society and economy of the United States, it was not their purpose to praise or necessarily censor these institutions; but they portrayed the American college of agriculture as a unique academic institution and suggested broad principles that might help achieve excellence in the future. The authors made the following general recommendations: (1) that we must train for a wide range of skills needed in the country's largest industry — the production, processing and marketing of the nation's food and natural fibers; (2) that we must act as centers of research and training, stressing the inter-relationship between the United States and world production helping other countries to improve their own agricultural education and expand their agricultural output; and (3) that we must train experts in environmental science which includes control of air and water pollution; water supply and flood control, and allocation and management of natural resources for the good of the whole population. We are responding rapidly to these suggested changes. Another group which has been on the scene for more than five years is the Commission on Education in Agriculture and Natural Resources, National Academy of Sciences, National Research Council. This commission has functioned long enough for many people concerned with higher agricultural education to become acquainted with its purposes and aware of the great potential of this commission to catalyze reactions in the field of higher agricultural education. At present, there are many active elements in these reactions: the Deans of Resident Instruction in Agriculture at the Land-Grant Universities through the Association of State Universities and Land-Grant Colleges; the teaching sections of the various discipline societies and the National Association of Colleges and Teachers of Agriculture. There are so many things that need to be considered. Certainly each of the above mentioned organizations has

made and can continue to make a vital contribution to the advancement of higher agricultural education. However, it appears that our efforts should be synchronized, with each organization undertaking as its objectives those facets wherein rests the most potential for the accomplishment of a given goal. Matters pertaining to advancements in curriculum development and course content in the specific disciplines might best be accomplished by the discipline associations or societies; whereas matters pertaining to the teacher, his training, his methods; the student, his needs, his capabilities; the agricultural academic administrator, his qualifications, his problems, might best be undertaken by organizations such as NACTA.

Last year, in my comments to you as president-elect, I emphasized my deep feeling on the role of a creditable publication such as a journal or yearbook in advancing higher agricultural education. For several years a journal has been published by this organization. This has been a tremendous undertaking, and admittedly we have made many embarrassing errors; but I certainly want to commend the editor and his editorial board and all who contributed manuscripts this past year for work well done. In this area of publication we are confronted continually with limitations most of which could be eliminated with additional financial support. We are most appreciative of some financial support which we have received from the Sears Roebuck Foundation through Mr. R. V. Mullen, who is the director of Youth and Rural Programs for that foundation.

From time to time this year, as I have pondered over the affairs of NACTA, I have felt somewhat like Shakespeare's character, Hamlet, as Shakespeare portrayed him in his play. There were many duties and obligations resting upon him and he did not feel qualified to cope with those tasks which confronted him. Hamlet was disqualified for action by his excessive use of the reflective tendency which caused him to alternate between complete inactivity and fits of excited energy. In one scene in the middle of the play, Hamlet began one of his long soliloquies with these famous lines, "To be or not to be, that is the question". For reasons altogether different than existed with Hamlet, I have found myself oft times speaking aloud some similar verbage which might be paraphrased to apply to me in the conduct of the affairs of NACTA.

To be an organization so structured as to serve all higher agricultural education, it appears to me that significant changes need to be initiated to strengthen the organizational function of NACTA so that we might render more effective service to all teachers and admin-

istrators. With this possibility in mind, your executive board, the advisory committee on matters of organization, development and policy and the NACTA Liaison Committee with RICOP decided that an appraisal of this possibility would be in order for consideration at this convention. Our friends in engineering have the American Society for Engineering Education which cuts across the board serving all areas of specialized engineering. The organization has been in existence for more than 70 years. It continues to grow in size, activities and influence. We have invited the Executive Secretary of that Society, Mr. Leighton Collins, to appear on our program on Tuesday so that he may present to us the positive values that have occurred to all who have participated in that educational society. He has likewise agreed to express himself concerning limitations that exist. It is our hope that his presentation will set the stage for much open and frank discussion, and that NACTA may decide once and for all "to be or not to be" an all-inclusive organization for higher agricultural education.

In order that we might proceed in a matter of parliamentary correctness, proposed revisions of parts of our constitution and bylaws have been submitted upon the recommendation of the two committees, one on policy, the other the liaison committee with RICOP.

For eleven years we have told our story to a limited audience. To my knowledge every vice-president and regional director has put forth at least some effort toward membership solicitation but many people still look with varying degrees of reservation on active participation in this organization. It is true and to our credit that we have consistently attracted membership from throughout the nation.

The membership roll has shown a progressive increase. Furthermore, those affiliating have consistently renewed their memberships. During this year, 19 colleges and universities have purchased institutional memberships. Seventy-five persons have subscribed to individual memberships. Our total membership roster for this year consists of five hundred sixty individuals.

A large membership enrollment is important to strengthen our financial capability as well as our prestige; yet, a small active participating membership more than compensates for the lack of a long list of almost unidentified persons. Apparently, we have too loosely defined membership eligibility. The professor at a junior or technical college who teaches in an agricultural program needs to be encouraged toward active participation. We have a limited enrollment from these areas at present. As yet we have not reached all teachers in the 50 colleges and

universities classified in the non-land-grant category. Approximately fifteen per cent of the land-grant universities are participating.

"To be or not to be" an organization with a long membership roster is a question that confronts us. In my opinion our purposes for existence must be defined more clearly so that prospective members can determine more accurately for themselves the desirability of affiliation. In my opinion, active membership participation will be proportionate to the ability of this organization to express its purposes in such a manner that all teachers of agriculture and all administrators concerned with agricultural instruction can feel that they can contribute to the advancement of a great cause and in turn will be the recipients of professional advances that would be difficult or impossible to acquire through other channels.

We need more functional committees. I want to commend those committees appointed last year for their activities which will be reported on later in the convention. Upon my recommendation the committee on institutes and workshops did not function because, in my judgment, we needed to synchronize our efforts with those of the Commission on Education in Agriculture and Natural Resources who at present is engaged in cooperative work with NACTA, the Deans of Resident Instruction for Agriculture at the Universities, and the agricultural discipline societies. We must continue as a national body to expend our energies toward the improvement of college teaching in agriculture. Our Committee on Teacher Evaluation and Recognition is one of the few of its kind. We know that distinguished teaching resists quantitative measurement; yet we need to encourage this committee to keep on exploring ways and means of evaluating good teaching, its causes and effects.

Since knowledge has advanced and continues to advance rapidly in all fields, the college teacher must continue the learning process throughout his career as an indispensable accompaniment to effective teaching. Keeping up with the advances of knowledge is the single most important phase of his work. Yet we know that in all phases of the agricultural sciences this is a most difficult undertaking, because concurrent with our own advances in the applied science field we have seen a mushrooming of knowledge in the pure sciences related to agriculture which are equally as important for us to appreciate and to understand.

To keep pace with the times is beyond our capability as individuals, but it seems that we can continue to upgrade ourselves with the stimulus of associating with scholarly peers and superiors through or-

ganized institutes and workshops of a limited duration as one of the most expedient ways of keeping abreast of the new advances. This need is not peculiar to the individuals represented in any type of institution offering instruction in higher agricultural education. Only the teacher who is himself in the full current of learning is well qualified to interest students in the learning process; therefore, I think that NACTA as an organization should continue to pioneer such efforts as suggesting the need for institutes and workshops, to lend full cooperation in the development of such programs, appealing for financial support from foundations and other granting agencies to conduct such ventures, and as individuals to participate actively when such a program becomes available within our specialized area of teaching.

The deans and/or department heads of the institutions represented here have been invited to a conference on Undergraduate Education in the Biological Sciences for Students in Agriculture and Natural Resources in Washington, D.C. on November 11 and 12, 1966. In fact, NACTA is one of the four sponsoring organizations. The letter extending you this invitation should have been received only recently. Undergraduate education in the biological sciences is changing rapidly.

We in agriculture are most dependent upon the pure biological scientist for a creditable academic program in agriculture. We want the biologist to know our sincere and earnest feelings and we sustain a certain responsibility and obligation to offer recommendations on course content and course sequence of biology courses so necessary to the proper training of all agriculturists. This issue is so vitally important that we have invited Dr. George Gries, Head of the Department of Plant Pathology, at the University of Arizona and a member of the Commission on Education in Agriculture and Natural Resources, to appear on this convention program to relate some of the thoughts and plans to those concerned with undergraduate education in biology, to relate some of the immediate responses from persons concerned with higher agricultural education, and to encourage participation on your part when opportunities are presented for expression on this issue.

"To be or not to be" the organization which we outline in our purposes is a question that needs periodic re-evaluation. Let us continue to reason together. Let us plan in a systematic manner for today and tomorrow. Let us take advantage of all of our assets, invest wisely of our time and talent, and be patient

and tolerant when things go wrong as they sometimes will.

A man was severely injured in an automobile accident. He was rushed to the hospital, bandaged up, taped up, and tubes had to be inserted through his mouth and nose. As soon as he could have visitors, his pastor called upon him. To his pastor he was a most pathetic sight. He couldn't talk, but he could move his right hand. He seemed very disturbed at the presence of his pastor. With pencil in hand he began to write a note on a pad. Just as he completed the note, it was evident to the pastor that he had passed on. He was filled with emotion. No doubt the note contained a message to be delivered to his widow. This was going to be most difficult. He took the note. It read, "You are standing on the tube that is providing me with oxygen".

Fellow NACTA member, many tubes are inserted into our framework delivering materials to sustain us and accelerate our growth. Let us be alert to the number of tubes that are inserted, the nutrient or element that is being delivered, and the significance of these materials to our existence. Let us not clamp down on any tube intentionally, and further, let us be on guard so that we will not through some careless or indifferent action fail to continue on the progressive route.

The Image of Agriculture Address of the President-Elect

KEITH JUSTICE

Abilene Christian College

In accepting the position of President of the National Association of Colleges and Teachers of Agriculture, I am indeed humbled by the honor that you have given me. At the same time I keenly feel the very strong responsibility that goes with it. To follow a man like Dean Hal Barker is especially difficult when I think in terms of keeping up the good work and the tremendous pace that he has set. Yet in a very real sense he has done much to make my job easier. Some of the hardest rows have already been hoed. I am also aware of the generally high standard that has been set by the entire past leadership of NACTA throughout the critical formative first decade.

