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THE STATE ACADEMIES OF SCIENCE AFFILIATED WITH THE AMERICAN ASSOCIATION[1]

SINCE the New Hampshire Academy of Science is now affiliated with the American Association for the Advancement of Science and is advancing shoulder to shoulder with twenty other affiliated state academies, it seems worth while to learn what these other organizations have accomplished and in what activities they are at present engaged. This address presents some of the results of a study of those questions.

Brief statements concerning the organization and work of sixteen of the affiliated academies were published in the last volume of "Summarized Proceedings of the American Association" (1921–1925), which appeared in December, 1925. Since that time five additional academies have become affiliated with the association.[2] In preparation for the study here reported, a questionnaire of eighteen specific questions was sent to the secretaries of all the academies in this group, excepting our own, and all but two of the twenty secretaries responded, some of them sending additional information about their academies. That the secretaries were keenly interested in the study is shown by the receipt of many publications from fourteen academies. Several of the secretaries expressed a desire to receive the results of the detailed study of the material collected.

Academies affiliated with the American Association exist in the following states: Alabama, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Michigan, Nebraska, New Hampshire, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania,[2] Tennessee, Virginia, West Virginia, and Wisconsin. Reference to the map shows that these states form a group extending from the Atlantic Ocean to the Mississippi River, with an arm extending from Iowa through Nebraska and Kansas to Oklahoma. The region south and west of the last named states has no affiliated academies at present, partly because it is covered by the Pacific Division and the Southwestern Division of the American Asso-

[1] From the address of the retiring president of the New Hampshire Academy of Science, delivered at Waterville, N. H., June 4, 1927.

[2] A sixth additional academy (of South Carolina) became affiliated October 17, 1927. There are twenty-two in all.

ciation.[3] Some of the states in the regions of these two divisions have unaffiliated academies, as is also true with several other states outside of the regions of the divisions.

Of the twenty-one academies to be studied, sixteen have as their titles the name of the state followed by the words Academy of Science. These apparently take *science* to cover most of the field of classified knowledge and orderly thinking. Three use the phrase Academy of Sciences, thinking apparently of the cooperation and coordination of the separate fields into which science is too often or too definitely split up; these three academies are those of Maryland, Nebraska, and Louisiana, the last-named of which takes the name of the New Orleans Academy of Sciences. The two remaining academies add two other fields of intellectual effort. They are the Michgan Academy of Science, Arts and Letters, and the Wisconsin Academy of Sciences, Arts and Letters.

The New Orleans Academy is the oldest of the twenty-one present organizations, having been formed in 1853, and the Alabama Academy is the youngest, formed in 1924. There seem to have been three active periods of academy formation; three academies were formed in 1866–1870, five in 1885–1894, and eleven in 1902–1924. There seem to have been obvious though slightly less well defined active periods of academy formation in the years following the civil war and directly after the world war. Historians may see some significance in this last observation. The Iowa Academy of Science was organized in 1887, though it succeeded the Iowa Academy of Sciences which lived from 1875–1880. The Maryland Academy of Sciences was reorganized in 1866, as the successor of the Maryland Academy of Science and Literature, which was itself a reorganization in 1819 of the Academic Society, formed in 1797. To the Maryland Academy belongs the credit of being the pioneer in this field.

In this connection it should be mentioned that the formation of the New Hampshire Academy of Science in 1919 occurred at the suggestion of Dr. J. McKeen Cattell, editor of SCIENCE, the initial steps in the actual organization having been taken by a committee consisting of Professor John H. Gerould, Professor Norman E. Gilbert, and Dr. John M. Gile, of Hanover, with the cooperation of Professor W. C. O'Kane, Dr. Charles James, and Mr. H. L. Howes, of Durham. This was the outcome of a plan of the American Association to cooperate with the state academies of science and to encourage their foundation in states where they did not already exist. Dr. Cattell was one of the leaders in bringing about the arrangements for the official affiliation of state academies with the American Association, arrangements that began to operate in 1918.[4]

The number of members enrolled varies from fifty for New Orleans to about eight hundred for Maryland and for Indiana. The small size of the first-named academy is doubtless due to its being largely local and limited to research workers. The number of members apparently bears no relation to the age of an academy; it may depend on the population of the state, on entrance requirements or some other factor. It should be noticed, however, that the three academies having the largest enrolment include non-resident members.

