PRESIDENTIAL ADDRESS

SOCIETAL RESPONSIBILITIES OF ACADEMIES OF SCIENCE AT MID-CENTURY

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One of the rewards of membership in a type of society like ours is the speculative interest in the comparative objectives and achievements of the richly diversified programs of the various academies of science in the United States. It is not intended here, however, to inventory, form or functionwise, the work of each academy, nor to appraise score-board fashion the comparative scope and efficiency of organization and operation of these academies. Neither do we propose to suggest what may constitute a model society, one which may best serve not only its own interests but those of our educational institutions, industry, and society as well. It is our object rather collectively to explore elements of strength and weakness in the general pattern of such programs with particular reference to the extent and manner in which the contributions of the societies to science are functionally integrated into human affairs concerned with the total economic, social, and spiritual well-being of man.

Relevant to the subject to which we would address ourselves are such questions as:

1. Should the activities of the scientist in part deal with human values, with the nature of man and his destiny?
2. To what extent do science programs attempt to relate the findings of one branch of science to another, of the natural sciences to the social sciences, and of the sciences to the humanities and religion?
3. In what way is the work of the academy oriented towards the social, economic, and political problems of our atomic age?
4. And finally, how are the above questions related to the problems of most of the academies in getting adequate publicity and funds for properly supporting the objectives of the academy and its publications which, according to our questionnaire data, are very prevalent and chronic issues.

These are some of the questions we wish to explore on the basis of relevant literature and a questionnaire submitted by the speaker to science academy secretaries.

Nature of Academies of Science

There are some two-score state and regional academies of science in this country, ranging in membership from somewhat over 100 to 1400. Great diversity exists in organization and functions. C. L. Baker, in a recent attempt to draw up a so-called model constitution and by-laws for a state academy of science, based on the examination of the constitutions and by-laws of 35 state academies, has tabulated the objects and purposes of these academies in ten categories. We note that about

half of these academic state their purpose or object to be "the promotion of research in the various departments of science and the diffusion of scientific knowledge." One fifth seek to "promote intercourse (fraternal relationship) between men and assist in developing and making known educational, material, and other resources." One seventh indicate "unification of scientific interests in state." Four mention "publication of papers" as a leading function. "Encouragement of scientific work in state," and "holding of meetings to further said objects" are each listed for two of the academies. Other purposes, to "promote science, publish, and form libraries," and to "investigate department of the State government" (1).

The Unprecedented Preeminent Position of Science and Scientific Societies in Our Atomic Age

I am sure that we all agree with the observation with Jewett that "Science, scientific research, and the men of science have, for the time being at least, been put in a front row position in human affairs" (9). The science academy stands ever ready to share its responsibilities with other agencies of society and government to provide what President Eisenhower has referred to as "the more abundant life." Life itself—the President's own life right now—is being extended as a result of biological, medical, and technological research, under the providence of God. And it is in our state academies where many of the new concepts and exploits of science have had their premier presentation and discussion. I personally recall at this moment the pioneer work in synthetic rubber by the late Father Nieuwland of our host institution. Many other epoch-making discoveries by other members of our own academy and of other academies could, of course, be cited.

It is in the academy also that fruits of the so-called scientific method —the greatest of all achievements, perhaps—have been impressively demonstrated in its manifold application to all the branches of science. Whitehead, as quoted by Compton, has characterized it as, "the invention of the method of invention" (4). Thus, as he observes, "The prophecy of Francis Bacon has now been fulfilled; and man, who at times dreamt of himself as a little lower than the angels, has submitted to become the servant and minister of nature."

It is in the academy moreover that research in "pure" science has received extraordinary emphasis and thus prepares the way for technological advances in engineering, in medicine, in industry, and in the applied arts generally.

Members of science academies throughout the country—and practically each state has one, besides an occasional municipally operated academy—share much of the credit for many of the primary researches which ultimately have made head-line news. To mention only a few: nuclear science, which promises to give us an infinite supply of power; electronics, which may yet make distant and instant person-to-person vocal and visual communication possible; pediatrics and geriatrics, which have phenomenally extended life's span. Anti-biotics are winning the fight against infectious diseases. Synthetics have come to be accepted to

such an extent as to suggest possible future obsolescence of the conservation program in many departments of nature's realm. Genetics and Agronomics point to an eventual inexhaustible food supply; and, together with the technology of applied mechanics in all its industrial forms, promise to provide not only adequate sustenance for all the peoples of the earth, but to raise the standards of living of all even above the level now existing in the United States. Or so at least we are led to believe by those who feel there are no limitations to what science can do. "Down to earth" thinking, as an expression of perspicuity, may soon have to be replaced by "space-mindedness," to indicate conversancy with the new realities of the inter-planetary affairs of men!