"I love agriculture," wrote the Earl of Bristol to Arthur Young, "because it makes good citizens, good husbands, good farmers, good children; because it does not leave

a man time to plunder his neighbor; and because by its plenty it bereaves him of the temptation." This tribute to agriculture was made in the 1700's.

We wouldn't expect exactly the same image for agriculture today, but I am certain that all of us are concerned about the image that agriculture does have and will have. A better image for agriculture begins with us. How do we view agriculture? As teachers are we imparting our vision to our students, our colleagues, our countrymen? Do we see the graduate of agriculture as one who is well-trained in technology but with no appreciation, interest, or skills for life in general. Too often this is the only image that people envision; this ought not to be. This is not to discount the importance of technology, but it is only one phase of agriculture, and it alone gives a limited view.

Not long ago at a faculty meeting three members of our college faculty from the Art, English, and History Departments spoke of the value of the humanities in education. To add to the decor for the occasion two large paintings were exhibited under the spotlight — both were farm scenes. Then a few days later one of the teachers of the required aesthetics course stopped me in the hall to tell me how much she enjoyed our agriculture students in her class. I'll confess that I was a bit shocked at first. But after thinking about it, I can see that it should be so.

Agriculture students have had many experiences of beauty in nature. They have been absorbed in the wonder of a new colt, moved by the mournful cry of a bird, or thrilled with the vast expanse of a rippling field of wheat. Since one of the characteristics of an aesthetic

experience is an internal reconstruction of an old experience, these students have the capacity for the appreciation of the fine arts. Norman Whitefield, the head of the Abilene Christian College Art Department, says, "Even an imperfect beauty, once lived, remains to haunt succeeding moments with its measure of grace and truth." Agriculture students should be made aware of their capacity to appreciate the fine arts and taught to unabashedly enjoy the beauty found in them.

Not only would this change the image of agriculture from the stereotype, but we can further change it by teaching all agriculture courses in a liberating spirit so that the gift of reason is developed. Teachers must have an appreciation of the principle advocated by Bacon when he said:

For as water will not ascend higher than the level of the first spring-head from whence it descendeth, so knowledge derived from Aristotle, and exempted from liberty of examination, will not rise again higher than the knowledge of Aristotle . . . Disciples owe unto masters only a temporary belief and a suspension of their own judgment till they be fully instructed, and not an absolute resignation or perpetual captivity: and therefore to conclude this point, I will say no more, but so let great authors have their due, as time, which is the author of authors, be not deprived of his due, which, is further and further to discover truth.

Agriculture teachers need the awareness of Dr. Miller (5) that:

Agricultural Colleges possess the grist for intellectual excitement. They deal with society's most vital enterprise and with problems which are vitally and ultimately decisive in international development and in the resolution of international tensions. As no other, agricultural colleges have an opportunity to relate the connections between things, ideas, and the world of practical affairs.

Dr. David Knapp (3) says:

Agricultural Colleges are relatively unique . . . in the extent to which they seek to relate abstraction to reality in the world of the natural and social sciences.

The art of relating abstraction to reality is not only useful in agriculture but is adaptable to many endeavors that can be beneficial to our nation. We can, as Woodrow Wilson suggests, give our student, "an elasticity of faculty and a breadth of vision so that he will have a surplus of mind to expend, not upon his profession only, but also upon the broader interests which lie about him."

Not only is the study of Agriculture conducive to the development of logic; but because it deals with a vital part of national life, it provides us an opportunity to help the

student develop ethical values that will strengthen our nation.

The type of education we envision for our students cannot be imparted or even required. We can only do as Socrates—serve as "a midwife assisting the labor of the mind in bringing knowledge and wisdom to birth" and, "thoroughly examining whether the thought which the mind . . . brings forth is a false idol or a noble and true birth." Teachers do not take raw materials and turn out a finished product. Their role is only to assist in the student's striving for an education. If we are good assistants, they will realize that education is worthy of a life-long endeavor.

I read with interest Dr. Gries' talk on *Educational Objectives in the Agricultural Sciences* (2). I especially appreciated his willingness to present ideas for the "stirring of imaginations" without waiting for his feelings to become convictions. Someone has said that a friend is one before whom you can think aloud. Dr. Gries' article is one of the most stimulating that I have read in some time, and I felt that he was a good friend before I had the pleasure of meeting him here. In commenting on the common practice of offering agriculture courses without prerequisites in the basic sciences, Dr. Gries asked, "This is applied science? What science do we have to apply?" I would like to think aloud about that question by suggesting that we are not applying science but teaching science—the science of agriculture. Too long we have referred to agriculture as an applied science; I would like to suggest that agriculture is a science; and farming is that science-applied or, as some have said, a useful art. It is true that we use as tools all of the basic sciences, (and I wouldn't object to the term "basic") but that does not preclude the fact that agriculture is a science. Fourier regarded physical theory as a kind of applied mathematics. Few of us would call physics an applied science simply because it applies the science of mathematics.

Science is accumulated knowledge systematized and formulated with reference to the discovery of general truth or the operation of general laws. Is agriculture a science? I believe that agriculture by scientific methods of investigation has accumulated a special fund of systematized knowledge that is a science. Perhaps the nearest analogy is the field of medicine. Medicine, like agriculture, applies many of the basic sciences, includes many technologists, and serves a vital public need. With time and the population explosion on our side, it seems to me that the main thing that is needed is thoughtful, sober and precise action on our part in order to bring the right image of agriculture into focus. One thing is certain: we

can't do it by prejudices; littleness, and divided organizations.

Diok Geyer (1) in his article "The Agricultural Sciences" does an excellent job of stating the case for agriculture in this respect:

The agricultural sciences are products of the synthesis of evolving disciplines characteristic of the world of science. Through free exchange of ideas, concepts, and research-derived principles, the agricultural sciences have emerged as distinct entities from the biological, mathematics, physics, chemistry, and the social sciences, during the past century . . . It was soil scientists, with strong training in physical chemistry, who explored the nature of the exchange phenomenon and built a background of basic information which has made important contributions to our understanding of the function of synthetic exchange materials. As a consequence of their investigations, we have new understandings of the mechanism involved in nutrient absorption by both plants and micro-organisms

Our task of educating men we can extend the science of agriculture can best be served, I believe if we heed the suggestion of Anderson that "some of the basic sciences might be postponed until after the student can see a need for such detailed understanding." William James notes that the more interest one has in advance in a subject, the better he will attend. We need to teach our introductory courses so as to awake the curiosity of our students in the basic sciences "so that the new thing shall seem to come as an answer, or part of an answer, to a question pre-existing in his mind."

Since the image of agriculture begins at home, let us take a brief look at some of our homework.

NACTA has a unique history of primary concentration on the improvement of teaching. In this we will continue enthusiastically. We see NACTA developing more and more as the national organization providing the common ground for the united efforts of all higher levels of the teaching of agriculture. Though there is much yet to be done, NACTA is to be commended for having stimulating discussions on the program this year from two-year technical schools, four-year state and private colleges, and land grant universities. We all have one thing in common—good teaching.

The executive committee in a preliminary look at program possibilities for next year is considering the general theme of the curriculum. We feel the need to hear from these various groups again with particular reference to curriculum problems.

The everchanging curriculum presents some vital questions. Does our present curriculum offer students an opportunity for a broad

education while specializing in agriculture? Does our curriculum continue to be too proliferated and fragmented? What about agriculture in the first two years? What type courses do we need?

There are other areas where NACTA can contribute to the improvement of teaching. For example, the committee on teacher evaluation has made a fine start. This project can become a great contributing factor. I still like the idea of the "Academy of Agriculture" proposed in the June, 1963, *Journal*. Then what about a study of teaching techniques, such as the audiotutorial system of teaching? If we cease to improve, we cease to be good teachers.

Although time does not permit even a mention of all phases of our homework, I would not want to conclude without a mention of what our past president pursued so diligently last year — the NACTA *Journal*. No doubt all of you join me in a word of commendation to Dr. John Wright and the editorial board for the obvious improvement in the *Journal* during the past year. All of us recognize the great potential the *Journal* has for serving us in the carrying out of our objectives as an organization. What most of us have not realized, however, is the challenging opportunity we have for writing articles for publication.

It seems to me that the new plan for the *Journal* shows good judgment on the part of the editorial board. The fall issue is devoted to the teacher, the winter issue to the student, the spring issue to the administration as it relates to instruction, and the summer issue to the proceedings of the annual convention. This is a progressive step toward meeting the need suggested by Dr. Keith McFarland (4) at Wilmington last year:

There is a need for better communication in the entire field of agricultural higher education. There exists no single publication in the field that draws together materials relating to instruction, curriculum, and programs in agricultural education, on the college level, or that presents these items in organized form. Much is being done in the way of individual effort and institutional research in instruction. The field would be benefited by having a journal or yearbook that would draw major movement materials together in unified form, for permanent reference. An additional committee of NACTA might well explore the development of a yearbook or publication that would serve the entire field.

During the first decade NACTA has contributed positively to the improved image of agriculture. Under capable and effective leader-

ship NACTA has accepted the challenge to reexamine its objectives, conditions for membership, and the convention programs in the interest of promoting a unified national organization dedicated to the improvement of teaching in agriculture.

To all of you — college or university, junior or senior, technical or liberal arts, land grant or non-land grant, private or public — we say: The ground has been prepared; the seed has been planted; workers and implements are needed to bring forth an abundant harvest.

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Vocational and Technical

Education

Now and in the Future*

by

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I appreciate this opportunity to share with you some insights and viewpoints on "Vocational and Technical Education Now and in the Future" with special attention to the implications for agricultural education. In attempting to cover the subject in the allotted time, I will not be able to exhaust the various ramifications of this topic. Hence, some areas, by necessity, will be touched only lightly, if at all. Please keep in mind that these comments primarily represent my personal judgment as an observer and participant.

In my preparation I have tried to

look at the central thrust of developments in vocational and technical education as I perceive their implications for your membership and institutions. In this presentation I would like to:

1. Review the broad setting and circumstances in which vocational education and agricultural education find themselves as a means of developing a perspective.
2. Review the specific thrusts of vocational education legislation.
3. Discuss trends in agricultural education.