The classification of members seems to be governed by no general principle; in fact, there is much confusion here. There are three academies (Alabama, Georgia, and New Orleans) with only one kind of members (active members), and there is one (Maryland) with six kinds (corresponding, associate and corporate members, fellows, patrons and founders). Examination of the complete list reveals these additional kinds: local, national, life, non-resident, annual, honorary and regular members, honorary fellows and life fellows. New Hampshire stands alone in having only two kinds, active and honorary members, with Michigan a close second, adding life members to the two kinds we have. Four academies have national members, meaning persons who are also members of the American Association for the Advancement of Science. All the academies have members with the standing of our own active members, though they are sometimes designated by different names. Thirteen have less than five kinds of members. Two have six kinds. Confusion is greatest in those cases where a member may belong to two different classifications; *e.g.*, the Oklahoma Academy has active members and fellows, and each of these may be either local or national; it also has honorary members. Seven of the academies list non-resident members, usually former active members who have moved from the state. Twelve academies have honorary members, or members of similar standing. The limitations to this honor are interesting. For New Hampshire the number is limited to ten, with a total enrolment of

[3] The Pacific Division now includes all members of the association residing in Alaska, British Columbia, Washington, Oregon, California, Idaho, Nevada, Utah, Mexico (excepting Sonora and Chihuahua), the Hawaiian and the Philippine Islands and other islands of the Pacific. The Southwestern Division now includes all members residing in Arizona, New Mexico, Colorado, Sonora, Chihuahua and Texas west of the Pecos River.

[4] For a list of the first academies to be affiliated and the dates of their affiliation, see SCIENCE for June 17, 1921.

131; for Kentucky the number is twenty, with an enrolment of 170, and for Ohio it is only twenty-five, with a total of 475. The other academies have, according to their constitutions, placed no limits on the number of honorary members. It is surprising that two (Kentucky and Ohio) confer this honor only on non-resident members; formerly the Nebraska Academy had a similar rule but rescinded the non-resident condition in 1920. Two academies (Michigan and Wisconsin) confer honorary membership for distinguished or conspicuous service in science, arts or letters, while one (Tennessee) confers this honor on "any white person who has attained prominence in any department of science."

The classification of members has apparently been established to meet local needs in each case. The multiplicity of names seems unfortunate, particularly as different names are sometimes used by different academies to designate the same kind of members. Simplification of nomenclature seems desirable and should make easier that correspondence between affiliated academies which is appearing so promisingly on the horizon, in connection with official affiliation with the American Association. It is suggested that the affiliated academies might, in cooperation with the American Association, bring classification of membership and the nomenclature thereof into closer agreement.

The payment of $20 in one academy (Illinois), $25 in two (Michigan and Nebraska) and $50 in one (Virginia) entitles a person to life membership. The payment of $100 in four academies (Indiana, Nebraska, North Carolina and Ohio) entitles a person to the standing of patron; the Virginia Academy, however, requires $1,000 for this form of membership.

Qualifications for membership may be covered generally by the statement that in fourteen of the academies any one "interested in science," "interested in the progress of science," or "interested in scientific work," to quote from the constitutions, may become an active member. The New Hampshire Academy is the only one that attaches an age limit (twenty-five years). Unless the committees on membership scrutinize applications very carefully, it seems to be rather easy to get into most of the academies. A few have more definite requirements; *e.g.*, Georgia requires five years of recognized scientific work or five years of productive work in a college faculty, or some noteworthy contribution to science; Illinois demands interest in science in the state and in the nation; for Indiana the candidate must be engaged in original research or some other phase of scientific work; New Hampshire wants proficiency in some branch of recognized science; North Carolina wants active interest in the promotion of science, while for Oklahoma, Pennsylvania and Tennessee the candidate should preferably be engaged in scientific work. Maryland again stands out in requiring, in addition to an interest in science, a desire for self-improvement and a desire to help others; this may be related to the fact that the Maryland Academy is "principally a popular academy in which any intelligent person of good character may participate." Curiously, two academies (New Orleans and Wisconsin) report that no qualifications are required for active membership. On the whole, qualifications seem to be framed broadly enough so that acquaintance with scientific workers in other fields than one's own may be obtained in a social and appreciative way without too much detailed machinery of enrolling. The experience of some academies in regard to membership qualification may well be useful to other academies and it might be very valuable if these qualifications might receive special attention from the Committee on Academy Relations, recently established by the American Association (SCIENCE for May 20, 1927, page 508, paragraph 14).

Annual dues are very moderate in all these academies, one dollar in eight academies and two dollars in four. Four academies require an initiation fee of one dollar, four require a two-dollar fee, and one a three-dollar fee. Annual dues of one or two dollars seem much more desirable than higher dues. Academy publications might better be financed in other ways than by means of annual dues, as will appear later in this paper.