The Limitations of Science and of Academy Programs

Highly acclaimed, then, as are the phenomenal achievements of modern science and the numerous well-planned programs of our academies, certain limitations and shortcomings in the record of scientific contribution, I think we would all agree, are not difficult to discover. The record, impressive as it is in reflecting the scientists' genius for supplying the material needs of society, does leave much to be desired in integrating the findings of science with the social and spiritual values of human society. Increasing concern in this matter, as indicated by a rapidly expanding literature on the subject, has further stimulated my interest in this question and led me to prepare the questionnaire referred to previously to determine the extent academy programs are planned for developing unification and integration of science and humane concepts. On this point the question asked was: "Does your annual or other periodic program include a planned program, or a special panel, or separate paper section designed to show the field or functional relationships 1) between two or more of the natural sciences; 2) between the natural and social science disciplines and the humanities?"

Certain other questions were also included in the questionnaire for the purpose largely of determining how the program of the academy directly serves society, industry, and the state. Such an integral relationship is considered significant in winning adequate moral and financial support of the academy's activities. It is here generally assumed that state agencies, educational institutions, private industry, and the public generally, will more generously support a society whose program is partly oriented towards the humane as well as the material aspects of our culture. It is relevant here to note that the secretaries of state academies in a great majority of cases indicated a real problem in achieving adequate financial support or even satisfactory publicity for the work of the academy.

The data received from twenty-seven questionnaires and programs in response to our first question reveal the following: Sixteen, or nearly sixty per cent, indicate no planned integration programs. Three indicate a lecture or an address, and one a symposium on relationship concepts or values, as expressed in the following manner: "The annual lecture is generally planned in such a manner to show relationship between different fields." "Presidential address often of this sort." "Academy address

frequently overlaps." One reported a symposium: "For the last three years at the Annual Meetings symposia on various subjects have pointed up these relationships." This latter one sounds like an excellent idea for attaining the objectives I wish here to stress.

Most of the other programs are of the conventional type, listing papers on specialized research projects in separate commonly recognized science divisions. Some of them do, however, combine two or, in a few instances, three or more subject matter specialties in one section. Such a type of program, however, does not necessarily make a conscious attempt to coordinate or integrate subject matter in the several fields. What it commonly represents is a mere avoidance of creating too many sections, especially if they be small, and so combining those which do have some organic relationship. In this category, for example, we note the following responses: "We had a joint meeting of chemistry and physics sections last year," and "Physical Sciences meet in one section." Still another: "Papers on sciences and humanities are scheduled together." This last statement reveals a rather unique situation, you will observe, since here the humanities appear in juxtaposition with science, and the program includes even the arts in the title of Science, Arts and Humanities. Two other state academies were found to have this type of integral organization.

The next part of our questionnaire deals with science-society integration aspects of academy activities outside the regular program meetings. Questions asked are: "Does the Academy in any way perform a specific service to the state or other agency, in addition to making the usual contribution towards advancing the frontiers of science through the research work and papers of its members?" And, "Are there any cooperative industrial, conservational, or other research programs engaged in by the academy?"

Answers to the first of these questions with reference to services to state or other agencies may be placed in four categories: No special services of which there were 5; science and science talent promotion programs, 8; science instruction and exhibits, 6; aid of some kind to the state, 4. It should be kept in mind that neither the question nor the answers as I have classified them here are definitive nor complete, but the results, nevertheless, may serve as some criterion as to the extent and relative importance of the various kinds of academy-rendered services to society and the state.

A few representative statements may make these classified responses more meaningful. Some form of science promotion and science talent recruitment stand out by far the most significant. Sponsoring of a junior academy heads the list. Thus a report that "The academy is contributing more each year to the improvement of pre-college science education and the recruiting of students into science. It is on the agenda for the fall meeting to set up a speakers bureau and a 'Big Brother' system for helping the Junior Academy with projects for the academy meeting and science fairs and exhibits."

Direct educational facilities, closely related to the previous activity, consist of sponsoring state and regional science fairs, setting up or

operating in one case or another a library, a museum, an arboretum, an aquarium, or a planetarium.