4. Examine the implications for this group.

We currently are living in an educational revolution, a revolution which promises to parallel and perhaps exceed the impact of the agricultural revolution of recent decades. We are experiencing new forces, pressures, and alignments in all areas of education. The federal government, to a degree unre-

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cedented in history, is bringing the full range of its influence and resources to focus directly and indirectly on problems of education, of which vocational and technical education is an important and essential part. We see a new social conscience emerging, coupled with new concepts of "economics", with attendant new roles for the federal government in improving and extending the benefits of science and modern technology to all citizens. This activist role of the federal government, the influence of educational foundations, and the prominent role being played by scholars of other disciplines in shaping educational policy — all point to an even more yeasty situation in the future.

As a result of recent federal acts, we have seen important transfers in the relative financial support of education. We have seen a realignment of power and authority. We are witnessing shifts in leadership and initiative. And the cycle has not yet run its course.

I believe that we could appropriately observe that America is literally rediscovering education. Traditionally, our nation has been committed to the ideal of the optimum development of each individual citizen. Beyond this, however, I believe we are experiencing an increased public acceptance and appreciation of the values and benefits of education in general and vocational and technical education in particular. Education is becoming recognized as an effective instrument of national policy. Currently, national governments are considering educational programs in revolutionary terms. They now realize that education is the responsible link between social needs and social improvements. Education is becoming recognized as an effective instrument of national policy. It is being viewed by some as the vehicle for sustained economic growth and national well-being.

There is, I believe, a new sense of urgency and perhaps an almost blind faith in the "powers" of education. For example, states and communities are becoming increasingly aware of the importance of vocational education to their economic growth and development.

Economists have indicated that the educational level of a nation's citizens constitutes an important part of the nation's capital. In brief, education is becoming identified not as an expense but as an investment in human capital. For example, in a recent article in the *Monthly Economic Letter* of the First National City Bank of New York, several sources were cited to indicate that the rising educational level of the nation's labor force was responsible for approximately 20% of the rise in national productivity and income between 1929 and 1957. This 20% contribution by human capital was in contrast to the contribution of

physical capital, which was only 15%.¹

Not only is there growing awareness that education is an investment rather than an expense, but when comparing the alternative costs to society between adequate vocational and technical education programs and institutional care, welfare, and unemployment, vocational education is the more desirable alternative—both economically and socially.

In one sense of the word, education has become one of our nation's greatest growth industries. "Total public and private expenditures for education have increased from \$14 billion in 1954 to \$34 billion in 1964. This represents an increase from just under 4% of GNP in 1954 to almost 5.5% of the larger GNP in 1964."²

Education is truly "big business". It also promises to remain as one of the most viable and significant segments of our society.

Clearly, the climate for education is good. What is the situation concerning agriculture? I don't have to remind this audience of the difficulties that the "agricultural image" has experienced in recent years. Unfortunately, there were a few who saw the rapid changes and progress in agriculture and concluded that research and educational programs were no longer needed. There were some who continued to think of our modern agricultural industry as only farming and ranching. I believe, however, that we may be "turning a corner". I sense from recent statements and attitudes a new appreciation for the ultimate role of American agriculture in a world burgeoning with population and in a nation whose industrial and urban expansions are eroding its agricultural resources.

The social, economic, and educational implications discussed earlier contributed to the passage of the National Vocational Education Act in December of 1963. However, this act was not funded until the fall of 1964. Because of this delay in funding and the lead time needed to develop adequate administrative procedures at the state and federal levels, the full impact of the act is just now beginning to be felt.

Perhaps the most far-reaching implication of the act is its emphasis in the Declaration of Purpose on serving all age groups in all communities, "to maintain, extend, and improve existing programs of vocational education, to develop new programs of vocational education . . . so that persons of all ages in all communities of the state . . . will have ready access to vocational training or retraining which is of high quality, which is realistic in light of actual or anticipated opportunities for gainful employment, and which is suited to their needs, interests, and ability to benefit from such training." There is a new man-

date, new opportunities, and new responsibilities to serve all age groups of varying levels of ability, irrespective of their place of residence.

Let me review rather quickly the significant aspects and intent of this far-reaching act.

1. Federal funds for vocational and technical education are provided in increasing amounts.
2. Quality in vocational education is stressed.
3. More emphasis is placed on post-high-school education and retraining.
4. Special classes for those who can't succeed in the regular vocational program are to be initiated.
5. Access to vocational education regardless of place of residence is a goal.
6. Training for known or anticipated employment is emphasized.
7. Funds are not ear-marked by vocational services.
8. Business and office education is now included among the reimbursable programs.
9. Cooperation among vocational services and between vocational education and other agencies is not only implied but is practically mandated.
10. Funds are provided for ancillary services.
11. Provision is made for research, experimentation, and training.
12. Evaluation is made part of the act.
13. The terminology limiting vocational education to less than college grade has been changed to exclude only those programs generally considered professional or as requiring a baccalaureate or higher degree.
14. Vocational agriculture is broadened.

"Any amounts allotted or apportioned to such titles, act, or acts for agriculture may be used for vocational education in any occupation involving knowledge and skills in agricultural subjects whether or not such occupation involves work on the farm or of the farm home and such education may be provided without directed or super-

¹First National City Bank of New York, *Monthly Economic Letter*, August, 1965, p. 93.

²Dr. Leonard A. Lecht, Director, National Goals Project, National Planning Association, Washington, D.C., March, 1966.

vised practice on a farm."

Specifically, the bill has given increased prominence to and a broader franchise to serve the total agricultural industry. Agricultural educators have been challenged to extend and up-date programs to add breadth and depth while retaining and building on the proven features of their present program. To summarize to this point, there probably was never a better climate or perhaps greater urgency for replanning programs of agricultural education.

With this background of the major thrusts and areas of emphasis of the Vocational Education Act, let me proceed to the broad, emerging trends that I see in vocational education in agriculture.

1. New, broadened objectives have been adopted.
2. High-school curriculums are being reorganized.
- Inter-service programs are being initiated.
4. Programs for special groups are being established.
5. Curriculum materials are being developed.
6. Multiple-teacher departments are increasing.
7. Area vocational schools are providing broadened and extended offerings.
8. Innovative approaches in teacher education are being undertaken.
9. Supervision and administrative procedures are being examined.
10. Post-high-school education in agriculture is being expanded.
11. New relationships and orientations are being established with key groups.
12. Increased special assistance is being provided for teachers.
13. Research and development are receiving new emphasis.

Probably the most pervasive trend is that multiple-teacher patterns of agricultural education are emerging. It appears that diversity, flexibility, and adaptability will characterize programs of the future.

In short, vocational education in agriculture is in a healthy state of ferment. Everywhere we turn we see new vigor and vitality, vigorous seeds of change, critical almost ruthless internal evaluation and appraisal, a willingness to kill some of the sacred cows, a new sense of urgency and commitment to meeting the agricultural occupational training needs of the nation.

It is obvious that if these occupational training needs are to be effectively and adequately met, increased involvement and participa-

tion will be required from all areas of the agricultural education community. I believe this to be especially true with reference to members of this association. I would hope that from my discussion to this point you have already identified some implications for your expanded involvement.

At the risk of being presumptuous, let me identify what appear to be some major implications for expanded participation on your part in this critical and growing arena of educational activity.

1. *Exert leadership to improve agricultural education.*

There is continued need for effective leadership from all quarters if the agricultural education community is to adequately redirect its programs to achieve greater congruency with labor market demands and exploit the implications of current research and technology in improving its economic position in both the farm and off-farm sectors.

We are entering one of the most competitive labor markets in history. All segments of the agricultural community must become increasingly articulate in portraying the advantages of career opportunities in the broad agricultural industry and in maintaining and further enhancing educational and research programs.

2. *Expand post-high-school technical education programs in agriculture.*

In my judgment, this area may have the greatest implications for members of your association. To meet the challenge of the future, post-high-school education in agriculture must be expanded and extended. (Secretary of Labor Wirtz has indicated that 14 years of education will be the normal expectancy in the future.) Perhaps greatest among the needs in the post-high-school area are in technical education. These programs, roughly equivalent to two years of post-high-school education, are needed to develop paraprofessionals to support senior scientists and to perform other technical tasks.

Industry, for example, has for a number of years identified a certain ratio between the number of professional workers and the number of technicians needed to support them. The normal range is from 1:1 to 1:5. Some space shots from Cape Kennedy have used a 1:3 ratio. In 1965 there were 6460 baccalaureate degrees in agricultural areas conferred by land-grant colleges alone. If we assume the 1:1 ratio between professionals and technicians, we see a need for well over 6460 agricultural technicians annually.

A draft of a position paper by the Committee on Educational Policies in Agriculture of the National Research Council of the National Acad-

emy of Sciences points out that there are more than 75,000 agricultural scientists and engineers working in the U.S., many of whom need support from agricultural technicians.

3. *Improve and extend teacher education programs.*

New types of agricultural teachers will be needed. One of the most urgent needs is to develop methods for recruiting and rapidly "retreading" graduates of subject-matter fields and for providing them with requisite professional skills, thereby enabling them to provide leadership in these emerging areas.

Increased emphasis also must be placed on in-service education activities. Special workshops and institutes are needed. Furthermore, funds are available to defray the costs of these institutes.

4. *Develop instructional materials.*

As new programs emerge and as technology changes existing programs, instructional materials must be continuously expanded and updated.

5. *Increase the emphasis on research.*

If we are to meet the challenge of the future we must rapidly expand our research and development efforts. Opportunities here might range from agricultural labor market projections to interdisciplinary and interinstitutional research on the learning process or new organizational and instructional approaches to meeting educational needs in this area. Pilot and/or demonstration efforts provide further opportunities for leadership and assistance.

6. *Assist in the continuous evaluation of programs.*

One of the most pressing needs is for assistance in developing mechanisms and procedures for achieving continuous appraisal and evaluation in agricultural education; to build the concept of self-renewal into the very heart of our programs.

7. *Improve and extend relationships.*

Relationships with new educational organizational structures, trade associations, unions, and all segments of agriculture, must be achieved if emerging programs are to succeed.

These are but a few of the implications for you and your association in the vocational and technical education programs of the future. I am sure that you, in consort with other members of your staffs and representatives of the agricultural industry, will perceive many others. Let me assure you of the continuing interest and willingness of our Center staff, and I know of the individual state staffs, in working with you and your association in develop-

ing activities in agriculture and other vocational fields. Our Center is comprehensive in its interest and commitment to vocational and technical education, interdisciplinary in its approach, and interinstitutional in its program. We hope you will look upon it as a potential resource.