In order to evaluate the objects or purposes of the state academies, each secretary was asked if the main object of his academy was "(1) to promote scientific research among purely scientific investigators of your state, or (2) to increase the fellowship among persons having scientific interests though not necessarily engaged in research." Dr. A. M. Peter, secretary of the Kentucky Academy, sent this reply: "The constitution of the Kentucky Academy declares that the object of the academy is 'to encourage scientific research, to promote the diffusion of useful scientific knowledge, and to unify the scientific interests of the State.' I think, however, that most good comes from bringing together those who are interested in scientific matters in the state, whether they are actually doing research work or not—that is, I think the most important duty of the academy is that described in your second item." This expresses very happily exactly what I think we all feel our own New Hampshire Academy stands for. It also expresses substantially what the majority of the secretaries express in varying ways. Two academies (Kansas and New Orleans) rate fostering research as more important than increasing fellowship; two others (Pennsylvania

and Tennessee) rate the two objects in the reverse order, and one (Iowa) rates the two about equally. Other comments of the secretaries are: The Indiana Academy maintains a research committee to receive requests for solutions of definite problems for the people of the state, and to assign them to proper experts for solution. The Maryland Academy seeks to be a popular center for all interested in natural science. The Michigan and Wisconsin Academies include also arts and letters. The New Orleans Academy emphasizes pure research almost exclusively. The North Carolina Academy finds that most of the actual work of the academy is done by the investigators. The secretary of the Virginia Academy, Dr. E. C. L. Miller, says: "Ours is a young society and the work so far has been mostly to build up the society and to promote fellowship among the scientists and good will toward science in the state. Now we have a permanent committee on research and are raising an endowment fund for this committee."

An examination of the academy constitutions gives additional support to the statement that Dr. Peter's reply, quoted above, is of general application. Indiana adds this object: "to assist by investigation and discussion in developing and making known the material, educational and other resources and riches of the state; to arrange and prepare for publication such reports of investigations and discussions as may further the aims and objects of the academy." Tennessee includes exactly these words and Oklahoma includes an abridged form of the same statement. North Carolina hopes "to furnish, so far as practicable, a means of publication of such articles as may be claimed worthy." Wisconsin says: "Among the special objects shall be the publication of the results of investigation and the formation of a library." Maryland supports a museum and maintains meeting rooms. Virginia lists as her fourth and fifth purposes: "to cooperate with other scientific bodies having similar aims and to render public service in scientific matters."

If the worth-whileness of any state academy of science is ever questioned, this enumeration of objects and purposes should certainly justify the existence of the organization. It should encourage us in renewed loyalty to and support of our own New Hampshire Academy and should make us proud that we are affiliated with such forward-looking scientific organizations. One secretary writes: "If your research discloses a very good reason for the existence of state academies of science I want to know it in order that we may get into the right line." He considers that the reading of scientific papers does not seem to him very important, but may be only a good excuse for getting the members together and giving them a chance to find out that the others are interested in what each one is doing. He then adds this significant suggestion: "I think the academy should have some hobby but I do not know what it ought to be."

As to the number of meetings per year, the academies are in close accord. Fifteen have but one meeting a year while three have two meetings. Two academies (Georgia and Oklahoma) specify that there may be extra meetings at the call of the council. Eighteen academies meet for the reading of papers and most of these mention transaction of business as one of the features. In the case of those that do not specifically mention business it is not clear just how it is transacted. Business may be delegated to a council or similar body. In several cases, including our own New Hampshire Academy, the council is instructed to transact business that arises between the annual meetings.

It is of interest that three secretaries specifically mention discussion as a regular part of the program; perhaps it should be inferred that other academies include this helpful and attractive feature without mentioning it. It may be that some academies are losing out to some extent by not stressing this feature. Four include regularly a lecture by a person of note, usually from another state. Opportunity for social intercourse is mentioned several times; luncheons, banquets, social gatherings, etc., occur in the programs. It appears that in most of the academies much is made of the encouragement of better acquaintance among the members. On the whole then the character of the meetings is pretty uniform.

Marked variations are: in one academy (Virginia) the program is stated to be made up of "papers mostly," and in two others (New Orleans and Wisconsin) of "papers only." Nebraska lists "Demonstrations" as part of the program. Experimental demonstrations or exhibitions of material might enliven considerably papers that would otherwise be less interesting and they might well be used much more than seems to be the case. Experience at various chemistry meetings has shown the markedly increased "selling value" of a paper that is thus accompanied by exhibit or experiment. An Ohio program lists nine exhibits relating to botany and zoology, and speaks of their not being as numerous as in the preceding year.