In the way of service to the state, one reports direct charge of a memorial arboretum in one of the state parks; another sponsors a research laboratory for the state. Three academies report advisory services on state legislation, of which the following is an example: "The Academy takes an active part in sponsoring legislation which may contribute to a better program for wildlife conservation, advancement of science education, and similar activities."

The third question was intended to determine whether any research project was being pursued by the academy per se, and not as a personal matter of a special individual research grant. Thus interpreted, only three of the twenty-seven responding, indicated such organizational activity: one academy co-operates with the state in operating a biological station; another a Gulf Coast research laboratory "on the planting and growth of oysters"; the third engages in "research under contract with state and Federal agencies."

With no pretense at presenting a complete inventory of the functions of all of our science academies, I believe we are prepared to draw the following conclusions:

1. The majority of the academies have no programs of any kind formally dealing with developing inter-disciplinary concepts directed at a better understanding of the relationship of scientific formulas and philosophies to the complex of human values and patterns of living in our atomic age.

2. Though the record of academic activities is more positive with respect to promoting or participating in projects designed to extend the services and influences of the academy beyond the annual program, it is obvious that here is a challenge to the numerous societies who have not as yet seen fit to engage in enterprises richly abounding in publicity values and conducive to a more adequate financial support of the entire academy program.

It seems an anomalous situation that academies whose scientists give so generously of their time and talents to contributing papers at the annual meeting, should experience a chronic financial publication problem, as is attested to by a report of a committee of the Academy Conference in 1954 appointed to study financial policies and practices of academies (14). According to this study, twenty-seven of the thirty-seven academy respondents indicated increase in dues within the last seven years, and further reported that financing the journal publication "is a major problem in most academies"; "that half of the state academies receive some state aid for publication purposes"; and that at least one without such aid ceased to function. Our own questionnaire revealed a similar situation. Ten indicate a definite publication problem of one kind or another, chiefly financial.

A New Look at the Nature and Scope of Science

If the observation is sound that our science academies should make greater attempts to bring the works of science into closer co-ordination and co-operation with those of other disciplines, and all of them into

the framework of unified knowledge of the nature of man, his purpose, and his destiny, what then may be our approach? First of all certain basic assumptions seem essential, namely:

1. The same high degree of validity of knowledge may be found in non-science fields as in science, even though the concepts of these other disciplines do not lend themselves to the precise mechanical measurements or mathematical formula found in an average scientific research experiment.

2. While narrow departmental specialization seems to be inherent in the successful pursuit of basic or applied scientific research, too often such specialized knowledge remains in water-tight compartments, and therefore loses much of its social value.

3. Certain traditional views of science may have to be abandoned or greatly modified in order for science to effect a coherence with the social sciences, with the humanities, or for that matter with religion. Granted that science deals characteristically with measurable values, whereas the human values may not be so measured, it is rather misleading to refer to science as "exact" even in those areas which lend themselves best to observational and experimental measurement. Leaders in science no longer talk in terms of absolutes and infallible findings. Thus, A. H. Compton, one of America's most celebrated physicists, as quoted by Long, observes that "Natural phenomena do not obey exact laws. . . . The movements of the smallest units of matter and light are unpredictable (11)."

This Theory of Indeterminacy, as it has come to be known, is based on the principle that the very act of observing the motion of an electron is said to change the electron's course, and, therefore, forever precludes the possibility of predicting its future behavior (3).

4. This profound observation of the nature of matter or energy, and man's limitation in exploring it in scientific fashion, should make every scientist humbly realize the import of the statement by the late Einstein that the scientific method can teach us nothing else beyond how facts are related to and conditioned by each other (8). This should be a warning to the scientist who holds that science is altogether self-sufficient in providing human happiness and in resolving human problems. Again, here a statement attributed to Einstein seems apropo: "A little science leads away from God; more science leads back to Him." The moral of all this would seem to be that the truly distinguished and consecrated worker in science will be extremely cautious in not confusing theory with fact, especially when dealing with controversial issues on man with respect to his origin and his destiny. In making his own distinctive contribution to the understanding of human nature, human behavior, and human problems, the scientist will carefully distinguish between what is true science and pseudo-science, or what has been called scientism or scientology.