What about the future of vocational and technical education? In my judgment, the biggest question is, "What kind of future do we want?" In the last few years a

number of organizations and government agencies have begun to anticipate or "invent" the future. Our achievements in defense and space endeavors may have given us the impression that we can literally invent the future if only we are willing to devote the necessary men and money. To achieve this Utopian concept in agriculture will demand the best thinking and efforts of all segments of the agricultural education community. Furthermore, it will necessitate improved coordina-

tion and cooperation among all relevant groups. The effectiveness of programs of the future can well hinge on the manner in which we perceive our present circumstances, identify long-range goals, consider alternatives, develop effective working relationships, and execute our plans and responsibilities.

I predict that we will not be content to merely keep up with change, which is the key to survival; rather, together, we will create change, which is the key to leadership.

"Our Brethren Are Already In The Field"

GEORGE A. GRIES, *Head,*
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"Our brethren are already in the field. Why stand we here idle?" With these words Patrick Henry spoke with alarm about the complacency of his fellow Virginians, while others, with no more at stake, were already at war. Perhaps the same words are appropriately directed at those of us in the field of education in agriculture.

Over the past ten years it has been popular to extoll the Colleges of Agriculture in the United States and to give them credit for almost single-handedly bringing about many of the desirable features of American life. We have heard that as a result of agricultural research, an ever decreasing percentage of the American public is needed for primary production, and that this in turn has released manpower to produce luxury items which contribute to the high standard of living we enjoy. We also hear that, to the credit of the agricultural colleges, the American workingman can buy a T-bone steak for a few minutes work while a Russian has to work long hours to obtain his tough little piece of boiling beef.

These ideas, no doubt, have had their place in boosting our morale in an era when agriculture was taken for granted and its image was at an all-time low. I wonder, however, if they have not had another, less desirable, effect — that of lulling us into complacency, into thinking that the organization and the system that have been so fruitful in the past can continue to serve

Talk presented to the annual convention of the National Association of Colleges and Teachers of Agriculture, Cape Girardeau, Missouri, April 18, 1966.

effectively without change in the years ahead.

Students entering our colleges this fall will graduate in 1970. They will be among the leaders in the field from perhaps the year 1980 to the year 2000. Is the training that they are now receiving that which they will need to fulfill the responsible roles awaiting them? Perhaps a quick look at the agriculture of the not-too-distant future will give us an insight into some of the questions and problems with which they will be faced.

Farming in the United States will be a corporate enterprise; the small farm probably can not persist. Cultural practices will be programmed by computer, perhaps not for maximum output, but for optimum efficiency in the utilization of water, land, labor, and capital investment. Ecosystems will be controlled and modified by chemical, physical, and biological means. New resource areas will be exploited including subpolar regions, arid lands, and, yes, even the seas and space. Marine agriculture and space agriculture are almost foregone conclusions. Who will manage the production of biological resources in the seas and who will be growing plants, and maybe animals, under pressurized, artificial environments on the moon? These possibilities are no more remote now than was the application of hydroponics to growing food on coral atolls in the Pacific at the beginning of World War II. If agriculturalists are not to do these things, who will? Who else is so well trained in the principles of management of biological commodities?

New concepts of the genetic potential of plant and animal species

will be developed. In a recent talk Dr. James Bonner of the California Institute of Technology suggested one example. The succulent plants as a group are most efficient in the utilization of water per unit of dry matter produced. This results from their unique ability to fix carbon dioxide in the dark while their stomates are open; during the day while stomates are closed and water loss is minimized, this temporarily fixed carbon dioxide is used in photosynthesis. Dr. Bonner points out that only the pineapple among our cultivated plants has this singular type of metabolism. The agricultural and chemurgic potential of other succulents has not been assessed.

We may also expect that the metabolism, growth and development of both plants and animals will be more closely controlled by means of chemical regulators. Those who use them will have to understand their action.

Opportunities in foreign agriculture will expand for those who have the ability to adapt their knowledge to new problems and to different social and political environments.

Many of you will immediately agree that the agricultural research scientist of the future will have to be better and more broadly trained than his counterpart of yesteryear, but some of you are not willing to admit that the training program for the agricultural technologists will also have to be changed significantly. While I agree that there will continue to be jobs not greatly different from those of today, it is my firm belief that the training of the terminal B.S. will have to be modified drastically. The industry will demand personnel at all levels of

training with better backgrounds in the basic disciplines — persons who can adapt more readily. In-service and on-the-job training programs will become more common, and the colleges and universities will be expected to place more emphasis on basics and less on "training for the first job." If we do not, the industry will look to biologists, chemists, physicists, and even the engineers to fill their needs. The agriculturalists will have to be satisfied with only the most routine and commonplace of tomorrow's activities. Then what will our image be?

Within the last ten years the teaching programs in the natural sciences and especially in the biological sciences have undergone dramatic changes. The K-12 (Kindergarten through High School) program of the American Association for the Advancement of Science is stimulating interest in science and catalyzing further study on the presentation of scientific reasoning to grade school and secondary school youngsters. The Biological Sciences Curriculum Study (B.S.C.S.) program has had a strong impact on the teaching of biology in high school, and the effects of it are just beginning to be felt in the colleges. Changes that are equally exciting and challenging are occurring at the university level, and these particularly will have a significant impact on instruction in agriculture in the years ahead.

The new advances in knowledge in the biological sciences have been primarily in the areas of molecular and cellular biology. This is a reflection, in major degree, of the increasing use of the interdisciplinary approach to the solution of problems — an approach that has made almost obsolete the traditional differences between the various basic sciences. A series of discoveries at the molecular level, including the role of DNA and messenger RNA, have demonstrated that the cell operates in essentially similar fashion in all biological entities. Now botanists, zoologists, and microbiologists are seeing unity where before they saw only diversity. Is it any wonder then that we are now hearing such terms as integrated biology, molecular biology and cellular biology in place of the old terms, botany and zoology? And is it any wonder that many biologists are revising their curricula to conform to these newer concepts?

With a great deal of foresight the American Institute of Biological Sciences created, in 1962, the Commission on Undergraduate Education in Biological Sciences (CUEBS) to give encouragement to curricular study and guidance to orderly change. Like its counterparts in chemistry, physics, and mathematics, CUEBS has assisted in the ex-

change of ideas and information and has cooperated with and coordinated the efforts of faculties, institutions and professional societies. With no intention of dictating policy, CUEBS has as its goal the stimulation of constructive thought that will lead to improvement of biological education.

There are among the biologists, and I fear among agriculturalists too, those who have their heads in the sand. They seem to believe that the new interests and new approaches are fads, that will, if ignored, go away. No doubt many of the new curricula and many of the new courses are extreme; they will be modified and perhaps drift back more nearly to the traditional. I am certain, however, that he who waits for college biology to revert to its static position of description and nature study of 10 years ago waits in vain. It will not, it cannot, it must not be thwarted in its attempt to gain its rightful position as a modern science. The "new" biology has much to offer general education and it can contribute greatly to agriculture and the other disciplines based upon it. It also is finding new horizons for itself as a basic discipline. It must be allowed to develop even though it means a period of ferment and indecision. Agriculture should assist it in its groping and work to help it develop programs that will be of maximum value to agricultural students.

The total subject matter of biology can be subdivided in many ways. Traditionally, we have divided it vertically into plants, animals and microorganisms and then subdivided it into convenient but artificial and isolated categories such as taxonomy, anatomy, and physiology. Students might take these courses in any sequence or might elect only one or two of them. It was thus impossible to integrate the subject matter of the different courses, and much duplication occurred. Similarly, it has been difficult for us to articulate our courses in "applied biology" to the basic offerings, and again excessive duplication has occurred.

Some would suggest that we divide biology horizontally into a series of courses on the basis of organization level. Since molecular activities are largely common to all organisms, they would start there. Next they would look at the cell as a basic functional and structural unit of life, and progress through tissues and organs until they finally reach the organism. Later they would undertake the study of populations of organisms and the impact of the environment on their performance. It is frequently suggested that this is the logical approach to the study of biology. Logical? To whom? Obviously it is logical to those who are biochemically or biophysically oriented, but

it most certainly is not to those who derive their interest and motivation from the whole living organism. It is not the logical approach for students in the College of Agriculture.

The ideal curriculum in biology must give due weight to all groups of organisms and the features that make them unique and distinct from others. It must also give students an understanding of biological unity at the molecular and cellular levels, and some insight into the behavior of populations of organisms. All modern curricula attempt this; they vary only in emphasis and time to accomplish it. On some campuses biology has moved so far away from the traditional that it has been dropped as a basis for agricultural courses. On others, biologists and agriculturalists have planned together to assure articulation between the offerings of both. On many campuses changes have been slow to come, but they will come, and I urge agriculture to work hand in hand with biology to make the transition as smooth and as meaningful as possible.

Efforts are underway on the national level to establish patterns for this transition. CUEBS has established a separate Panel on Pre-professional Training in the Agricultural Sciences. This group, working together with the Commission on Education in Agriculture and Natural Resources (CEANAR) has underway at present an in-depth study of the training in the biological sciences as well as a less detailed study of the mathematics and physical science needed by students in the different areas of agriculture. Although it is realized that there is a continuum of post high school training needs from the short course to teach a technique all the way up through the 4-year business, technology and science options leading to the Bachelor's degree, this study is concerned primarily with the baccalaureate programs. Similar attention should be given to the biological training needs of those enrolled in non-degree programs.

Rather than second guess those involved in the current CEANAR-CUEBS study and rather than claim to speak for the Commission, I would prefer, in the time remaining to regale you with some of my own beliefs on the effects that changes in natural science instructional programs will have on baccalaureate programs in agriculture and to expound some of my ideas regarding the training of the B.S. technologist of the future.

First, I would indicate that I wholeheartedly embrace the "core" concept — not only in biology but in the physical sciences and mathematics as well. I would stipulate, however, that every "core" have two characteristics: (a) that it give early and broad coverage to the entire field, and (b) that it have many

points of departure.