Eleven academies make field meetings part of the regular program. Two (Indiana and Oklahoma) devote the spring meeting entirely to inspecting industrial plants, visiting regions of geological or biological interest, etc., the reading of papers being reserved for the winter meeting. Most of the others combine field trips, as do we, with the regular pro-

gram of papers at the annual meeting. The Illinois Academy specifies that its field trips are designed "to stimulate interest in local flora, fauna, geology and industries."

It now becomes my sad duty to report that eight of the academies go on record as having no field trips, and examination of the literature received does not indicate that they employ such trips even "only incidentally," as one of the eleven mentioned above puts it. To those of us who have so keenly enjoyed our own field trips it must seem that those eight academies are omitting one of the most effective agencies to increase mutual acquaintance and to learn to see things through the other fellow's eyes.

In my enthusiasm for the field trips I almost forgot to say that the Maryland Academy of Sciences meets "every night," according to the blank returned from Baltimore. Probably this means every night but Sunday. The subjects taken up are varied. The members are "taken to the field under competent instructors for the purpose of investigation or study." It should be recalled that the Maryland Academy is organized definitely as an institution for public education in science, being thus different from any of the other academies studied.

The membership of the Georgia Academy is divided into eleven groups according to the subject in which each member is most interested. Similarly, Nebraska has eight groups. Programs are correspondingly divided. In an organization the size of ours here in New Hampshire such subdivision of the program would be entirely out of place and would defeat the main purpose of our coming together. In larger organizations, with large numbers in attendance, such subdivision may be advisable or even necessary.

As to the papers and addresses themselves, our own New Hampshire Academy may serve as an example. In the past seven years 106 papers have been presented, of which 15 were presidential addresses or formal lectures. This makes an average of 15 papers per meeting. The smallest number was eight, in our first year, and the largest was twenty-one, in 1923. When we remember that between supper Friday night and bed-time Saturday night there are available two evening sessions and two half-day sessions, we see how the number of papers may vary from year to year. One year there was no presidential address or formal lecture and the next year there were four papers of that kind. When Saturday afternoon was devoted to an inspection trip through an industrial plant or a college the number of papers was naturally smaller.

A hasty skimming of such programs, abstracts of papers and reports of meetings as are at hand indicates that the papers presented before other state academies do not differ markedly in number or character from those given at the New Hampshire meetings. In a few cases the papers have more direct bearing on the problems and progress of the state in which the academy is located. In some cases the papers seem generally to be the result of considerable scientific investigation, the kind of papers published in the special scientific journals. Such more technical papers may be more appropriate for some of the larger academies than for the smaller ones. For us, however, this might be taken as suggesting a possible bettering of our own programs, or at least as a hint that we should not neglect our service to our state in the midst of our personal scientific enjoyment.

Of great interest to those making up academy programs and those presiding at the meetings is that several of the programs examined show a time limit after the title of each paper. This device has proved so satisfactory in other organizations that it might perhaps be more generally adopted by the state academies. The most extreme case noted was a program that limited all papers to ten minutes each.

It may be of interest to list here a few titles of presidential addresses selected from the academy reports at hand. Some presidents deal with the special subjects in which they are directly interested, while others deal with broader and more general aspects of science. Of course the president should try to feel the pulse of his academy and to point the way to a larger vision. The titles selected are as follows:

Bacteriology and its practical significance (C. A. Belvrem, Indiana).

Flora of Indiana: On the distribution of the ferns, fern allies and flowering plants (C. C. Dean, Indiana).

The unselfish service of science (W. M. Blandard, Indiana).

Biological laws and social progress (H. L. Bruner, Indiana).

The earth's framework (E. R. Cumings, Indiana).

The social responsibility of science (O. H. Smith, Iowa).

Geology of some proposed Kentucky State parks (W. R. Jillson, Kentucky).

The effect of the teaching of evolution upon the religious convictions of undergraduate students, as evidenced by theses upon this subject (A. R. Middleton, Kentucky).

Science and letters (C. Bamer, Michigan).

American botany during the colonial period (H. H. Bartlett, Michigan).

Recent research in atomic structure (J. C. Jensen, Nebraska).

Accumulation of energy by plants (E. N. Transeau, Ohio).

Research in industry (J. H. Cloud, Oklahoma).

Research as a state policy (H. L. Dodge, Oklahoma).