The Socio-Economic Factor

Granted, then, that the scientist must share with co-research workers in other fields problems concerning the well-being of man, what may be some of the specific areas of investigation of human society which

pose a common denominator of interest and service? Time will not permit more than a few general observations. First of all, the humanitarian scientist will not be satisfied with doing what he can to promote the standard of living in his own country, but to do his part in extending the benefits of our mid-century technology to all the under-developed regions of our globe and to the underprivileged peoples of the earth regardless of race, creed, or color. The inequality of geographic distribution of man's material and spiritual heritages in this world is probably the most outstanding fact of human society. If so, then our basic research program of analyzing and resolving national problems and international tensions must have a regional orientation. We need to have a clear picture of the inequality of man's own distribution. Viewing the land masses as a whole, we find approximately half of the world's population living within less than 9 per cent of the total land area. Continent-wise, the situation looks something like this: Europe, with 4 per cent of the world's land area, supports 18 per cent of its population. The Americas, with 28 per cent of the world's land area, harbor 13 per cent of the world's population. On the other hand, Asia, with 30 per cent of the world's land area, has 54 per cent of its population; while Africa, with 23 per cent of the world's land area, contains now only 7 per cent of its population (2).

What is even more significant geographically is the inequality of arability or productivity of regions within the several continents. Thus on the basis of map studies of world land possibilities by Pearson and Harper, it was found that "17 per cent of the land is too cold, 66 per cent too dry, 36 per cent too steep, and 54 per cent too infertile. Allowing for overlaps, the remaining area suitable for cultivation is thought to cover 7 per cent of the land" (Cressey, *op. cit.*). About one-half of mankind live in countries whose per capita income is below $200 as compared to $1000 in our own country. If we add to the above such a statement as that of de Castro (7) that "Most of the unrest between the Eastern and the Western World is definitely related to the poverty-ridden conditions of two-thirds of the people of the earth—most of whom go to bed hungry every night, hungry or at least critically undernourished," we may begin to see some of the world problems in proper social, economic, and even spiritual perspective. For as de Castro concludes, "Hungry people cannot be spiritually uplifted."

Data, such as the above, may prove most disconcerting to the layman, but challenge the scientist and technologist. The idea held by some that the so-called "backward races" are inherently incapable of advancing with our aid to our concepts of civilized life has been pretty well debunked. The famous world historian, A. J. Toynbee, for example, reportedly maintains that "The so-called racial explanation of differences in human performances and achievement is either an ineptitude or a fraud" (12).

Areas hitherto said to be too cold, too hot and humid, too dry, too rugged, too infertile, or too uncivilized are, in numerous instances, progressively being transformed into habitable and even hospitable regions. Not only that, but many lands of frustrating natural endow-

ments or backward cultures have, as a result of instant communication and facile transportation, been integrated with the more productive and progressive peoples into one world community. Admittedly, population pressure and extremely low standards of living in some excessively overpopulated communities may present seemingly insurmountable problems, requiring joint remedial attack by all academic, societal, and governmental agencies. The United Nations Educational, Scientific and Cultural Organization and our own government's so-called Point Four Program point the way towards self-rehabilitation of the under-privileged countries with the aid of such technical help as we are prepared to give them. Though national and international in scope, problems of such profound social, economic, and political implications may well concern the science academy.

Moving closer in to our own state settlement and resource development problems, one might very well wish for a joint attack by our academy and the state on the more critical conservation problems which the state alone may find rather difficult to handle. Instead of an occasional paper on some phase of conservation presented as now independently, arrangements might be made to carry on in co-operative fashion a systematic and sustained program well integrated into the overall objectives of the state conservation department.

A similar type of contract might be made with the state planning commission, where there is one, as in the case of Indiana, to aid that body in exploring the natural resource patterns of the state as we find them directly related to regional, county, and community planning programs. Direct participation in such programs would demonstrate both to the state and the public the worthwhileness of academy activities and hence worthiness of adequate financial backing.

A Sound Religio-Scientific Synthesis of Man and His Destiny The Challenging Educational Program of Our Atomic Age

Identified with the educational program of a Church-related university, and with a department—Geography and Geology—which has, so to speak, one foot in the Natural Sciences and the other in the Social Sciences, I have come to feel that the goal of all higher learning, the understanding of man and his responsibilities to God and his fellow men, can be attained only when we take a unified look at religion and reality. I speak here now not as one of the clergy, but of the laity; not as a theologian, but as a fellow-scientist. On an occasion such as this there is no intent to expound any particular creedal philosophy. I am well aware that any treatment of such a complex subject as the religio-scientific synthesis of man must by its very nature be an individual's credo. However, examination of some two-score recent publications on the subject, written by both leading churchmen and scientists, has confirmed my earlier conviction that today, more than ever before, the religionist needs to know more about science; and the scientist must know more about religion. What is needed in this day of confusion and threatened destruction of world civilization are more symposia to show how the obli-

gations of man to his God and to his fellow men are revealed in the Divine commandment to man to "subdue the earth."