In the case of biology the introductory course should emphasize, but not be limited to, a study of organisms and populations of organisms — the levels of organization with which we are most concerned and the level with the greatest potential for motivation of the student. In view of the wide range of backgrounds with which our students come to us, provision should be made for those with excellent preparation to receive advanced placement. Whether biology is to be taught at the freshman level as an integrated discipline or as botany and zoology is a continuing point of contention. There are logical arguments to support both views, but logic seldom prevails when this topic is being discussed.

That the core have many points of departure, I believe is incontestable. The variations in depth of background needed by the students in agricultural business, agricultural engineering, agricultural technology, and those preparing to enter graduate school in one of the more sophisticated biological specialties dictate that this be so.

Biology core programs are presently in a state of turmoil. It is doubtful that there will ever be one standard because of the variety of purposes biology serves. In liberal arts colleges it will probably always be oriented toward general education. In some schools it has been traditionally biased towards the pre-med student. In the larger universities it must serve a variety of students including those in agriculture. Physics and chemistry departments have only begun to consider their service role to other areas; but mathematics, on the other hand, has given much attention to the development of a sequence of courses that they believe will serve the needs of all students. This "core" is characterized not only by many points of departure, but also by many points of entrance.

There was a fad a few years ago to equate agriculture with science. Colleges and departments changed their names. Courses in Poultry Husbandry became courses in Avian Science. Some people in agriculture were impressed; some politely ignored this attempt at respectability; but most scientists in the traditional disciplines laughed. I'm afraid a number of high school and college students laughed too. To them biology, physics, chemistry and mathematics are *the* sciences; agriculture becomes an *applied science* only to

the degree that it utilizes and applies these basic disciplines. Here we were teaching "agricultural science" to students with no workable knowledge of biology or physics or chemistry or math; and what was worse, we were not even using the backgrounds in these subjects that they did have in the development of our courses.

How often in your course with a prerequisite in organic chemistry and plant physiology do you really build on a concept that the student presumably learned in the prerequisite course? How frequently do you use higher mathematics, for example, in a discussion of the epidemiology of an animal disease? My effort here is to point out what I believe to be one of the greatest shortcomings of educational practice in agriculture: our failure to truly articulate our courses with those of the rest of the university or even with those in the students' backgrounds. While this is not entirely our fault, a major portion of it is. First, most of us are obsolete. Either we never were really qualified in the basic disciplines upon which our "applied science" is based, or we assume that the content of the present course in organic chemistry, plant or animal physiology, genetics, economics, and so on, are the same as they were when we took the course 20 years ago. Another factor that contributes to our inability to really challenge our students to apply basic concepts to our subject matter is that in order to fill our classroom with warm bodies we either omit legitimate prerequisites or we freely waive them. The students thus have such diverse backgrounds that we can't build on previously acquired information even if we were capable of doing it. Instead, we have to reteach material to the depth needed.

To summarize this point, let's look a little deeper at the mathematics requirements for the baccalaureate degree. We seldom require anything past algebra and trigonometry. We don't use it in our courses either because of lack of our ability or because some of the students have not had it. Therefore, the question is raised, "Why require it?" The technologist of tomorrow will be living in a mathematical age. The computer may solve the problems; but the man will have to understand the significance of probabilities, of limits, and other concepts to even interpret the answer that the computer hands him. In planning cur-

ricula for future students, don't sell them short. Prepare them for the era in which they will live.

I visualize that in the not-too-distant future the technical (and scientific) aspects of agriculture will be concentrated in the last two years of the baccalaureate program. There are two reasons for this: more and more of our students will be transferring into our four year programs in the junior year, and two years in the basic disciplines will be needed to gain the backgrounds that will be needed to teach the types of courses in agriculture that must be taught.

This does not mean that courses in agriculture should not be offered during the first two years, but let's not try to convince anyone that they are "science" courses. I visualize a course during the first year in which agriculture is approached through its socio-economic implications, both past and present. This course should also delve into the frontier areas of agriculture to demonstrate to the student the relation of the basic disciplines to the solution of the problems of the future. Show him why he will need calculus, physical chemistry, sociology and other courses if he is to compete in some area of agriculture 20 years from now.

Sometime before the end of the sophomore year introductory courses in crop production, animal production, soils, and the social sciences as they are related to agriculture could be offered. These should have few or no prerequisites and should be so taught that they would have campus-wide appeal. Neither should they be prerequisite for specialized courses to be taken later.

In closing I would make one final appeal. Realizing that 50 percent of the technical knowledge of today will be obsolete in 10 years, that 50 percent of the technical knowledge our graduates will need in 10 years has not yet been discovered, that, if he is typical, our graduate will make 4 to 6 major changes in his type of employment during his lifetime, and that he must live as a responsible citizen in his community as well as make a living, let us be certain that in planning curricula for the future, we put the good of the student foremost. We can and we must adapt to change, to the new curricula in biology, to the future requirements of the industry. Let us forget our vested interest in the *status quo* and move forward as the times demand.

Curriculum Development

and the

Larger Learnings

by

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Curriculum development utilizing reasoned principles and directed toward reasoned goals in liberal learning is a challenge of the highest order to faculties in these times. First, there is the great challenge of trying to have the faculty agree on something — not only on one item but on an entire spectrum of

diverse experience based on reason. Second, there is the necessity for constant ferment and constant revision to keep curriculums from becoming out-moded and stagnant. Third and most important is the challenge to truly follow reason where the results will be a curriculum that is unique — one that is different and raises questions in the minds of our contemporaries. Curriculum makers are as susceptible to bandwagonism as most educators. Better to stay safe, too many say, make a "catalogue study" of offerings and hew to the line.

Given the task of providing for both major fields and general education, curriculum makers in the technical fields will have to grapple more earnestly with the latter than has previously been the case. Colleagues, industry, government, educational institutions, graduate schools, accrediting panels all tell us in no uncertain terms what students must have in a major field. And if new knowledge and processes demand a curricular shift, they will tell us that also. In general education, however, these groups too often fall strangely silent and beyond a vague reference to "broad backgrounds" and "enrichment" as desirable curriculum components, have little to say on the larger learnings. Indeed, too many abdicate their responsibilities in this area in favor of English teachers and professors of history, many of whom seem dedicated to the training of Roman senators. The results, too often, are general education experiences which have little meaning for students, technical students who have little meaning to general education professors, and academic advisors who are puzzled by the entire affair and who resort to "getting the student through the institutional requirements" in the general education sequences.

The college — or department — that meets its responsibilities for the well-reasoned, well-rounded education of young people in the years to come will have a faculty which will not hesitate to spell out loud and clear the values and competencies they hope their graduates will possess. These curriculum makers will then set about working with experts in all disciplines to avail their students of experiences that will develop them. If the college catalogue does not carry the courses, they will put them in it. If their offerings look different, and even slightly awry, so be it. Happily, more and more institutions are coming to this view.

In visualizing the type of young person they would like to see in their graduation ceremonies, most faculties will envision a youngster who is articulate, both in speech and writing, one who has a feel for language, a respect for clarity and, hopefully, a knowledge of some language other than his own. The

young graduate would be at home in the world of quantity, numbers and measurements; he would be able to recognize the difference between fact and opinion; and he would be a logical thinker yet quite capable of imaginative and creative thought. Our graduate would know both the worlds of nature and the worlds of man; and he would not be afraid to apply what he knows with judgment and discrimination which comes from a deep knowledge of other persons, other problems and other times and places. Our graduate would never be a type. He would have acquired the bent and skill for perpetual self-renewal and a value system and yen for excellence which would serve him well in an increasingly changing world.

Visual models of students molded by general education experiences are easy to come by. Translating visionary materials onto the drawing board and thence into classroom and campus life is something else. Perhaps the first and most important step is to assemble a general education faculty which will commit itself to a developmental type of teaching rather than the sometimes unconscious commitment to faculty psychology or pre-graduate school training which characterizes the efforts of many college teachers. Professors who will try to measure and appreciate increases in critical thinking abilities, values and abilities to integrate knowledge in addition to the usual measurements of the increases in the *fact banks* for their courses are most effective in teaching for the larger learning. Professors, with broad sweeps to their general courses, who constantly relate past efforts of man to contemporary struggles to master the universe and perfect a society, will involve students in a developmental experience that has a lasting impact.

Given a good faculty, the outlines of a good curriculum in general education can be easily staked out. Curriculum horse trading, back scratching and empire building are pitfalls in general education, however. Too many common cores have been divided — exactly separate and exactly equal — among the feudal barons of the major disciplines of knowledge in a college with the administration sitting nervously in the middle. The more honest efforts set out the values and competencies to be developed and set about developing learnings to be mastered. Then the question of who will teach the students is considered in depth.

Some interesting approaches are emerging as a result. Who would have thought in years gone by that a professor of "scientific humanism" would become a highly respected member of the academic community. Or that economics, sociology and psychology would lie

down together in a cross-disciplinary social science course. Or that professors who wrote their dissertations in Early English History could find fulfillment in courses entitled Western Civilization; or that archery, tennis and community health, scoffed at in the past as beneath the ken of solid academics, would come to be more and more regarded as experiences necessary for preparation for the new leisure and for providing leadership for perfecting communities where poverty and poor health conditions still grip a third of our population. Who, also, would have envisioned the new honors movement making as much or more headway in general education programs as in major fields departments or the new breed that is emerging from the wedding of science and technology with the new general education programs, engineers, accountants and agronomists recalling the wisdom of Descartes and Aristotles as they make their decisions in daily life. Thus is the new academia as a result of serious attempts at a more complete development of the students.

Still largely unsolved is the problem of evaluating the outcomes of general education experiences. Judgmental types of subjective assessments leave much to be desired in curriculum development. Educators are beginning to come to grips with the problem of providing empirical data to be used in conjunction with subjective appraisals. It is important to note that the thrust is toward supplementing rather than supplanting subjective with empirical data. Some change phenomena defy complete empirical measurement.

Measurements of behavioral outcomes of general education have had the inherent weakness of ending at the last final examination or testing session of the senior class. Recently some institutions, notably the University of California at Los Angeles, have structured studies designed to ascertain the impact of general education on the lives of students *after* they leave the institution. Participation as an effective citizen in the cultural, social and economic life of their communities, maintaining a healthy perspective regarding home, family and careers and persistence of inclination to improve their communities are regarded by many as the *real* test of a good liberal education in college. For the young adult in a technical and scientific profession oriented toward rural and village life, a further test might be adjustment of perspective and often of careers to increased urbanization and to rapid changes in occupational structures.

Indeed, the challenge of change is perhaps the greatest of all for curriculum makers. For theirs is the challenge of preparing young men and women to expect and, indeed, welcome change and yet maintain the roots of family and community

upon which a strong society must rest. In the years to come this challenge will become even more severe as technology and popula-

tion shifts work their changes into the fabric of American life. It will be interesting to note in what way and how well those who set the out-

lines of the larger learnings in the college will meet this challenge.

"Strengthening

College
and
Industry

Communications
for

Improved
Student
Understanding"

MR. R. C. MORTON

*Manager, College Relations
Ralston Purina Company
St. Louis, Missouri*

It is an honor to address this group of educators today and to be a part of your Annual Convention Program. In recent years, I have watched the activities of NACTA and this Conference is certainly an indication that your organization is making the necessary adjustments to play even a more important role than in the past.

Most every agricultural conference that I have attended over the last ten years has sent me home with renewed faith in my selection of agriculture as the field in which I could possibly make the greatest contribution to our society and achieve the most personal satisfaction. Each of you has attended dozens of such meetings, some excellent, some good, some not so good; but the facts and figures invariably presented an extremely favorable picture of the challenge which American Agriculture was facing. This was true in spite of the usual ill winds, surplus situations, public relations complications and a host of other "enthusiasm-dampening factors."

It has been obvious for quite a few years that the supreme test and challenge of our food production machinery was yet to come. "Never Was the Future So Close As It Is Now" . . . says Dr. Earl Butz of Purdue University . . . "American Agriculture is an expanding industry in every important respect except one . . . the number of people required to run our farms."

In the past six months I have had the pleasure of talking with over a thousand fresh young college students who are probing many different industries and companies in search of a career that will meet their expectations. They grant that the facts and figures indicate as much or more opportunity in agriculture than other industries, but

they have watched *people*, neighbors, their own families respond to the trends. They are anxious to enter the agribusiness phase of this fascinating industry, but they do so with uncertainty and inadequate information, consequently, a weakness in that vital quality, enthusiasm.

I hasten to add that other company representatives from various areas of industry share my concern over student attitudes toward the business world. Then let me qualify this statement to some degree, at least, and assume a great share of the blame for industry. My thoughts along these lines parallel those of many educators, but the remedy is not simple.

Enrollment in our universities from coast to coast is skyrocketing; Colleges of Agriculture which were sagging a few years ago are also enjoying new growth. And at the same time, most businesses are surging forward with good profits, expansion, mergers, diversification and the like. We are both so busy going up our own ladders of success that we can't take time to understand each others' motives.

We can't expect instructors who have never really been exposed to the business world to sell the opportunities which are available with sincere enthusiasm. And on the other hand, we can "crack industry on the knuckles" for being so busy in their "busy-ness" that they have neglected to accept their responsibility in this important area of education and attitude development.

Our colleges of agriculture have made excellent curriculum changes in recent years, with particular emphasis on economics, certainly an indication that our economic system has a great deal to be desired. Many schools have been able to develop economic courses with practical application to our changing business world; others, however, are deep in theory and may not be accomplishing the desired goal.

There has long been a distaste on the part of college students for sales positions, and this will not change overnight. Possibly it stems

from an unfortunate incident, or contact with a particular sales representative on the farm. As the influence and acceptance of technology reached new proportions in all of industry, the need for company sales personnel to become extremely important. Agribusiness organizations exist on low-profit margins compared with most other industries and repeat sales are essential for survival. The one-shot, high pressure salesman is a thing of the past. Today's successful marketing man builds a working business relationship with the producer that must be based on strength and profitability for all concerned.

If these observations are in any way accurate, there appears to be a big job ahead for both of us if we are to perpetuate the economic system which has produced for us the greatest society in the history of mankind.

Business, however, must bear the bulk of this load, but it will require your understanding and cooperation. Industry must be willing to give time and thought, our two most valuable assets to communicating with instructors and students and attempt to bridge the gap between these dynamic areas of education and business which are not thrusting forward too independently for each others' own good.

In addition, industry must be willing to invest dollars, a third asset of considerable importance to most businessmen.

Possibly industry's greatest concern today is in this vital realm of motivation. Every company can point to numerous examples of young men who entered their ranks with a weak scholastic record, or no college work at all. Yet these individuals had the capacity to recognize and reach for a challenge and become personally involved to the extent where they readily overcame their shortcomings. This is the exception rather than the rule, since the student's academic record is probably the best single measurement of performance potential.

"Life is an adventure in personal

experience and individual involvement."

"Anyone who is really alive knows that life cannot be a spectator sport. It is a game of personal involvement, of individual participation."

"Personal involvement in life also teaches the individual another inescapable truth, the necessity for teamwork in every endeavor. While life is not a spectator sport, neither is it a game for the loner. All people in a society, and in a company are interdependent. The active participants are the first to learn this. They see a personal opportunity in teaching the beginner, in informing the ignorant, in respecting the competitor, in understanding the enemy, in admiring the victor, in giving aid and comfort to the injured man or woman on the street, regardless of personal inconvenience."

This is the philosophy of our Company President, Mr. R. H. Dean.

Many peoples of the past have failed because they did not understand the *challenge of change*. This is why our most difficult problem in the era ahead will be our relationship with ourselves and our fellow man in the face of tremendous change. The 20th Century will go down in history as "a massive attempt at improving human relations."

The relationships which exist between all segments of agriculture have room for improved understanding. We have witnessed a

change from a production oriented industry to one that has rapidly accepted the importance of marketing. Assets and liabilities have become everyday language and the term "profit" does not seem to upset quite as many young people and non-industry workers as it has in the recent past.

A business school study at one of our widely recognized eastern universities showed that only 12% of their student body favored going into business as a career. This is disturbing, when you think of the contribution which American industry has made in the growth of this nation. Strangely enough, those countries behind the Iron Curtain which have scoffed at our business policies and methods have found it timely to re-introduce the profit principle into the operation of certain segments of their industry. These efforts will be marketing oriented, geared to meet the needs and desires of consumers.

Over the years, our company has sponsored a program exposing agricultural students to the actual operations of the business world. The response has been most gratifying. Programs of this nature take a great deal of time if they are to be effective. Too often, industry expects a "tour of the facility" to sell the merits of business. Concern in this area is genuine and not prompted by current manpower needs. We are sincere in our desire to see stu-

dents develop a greater appreciation for the business world, for profits, for competition, for personal involvement and deeply rooted motivation.

I don't believe there is a simple solution to the problem. Scholarships and other monetary offerings will do little to correct these areas of misunderstanding. Possibly the greatest single factor which could improve this relationship between the student, academic field and business world, would be in face to face discussions of topics involved. The printed word, unfortunately, often lacks the human qualities that are essential for understanding and thus acceptance.

Our Agriculture today faces the greatest challenge in its history. You are well aware of the population growth around the world, and the inability of other nations to meet their own needs. American agricultural technologists are in demand wherever food can be produced. You and industry, together, must accept this challenge if we expect to foster the type of freedom for mankind that we have enjoyed here at home.

I offer the hand of industry to your group, without reservation, realizing that both of us are deeply involved in our own responsibilities, but knowing that we can develop better young men that can meet that challenge if we strengthen our lines of communications.

The Roll of American Society for Engineering Education

An address by

MR. W. LEIGHTON COLLINS

Executive Secretary
American Society of
Engineering Education
Washington, D.C.

* * *

SUMMARY—Editor

A major point made in discussion of the purpose of the organization was the concern with the total program of education for engineers. A unique characteristic of this organization was pointed out as its being the only one of its type in existence. Its success has created interest in the establishment of similar organizations in foreign countries.

An individual membership of 12,000 and an institutional membership of 500 were reported. Various conditions and requirements of membership were discussed.

Attention was given to the organizational structure which relates to all aspects of engineering education. The necessary concern with technical programs was brought out at this time.

It was pointed out that levels of

college institutional membership were determined by accreditation of programs by the various professional societies. Commitment to continuous evaluation was presented as a basic tenet of the society.

Communication between the society and the membership was established as the primary function of the JOURNAL OF ENGINEERING EDUCATION. It is structured in three divisions: the staff, papers, and advertising.

The committee structure of the society was divided for discussion into two categories: (1) those needed by the society for continuous operation and (2) those concerned with special projects. These project

committees are charged with developing programs in new areas of concern within the scope of engineering education such as computers, space, ocean, etc.

Special studies such as curricula development, faculty development, and institutional development are among the concerns of the group. Outside funding of special studies is sought. Presently, examples are the National Science Foundation supporting a study of goals, the Ford Foundation supporting a study in programmed learning, while a program of faculty exchange is being financed by industry. A deans' conference is concerned with techniques of instruction.

Faculty development was presented as a major concern of the society. Colleges and universities are assisted in this regard by summer insti-

tutes, summer schools, short conferences, visits and special programs at annual meetings. These annual meetings are divided into sections of engineering specialization.

The staff of the society is composed of professional and clerical personnel.

Income used to support the soci-

ety is derived from the sources listed below in the amount indicated.

Individual Dues	40%
Institutional Dues	15%
Advertising	22%
Recoveries	11%
Other	<u>12%</u>
	100%

It was indicated that the cost of the JOURNAL runs approximately twenty-five percent of the total operating budget.

The business of the society is conducted by a board of directors and executive committee.

Following the main address, numerous related questions were posed to the speaker from the floor.

Report: NACTA-RICOP Liaison Committee

THOMAS J. STANLEY
Chairman

*N.A.C.T.A.-R.I.C.O.P.
Liaison Committee*

The N.A.C.T.A.-R.I.C.O.P. Liaison Committee was convened at the annual N.A.C.T.A. Convention at Southeast Missouri State College, Cape Girardeau, Missouri, April 17, 1966. Representatives present from N.A.C.T.A. were the chairman T. J. Stanly, Nicholls State College; Keith Justice, Abilene Christian College; Glen Karls, Southwest Missouri State College; and Lloyd Dowler, Fresno State College. R.I.C.O.P. was represented by Franklin Eldridge, University of Nebraska, who served as chairman of that group in the absence of the duly appointed chairman.