It is obvious that no understanding of life's realities and responsibilities can be complete without a unified consideration of man and matter any more than we can get a rational concept of man's global relations without noting how the various regional world environments complement each other in the world economy. It is to the following topics, then, to which in conclusion we would briefly address ourselves:

1. The Need of a Coherent View of Science and Religion—The old-time traditional conflict between church and science is familiar, I am certain, to all of us; its history need not be elaborated here. What is probably more germane to our present task is to emphasize that such conflicts must necessarily be classified for the most part as church dogma and science dogma, and not religion and science as such. For truth and reality cannot be divided against themselves, whether religious or scientific. Teaching of religious and scientific truths must be mutually relevant and reconcilable. Such an axiomatic proposition, however, we all realize is not as self-satisfying as it seems. Responsibility for incompatible religio-scientific viewpoints in the past can be laid at the doorstep of both the religionist and the scientist. Thus, of the former, Cosmos Indicopleustus, one of the most distinguished scholars and widely traveled churchmen in the early mediaeval period, who contended in his Christian geography that the earth must be flat. One recalls here also Luther's evaluation of Copernicus' *De revolutionibus orbium coelestium* as the work of an over-witty fool who would overturn the whole art of astronomy, and defending instead the Ptolemaic system with which Luther's exegesis of Scripture seemed much more compatible. On the side of science, a theory or dogma can likewise prove not only incompatible with religion but with science itself. Thus, all of us recall how at one time the scientists accepted the doctrine of spontaneous generation subsequently discredited by the famous bacteriological experiments of Pasteur.

It is very understandable that a religionist should look askance at any scientifically unproven theory based on a mechanomorphic view of the origin and development of life, ruling out divine creation and providence. For those of us, who have faced the problem of a harmonious religio-scientific syntheses—and what person versed in religion and science hasn't had this challenge—much guidance and reassurance may come from the fact that some of the world's most creative scientists have found a way of holding a "faith with propriety and with intellectual integrity." Among such are the all-time distinguished astronomer-mathematician Newton; astronomer Kepler; chemist Boyle; botanist Ray; the chemist-physicist Faraday. All of them looked upon nature as the direct handiwork of God and not as God itself rationalizable through some chance interpretation of purely mechanistic forces. Just as the scientist must help the missionary remove superstition from the more backward areas of the world, as does Albert Sweitzer, rated by some as the world's most distinguished citizen, in the wilds of Africa—so we in America have a challenge to find the formula how science and religion

may be joined in man's liberation. The key to such liberation, as Kettner has so well pointed out, "lies in the ethical strength which arises from the integration of the scientific and religious spirit" (10).

2. Some Obstacles on the Road to Religio-scientific Integration—I have already alluded to the problem of the traditional controversy between certain exegeses of Scripture and certain postulates of science. Attempt to resolve an apparently irreconcilable situation has often resulted only in posing another problem, such as compartmentalism. Coulson in a Riddell Memorial lecture at Oxford (5) points up two pitfalls responsible for a lot of confusion. To quote: "The first occurs when we try to behave as if science and religion could be completely separated from each other with no points of contact, in much the same way that in a space of three dimensions two straight lines can be perfectly straight and infinitely long without in general ever cutting across one another." It is said of Michael Faraday that "when he turned from his prayers to his laboratory he forgot his religion; and when he closed the door of his laboratory to leave it he forgot his science."

"The second false assumption is that science and religion occupy contiguous regions, so that starting with science and continuing as far as science can take us, we eventually arrive at a boundary where science hands us over to religion. In much the same way, we exchange one set of laws for another when we move across the frontier that divides one country from its neighbor. . . . Isaac Newton in his *Opticks* could write that 'God in the beginning formed matter in solid, hard, impenetrable, movable particles'. But after that they were left to their own interactions. 'These particles', he said, 'are moved by certain active principles, such as Gravity . . . and the cohesion of bodies'. According to this view, God is restricted to the original winding-up of the universe, and to quote once more from Newton, in his *Principia*—'The rest of the phenomena of nature . . . all depend upon certain forces by which the particles . . . are either mutually impelled towards each other and cohere in regular figures, or are repelled and recede from each other'." When Newton found that his universal law of gravitation did not explain certain other celestial phenomena, then once more he invokes Divine intervention, observing, for example, that "the diurnal rotation of the planets could not be derived from gravity, but required a Divine arm to impress it on them."