ITEMS OF BUSINESS CONSIDERED:

I. Representation of higher education in agriculture in the Office of Health, Education and Welfare.

It was pointed out that this department of the federal government had discontinued the position of liaison formerly filled by Dr. Henry Brunner. In view of the recognition of the importance of liaison between this department and institutions offering higher education in agriculture, and in consideration of the need of one group to relate its objectives to the other making direct communication imperative, the committee supported the suggestion that N.A.C.T.A. endorse a resolution to the Department of Health Education and Welfare requesting reinstatement of this function.

II. Reports from N.A.C.T.A. Rep-

resentative to R.I.C.O.P. Regional Meetings.

Representatives from N.A.C.T.A. were invited to and attended all regional meetings of R.I.C.O.P. It was reported that there is excellent rapport between the two groups. Participation of the representatives ranged from appearances on the agenda to participation in general discussion of common problems. Each reported the personal appreciation of information gained.

It was recommended by the committee that the practice of inviting two N.A.C.T.A. representatives to each regional R.I.C.O.P. meeting be continued.

The committee also recommends that the representatives to these R.I.C.O.P. meetings be given instructions as to their responsibility in speaking for N.A.C.T.A. or conveying official information to R.I.C.O.P. Representatives were: Southern — Keith Justice, Abilene Christian College; Central—Ralph Benton, Southern Illinois University; Eastern — Charles Cameron, New York State Agricultural and Technical College; Western — George F. Ilg, Fresno State College.

III. A few moments were taken to discuss the necessity of continued evaluation of programs of instruction in agriculture in terms of quality and purpose. Attention was given to the current visitation program sponsored by the Commission on

Education in Agriculture and Natural Resources.

IV. A short discussion ensued concerning the necessity of broadening the scope of the constitution for the purpose of reinforcing the efforts of N.A.C.T.A. to develop an active representation of all types of institutions offering higher education in agriculture. A possibility of similarity of purpose with the American Society of Engineering Education was proposed in this connection.

V. More effective relationship between the Cooperative Extension Service of each state and all institutions charged with resident instruction in agriculture was recognized. It was suggested that the Executive Committee give attention to the possibility of including a representative from extension on next year's program to speak to this point.

VI. The desirability of inviting an official representative from the education section of each of the professional societies to present developments in teaching in each area was suggested to the Executive Committee. It was recognized that this would be in keeping with the N.A.C.T.A. purpose of improvement of instruction. It was further considered that N.A.C.T.A. as an audience may serve as an extension of their efforts in education — subsequently leading into a permanent complimentary relationship.

The meeting was adjourned.

Commission On Education In Agriculture and Natural Resources

RICHARD E. GEYER

*National Academy of Sciences
National Research Council
Washington, D.C.*

The Commission, a unit of the Agricultural Board, Division of Biology and Agriculture, NAS-NRC, funded by NSF, has two objectives:

(1) The first is to continue to review trends in education for undergraduates in agriculture and natural resources; stimulate discussion, re-evaluation and improvement; and prepare recommendations for the development of academic programs in the future.

(2) The second goal will be to stimulate and assist in the development of the agricultural aspects of general education, especially but not exclusively general biological education, at all educational levels. This encompasses agriculture as a contribution to the cultural enrichment of the student population at large, as well as to the professional goals of biologists and other scientists and engineers.

Among the major current Commission projects are the following:

A program, co-sponsored with the Commission on Undergraduate Education in the Biological Sciences (CUEPS), to develop recommendations for desirable preparation in the biological sciences for undergraduates in agriculture, including agricultural engineering and natural resources, and to propose mechanisms for achieving this kind of preparation. Seven action committees representing various areas of agriculture and natural resources — animal science, plant and soil science, food science, environmental engineering, social science, agricultural education and natural resources — are studying and recommending desirable preparation for undergraduates in their areas. Reports produced by these committees, and a summary report, will be reviewed by professional and scientific societies during spring, summer and fall, 1966. This will be followed by a November 11-12 Conference on Undergraduate Education in the Biological Sciences for Students in Agriculture and Natural Resources, to be attended by deans and directors of resident instruction in agriculture and natural resources, and selected others.

A Conference on Undergraduate Teaching in the Animal Sciences, involving 20 animal scientists and several observers, will be held May 20-21. Purposes are to (1) assess the status of undergraduate education in the animal sciences, (2) recommend action, if any, that should be undertaken to improve undergraduate teaching in the animal sciences, and (3) suggest mechanisms for implementation of recommended action. This Conference may establish a pattern for similar conferences in other areas.

Conferences on undergraduate education in agricultural economics and phytopathology in August, 1966, and agronomy in November, 1967 will be co-sponsored with the appropriate societies. These conferences are a continuation of a program begun with conferences in dairy science and horticultural science held in August, 1965.

Panel visits to the agricultural divisions of Prairie View Agricultural and Mechanical College, Mississippi State University, Yakima Valley Junior College, Washington State University, California State Polytechnic College and Abraham Baldwin Agricultural College will be held during spring, 1966. These four-six member panels have two objectives: (1) to inform the Commission about the status of, and trends in, undergraduate education in agriculture and natural resources in the host institution; with special reference to new and successful programs, and problem areas, and (2) to assist the host institution in self-evaluation. The selection of visit sites reflects the importance of four types of institutions in education in agriculture and natural resources: Land-Grant, non Land-Grant, two-year and those attended primarily by Negroes.

A Panel on Natural Resource Science has been formed to be concerned with desirable changes in the education of scientists, resource managers and other professional personnel who will be involved in the use and management of natural resources. The Panel is taking into consideration the educational changes made necessary or desirable by the rapid change in the use of land and other renewable natural resources, and by the intensifying interest in wise use of our renewable natural resources. The Panel is developing model curricula for undergraduates preparing to be resource scientists and managers.

The Commission is conducting an informal study of the extent to which students other than those majoring in agriculture and natural resources are exposed to concepts in agriculture and natural resources that should be a part of their general education. The Commission may undertake activities in this area, depending upon the results of the study.

The Commission is completing a position paper on technician training, and has recently published reports of pilot studies of educational needs as seen by two agricultural industries.

Members of the Commission are: A. E. Darlow, *Chairman*, Oklahoma State University; D. G. Aldrich, Jr., University of California (Irvine); Lincoln Constance, University of California (Berkeley); G. R. Ferguson, Geigy Agricultural Chemicals; George A. Gries, University of Arizona; A. R. Hilst, Purdue University; Roy M. Kottman, The Ohio State University; and Lloyd E. Partain, U.S.D.A.

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The E. B. Knight Journal Award

W. CLYDE HYDER

In view of the interest that Dr. Knight had in NACTA and the Journal, it is Mrs. Knight's desire to establish a memorial in his behalf. After much thought and deliberation the following is proposed by Mrs. Knight: she will contribute to NACTA \$1000.00 which is to provide an annual annuity for the purpose of promoting interest in contributing to the NACTA Journal each year.

A plaque to be known as the E. B. Knight Journal Award will be provided. This plaque will go to the school from which the person receives the first place award. His name will be inscribed on the plaque. This plaque will remain at the institution of the winner until the next annual meeting of NACTA at which time it will be returned to the NACTA convention to be presented to the next winner.

A committee of three members will be appointed by the president of NACTA to direct the Knight Journal Award. The award (or awards) will be presented to the author or co-authors of the outstanding articles or papers published in the Journal during the calendar year preceding the annual NACTA Convention.

First place winner will receive \$20.00 cash award and the plaque will be displayed at the Institution of the winner with his name being inscribed thereon. A certificate will be provided by NACTA (suitable for framing) to the winner at the convention.

Second place winner will receive an award of \$15.00 and a certificate.

In the event winning articles are co-authored, each author will be provided with a certificate and the cash award will be equally divided between them.

The above being contingent upon the following:

1. Initial outlay of money is income tax deductible.
2. Should the NACTA organization cease to exist or discontinue the publication of the Journal, the original investment will be given to The E. B. Knight Agricultural Loan Fund at Tennessee Tech, which is Mrs. Knight's favorite charity.

D.T.A. Retiring President's Address

JOHN REYNOLDS

Delta Tau Alpha

Professor John D. Schatz of Southwest Missouri State College formulated the idea of a National Society for honor students specializing in agriculture at non-land-grant colleges. He proposed the idea to this very gathering eight years ago. Since its conception, 1189 young men and women have been accepted to carry forward the aims and ideals that each member of DTA agrees upon when becoming a member. The difficult formidable years of construction and orientation are now completed. Last year the annual membership was 148 with 82 initiates; while this year's membership increased to 327 with 215 initiates. We have successfully overcome the growing pains of youth and development and now we embark upon the sea of adolescence. Our purpose or plan of attack must change; the way will not be easy as we set forth to fulfill the remainder of our purposes and commitments.

In our infancy we have remained relatively unknown outside the immediate family. You members of NACTA are our parent and guardian who have helped us gain stability while taking these first steps. This year's national convention is the first one that will review and update our past actions. When a child is growing, many rules are laid down in order to protect him from harm and to insure his safety and prolong his life. But as the child matures and gains stability and good judgment, some of the rules are relaxed and altered to accommodate his new position of responsibility. At the national convention last year in Wilmington, Ohio, the delegates carefully considered our constitution with an open mind to changes that might help us become more effective on our local campuses and on the national scene. As a result of the last convention, chapters throughout the country have been delegated and have voluntarily submitted amendments to this end.

We have been active on our local campuses and fulfilled the 1st, 3rd, and 5th aims of our constitution: to include the areas of recognition of scholarship, leadership, and character among agricultural students; to bring together these young citi-

zens who have been thus recognized; and to cooperate and serve with other campus organizations within our respective institutions.

Now it is time to fulfill the 2nd and 4th aims: to encourage and foster high ethical standards in agriculture and professional positions held by agricultural students, and to promote the profession of agriculture.

These last two original goals of our society require a delocalizing effort by our chapters. As well as continuing the work on our respective campuses, we are now being called upon to meet the challenge of DTA on the national or international scene, wherever we are required. Naturally, we do not suggest that self-glorification or false pride is one of our thoughts or ideals, but a certain measure of promotion, publicity, or recognition may be necessary in order to increase our effectiveness and fulfill our obligations.

At present we have not attained equal footing with our fellow societies. Now that we have shown that maturity and stability are part of DTA and our future is bright and positive, it is our duty to examine ourselves carefully, improve ourselves, and seek to become accepted and recognized by our equals.