Dogmatism can be still another stumbling block to real religio-scientific progress. On the phenomenon of meteorites one is reminded here of the scientists of the eighteenth century who, as Whitehouse points out, could not conceive of meteorites falling from Newton's well-ordered sky. The stories of such happenings were therefore dismissed as the pious religiosity of peasants who still regarded the sky as "the abode of the gods" (15).

Humorous and harmless as some of the above observations may seem, certain scientific dogma can be a very serious and faith-destroying matter. Such is the modern dogma known as "scientism" or "scientolatry." Because of the phenomenal achievements of twentieth century science, climaxed in the researches of nuclear fission and fusion, science

has in some quarters come to be revered and exalted to the level of revealed religion itself—fully self-sufficient to deal with the body, mind, and soul of man. "This peculiar form of idolatry," as Owen observes, "refuses to recognize the limitations of science and claims that its working principles can be used as universal principles, in terms of which the whole of reality can be explained and controlled" (13).

Recognizing that "science and religion are both necessary to the understanding of life and reality," Owen concludes that "the essential requirement of the present day is the construction of a synthesis between findings of modern science and the older truths of religion. It is the only way in which religion, on the one hand, can be prevented from withdrawing into idealism and other worldliness; and the 'scientific' age, on the other hand, can be rescued from ruin in antihuman collectivism."

Summary and Recommendations

The mid-twentieth century scientist has come to occupy a leading position alongside the statesman in world affairs. His role in humane affairs per se does not appear to be so well established. Our primary concern in this paper has been to focus attention on the contributions that the scientist, through the State Academy, can and should make to the combined material, social, and spiritual well-being of man.

Science academies in the United States by and large have given a good account of themselves in extending the frontiers of knowledge in practically all branches of pure science; in some instances the society also embraces certain applied sciences, the arts, and the humanities.

Some two-score societies are identified with the American Association for the Advancement of Science Conference. Over a score of them sponsor a Junior Academy of Science. Further promotion of educational interest in science and recruitment of talented youth for science has been achieved through the program of Science Talent Search.

Grants for research from one source or another, including the AAAS, and subsidization by the state or otherwise to help finance the publication of academy papers, have greatly stimulated and aided the State Academy in its objectives.

Despite the ambitious programs and otherwise strong organizational structure of the average state academy, most of the societies experience financial difficulties. Seventy-three per cent of those replying to Mr. Robertson's questionnaire report an increase of dues within the last seven years. On the basis of my questionnaire, it appears that publication is one of the chief difficulties, the problem being primarily financial.

The suggestion is here made that the State Academy explore every effort so to organize its program and other activities as to be of direct service to industry, the state, and to society generally. It is recognized that a certain amount of such service is already being rendered—by some more extensively and intensively than by others. On the basis of the thesis of this paper, several recommendations are offered with the view of achieving increased interest and support of academy programs:

1. That we strive to include in our sectional programs one or more papers which touch on some vital public issue having current news

value: e.g., the application of some scientific principle of direct use to industry or business; the implication of some scientific discovery on a social, economic, or political problem.

2. That a separate session be arranged in the form of a symposium, a panel program of some kind dealing with a broad theme of sufficient scope to include participants from several science disciplines. On occasion, as the theme may warrant, the panel might well include representatives from any or all the other academic disciplines outside of science proper. Themes would be chosen from broad areas of human interest and activity. "Population Dynamics," for example, was such a theme used by the Indiana Academy of The Social Sciences at this year's meeting at Indiana University; it included references to resources and technology as well as to demography.

3. That we offer our services directly to such state and other agencies which can profit directly from the research which academy members are prepared to undertake. I am thinking here, for example, of the State Department of Conservation; the Indiana Economic Council, the state planning agency; and also industrial establishments. Assistance on specific projects, expertly done, may well merit in return the kind of subsidization that is needed to carry on most effectively the work of the Academy.

4. That the society-centered program be given full publicity so that the educational institutions of the state and the public generally may become aware of this new effort on the part of the Academy to integrate its services into the affairs of the state and of society.[1]

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