Last year our chapter growth increased by 50 per cent. This exceptional feat was the result of two years of hard work by the National Council. This past year was no exception. The National Council again set to work during the year to come to grips with various problems and decisions. Again, our chapter number is increasing, but we had a tough record to follow. For a while it was thought that chapter 17 and 18 would be added this year. As it turned out number 17 will be initiated at this Convention — Western Michigan University of Kalamazoo. With high ambitions, 152 colleges offering four-year courses in agriculture were contacted across the nation. Unfortunately, we received responses from just under 10 per cent. But the ground work has been laid and lists and files are available

to the future National Councils, indicating those contacted and their reactions. It is sincerely hoped that in the years to come the increase in local chapter numbers will be fruitful.

After years of discussing the question of Junior College membership, the National Council finally has formulated an amendment to present to the delegates which should once and for all answer this question. It is hoped that this action will be considered acceptable to the Junior College and DTA.

There were some changes in the DTA Newsletter this past year. These were aimed at creating a closer association among members of all chapters. Some of our ideas were successful, others less so. One action was to print enough newsletters so that each member would receive his own copy instead of the one copy per chapter as in the past. Also we changed from ditto to offset which created a better-looking

paper especially through the use of the DTA stationery for the first page. This method of reproduction widened the scope of the Newsletter allowing for pictures, etc. where applicable. The cost remained low. For approximately \$15 per month the total membership of DTA and NACTA leaders received a copy. This price included first class postage as well. The idea of featuring one chapter each month, including a written article and pictures of the local chapter together with its history and functions was not as successful. Only two chapters participated in this venture. Perhaps the National Council in the future may arrive at a method of modification to increase closer ties and understanding among chapters.

Just what does DTA do on local campuses? This is the question some of you who do not have a chapter may be asking yourselves. To be frank and honest, some chapters do very little as far as we can

tell. But this is on the negative side and indicates by far the minority. Let us consider the positive and the vast majority. The following items are taken from the Newsletters of this past year.

1. Academic help and tutoring
2. Community service projects: hurricane aid, cattle roundup for crippled children
3. Build and maintain agricultural libraries
4. Establish scholarship funds
5. Present awards to outstanding agricultural students
6. Organize and hold contests: livestock judging, parliamentary procedure

It may be concluded that wherever a Delta Tau Alpha chapter has been established on a campus that college community has benefited from its existence.

Agricultural Education for the 1970's at State Colleges

by

M. A. BROWN*

It would be extremely pretentious of me even to predict what modifications may or should take place in programs of Agricultural Education at state colleges other than Sam Houston State in Huntsville, Texas. I shall attempt only to explain the logic behind the changes (and, hopefully, advances) that our Agricultural Education program will undergo in the next few years. Perhaps our ideas may be of value to those at other institutions challenged by similar problems.

Two statements of particular significance to Agriculture appeared early in the recent REPORT OF THE TEXAS GOVERNOR'S COMMITTEE ON EDUCATION BEYOND THE HIGH SCHOOL:

"Agriculture is now scientifically oriented and requires skilled personnel in most of its operations."

"The trends toward urban and industrial dominance are destined to intensify."

These views reflected the philosophy of Administrators and the Agriculture Faculty at Sam Houston

State College as plans for the total program in Agriculture at the College during the next decade were developed.

Over one third of the employed persons in this country are engaged in some form of work stemming from Agriculture or its related fields. They are working in an industry which has doubled production volume and production efficiency in the past twenty years. Their leaders have been trained in a technology that has developed an advantageous blending of hybrids, chemical fertilizers, improved breeds, feed additives, pesticides and other advances. Further increases in trained leadership and advances in technology in Agriculture must keep pace with a national population that will exceed 200 million very soon.

The need for agricultural colleges is greater than ever. Instructional programs, however, must take new directions. Of our college graduates in Agricultural Education, less than one-half teach, while the majority now move into other agricultural positions. Banks need experts on farm loans and mortgages; and food processors need experts on how food is produced, stored, priced and marketed.

Sam Houston State College has a continuing role as a senior college to provide general training leading to baccalaureate and master degrees. Within this scope, Agriculture students must be trained for teaching, and for professional and managerial positions in those industries concerned with production, processing, and merchandising of food and natural fibers.

Several guide lines were used as plans were developed for the program in Agricultural Education at the College for the years 1965-1974. The department has a rich heritage of service to Texas. It was the first in the state to accept responsibility for training teachers as secondary school instructors in Agriculture. Through the years more than 1,650* have been qualified by Sam Houston State College. However, employment opportunities have increased dramatically in recent years for graduates trained in the business and technical phases of agriculture. Requests for off-farm professional agriculturists have increased. Management personnel for agriculturally related urban and rural businesses are in great demand. More junior college instructors of agriculture will be required.

*From data available at the Texas Education Agency.

*Professor and Director, Agriculture Department, School of Sciences, Sam Houston State College, Huntsville, Texas

Over the past seven years, majors in Agriculture at Sam Houston State College have increased from 342 to 567.** This represents a growth of nearly 66 percent. An increasing Agricultural enrollment at this institution has come during a period when numbers of students in many other agricultural colleges apparently have been decreasing. A growing student body would appear to be a decided asset to a forward reaching total program in Agriculture.

College Re-alignment:

Sam Houston State College has been re-aligned into six schools. They are: Applied Arts, Fine Arts, Education, Humanities, Science, and Graduate Studies. This alignment provides the administrative organization to enhance its role as a multi-purpose liberal arts and teacher training institution. The departments of Agriculture, Biology, Chemistry, Mathematics, and Physics comprise the School of Science. Instructional and research disciplines among these departments generally are complementary. Facilities and equipment located in one department may be used by another. Students enrolled in each of these departments may be expected to benefit from an increased coordination and communication developed within the school.

The Agricultural Education Program:

During the past seven years a total of 1,323* majors in Agricultural Education completed their requirements at seven teacher training institutions in Texas. Sam Houston State College qualified 302 students — more than any other institution. Almost 23% of the total degrees were earned at this College.

Sam Houston State College led also in numbers of Masters degrees in Agricultural Education from 1960-1964. Almost 44% of the total during these 5 years were earned at this College.

Major emphasis in Agricultural Education has been directed toward preparing students for teaching Vocational Agriculture in Texas high schools. Sam Houston State College ranks second in placement of students in the Vocational Agriculture program, 1959-1965. Of 352 placed, 84 (23.9%) were graduates of this institution.

**From data available at the Registrar's Office, Sam Houston State College.

*Compiled by Vocational Agriculture Teachers Association of Texas. Data from Prairie View A&M (58 graduates) were excluded, as placement data were not available.

There are 275 Sam Houston State College graduates among the present total (white) Vocational Agriculture instructors in Texas. They comprise 27.6 percent of this professional group.

Many graduates of the Agricultural Education program have elected to enter other professional agricultural occupations. An occupational study of such graduates from seven Texas institutions, 1959-1965, disclosed that 22.6, 22.1, 17.6, 11.9, 8.7, 6.5 and 6.6% entered Vocational Agriculture teaching, science teaching, professional agriculture, graduate study, farming or ranching and other fields, respectively.

Placement possibilities for graduates from the Department appear brighter than ever before. Faculty members are expecting an enrollment of over 1,000 Agriculture students in the years immediately ahead. They look forward to the challenge, realizing that employment opportunities in Agriculture are attractive for students well trained in various modern agricultural curricula.

The Agricultural Education Curriculum:

Three curricula in Agriculture are listed in current catalogs of the college. They are Agricultural Business, Agricultural Education and Agricultural Science. At present, department majors are divided about equally among the various courses of study.

The Agricultural Education curriculum has served in the past to prepare students for teaching Vocational agriculture. It has served also in training for agricultural occupations where a fairly general knowledge in Agricultural Science and the communications skills developed through this program are at a premium. As more students each year have elected to accept professional positions in agriculturally based industries than to teach, it appears that greater emphasis should be placed on the technological aspects of the curriculum. It is proposed that students desiring training in this area be identified with an Agricultural Science curriculum. Prospective teachers of Vocational Agriculture then would complete additional course work required for certification.

During their Freshman and Sophomore years, Agricultural Science majors will be expected to complete specified *basic* course work in Agriculture, Biology, Chemistry, English, Geography, History, Mathematics, and Physical Education. Only courses readily accepted for transfer credit at other agricultural institutions have been included in each discipline. For example, the basic course in Zoology recommend-

ed for pre-medical, pre-veterinary and science majors has been specified in the Agricultural Science curriculum.

In the Junior year, students will undertake specified *advanced level* courses in Agricultural Marketing, Agricultural Mechanics, Animal Nutrition, Crops, Genetics, Government, Micro-biology, and Soils.

Course work has been designated rather rigidly in the first three years of this curriculum. It was done to help insure that students would acquire broad and solid foundations in the major agricultural and liberal arts disciplines.

Agricultural Science majors will be free during their last year to select areas of specialization in Agricultural Technology, and Humanities or Agricultural Education. Students electing the latter course of study will follow guidelines of the State requirements for certification. The Provisional Certificate in Vocational Agriculture usually may be earned in one semester after completion of requirements for the B.S. degree.

Prospective employers of Agricultural Science graduates desire personnel proficient in leadership and communications skills. Concerted efforts are made throughout our program to help students develop these important traits. Seminars, term papers and oral examinations are used often in advanced courses. Students also are guided and supported strongly by Agriculture Department faculty members to gain extracurricular experiences in counseling, tutoring, student organizations, judging contests, campus and departmental tours, social events and others.

Modern, well planned and equipped laboratory and farm facilities will be required if the College is to compete successfully in the future for superior students and faculty members. New facilities *have* been planned for Sam Houston State College. Limitations of time do not permit me to discuss further this important aspect of our program.

Summary:

The total program in Agricultural Education at Sam Houston State College is built on a rich heritage of service to Texans. It has been unsurpassed in providing Vocational Agriculture instructors for Texas High Schools. This program is undergoing major changes in view of shifting emphases towards increasing employment opportunities for Vocational Agriculture students in off-farm agricultural occupations. The improved program is important

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and deserves continued emphasis. The total program involves superior students, curriculum, faculty and facilities joined in a forward reaching, harmonious blending of instruction, research, demonstration and public service. Administrators and the Agricultural faculty at Sam Houston State College are pledged to this end.

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