Conservation from a biological standpoint (C. E. Sanborn, Oklahoma).
Research in secondary schools (A. F. Reiter, Oklahoma).
The possibility of the redemption of the great plains from their semi-arid condition (J. B. Thoburn, Oklahoma).
Church and science (I. F. Lewis, Virginia).
Some reactions of man to platinum (J. L. Howe, Virginia).
What is science? (L. B. Richardson, New Hampshire).
A skeptical inquiry into the creed of science (W. B. Van Arsdel, New Hampshire).
The open mind (W. C. O'Kane, New Hampshire).
Backgrounds (F. H. Foster, New Hampshire).

The academy secretaries were asked in what way their academies cooperate with state departments and state organizations, with a view to making known the resources and advantages of their respective states. Ten academies make a definite effort to cooperate in this way, five cooperate only a very little, while four answer the question in the negative. The following are mentioned as avenues for cooperation: close contact with the State Educational Association, making the meetings as educational as possible, publication of papers on surveys, working with the State Conservation Commission, fostering research, having representatives of the state departments read papers and take part in the discussions, maintaining a conservation committee, acting in an advisory capacity to state departments on scientific matters, placing papers at the service of the public, supplying scientific information to the state legislature, keeping tab on legislation affecting scientific interests, having papers on the resources of the state, and offering the services of the academy to the governor in the capacity of an advisory scientific body to the state. Cooperation seems to be a reversible reaction. In Iowa a plan is on foot for the state to appropriate $2,000 or $3,000 for a biological and natural history survey of the state, the academy to furnish the experts. In Illinois the state surveys contribute papers to the Academy Transactions and the Transactions are published by the state.

Closely associated with the topic just considered are the replies to the question, "in what other way does your academy contribute to the scientific progress of your state?" Two secretaries say their academies contribute nothing, one is doubtful, another recognizes ungrasped opportunities by saying, "I am afraid we have done very little," while fifteen mention specific ways in which they justify their existence. The secretary of the North Carolina Academy, Dr. H. R. Totten, mentions the largest number of ways: That academy publishes important papers read at meetings and abstracts of the others, works for better scientific teaching in high schools, supplies speakers for educational meetings and for high schools, offers a state prize for the best essay by a high-school pupil on a scientific subject, keeps in close touch with the State Department of Education, arouses interest in the American Association for the Advancement of Science, and works for freedom of thought, of research and of teaching.

Several other secretaries send lists nearly as long. The following may be mentioned in addition: arousing public interest in scientific matters, backing legislative bills of a scientific nature, publishing papers primarily for non-scientific readers, conducting symposia for teachers in high schools, making the American Association for the Advancement of Science annual allowance available for grants for scientific work, encouraging graduate students to do research work, endorsing public movements like those for national parks, conducting a bureau of information at the service of the people, presenting non-technical lectures, publishing results of research connected with state affairs, encouraging beginners in science, fostering higher standards of scientific work in the state, and offering prizes or financial aid to meritorious projects. Though some of these items are plainly adapted to restricted and local use, still they supply suggestions for future activity to any academy that is looking for some new way to serve its state.

The question, "Do you have interchange of speakers, of ideas, or of reports on scientific work with other academies and if so to what extent," brought out the fact that ten academies practice no such interchange, while five have only occasional interchange. The secretary of one of the latter said, "Only occasionally and then rather accidentally." Four secretaries mention having out-of-state speakers, not always, however, drawn from the academy of a neighboring state. Three academies have had a joint meeting with a neighboring academy. One (Illinois) has an "out-of-state speaker for the complimentary address to the public." Another (Maryland) invites all visiting scientists to attend its lectures. One (Tennessee) "very rarely" has interchange, but the secretary adds, "I hope to see organized during the meeting of the American Association for the Advancement of Science in December, 1927, a Federation or Union of State Academies which will promote these things." Three academies (Illinois, Ohio and Oklahoma) exchange their publications with the other state academies, Oklahoma exchanging "widely, both in America and abroad." It thus appears that closer relationship among the state academies would be very helpful in general and it is clear that this feature of academy work is apt to receive more attention in the future.

Only four academies have museums. The Maryland Academy has done most along these lines. Having started with the Peale Museum, in 1797, it now maintains a constantly developing museum of science and natural history, housed in its own building and freely open to the public from 9 A. M. to 4 P. M., after which hours it is open only to members. The Kansas Academy has merged its museum with that of the State University. The Indiana Academy is cooperating with the State Museum and with the local historical societies in extensive mound exploration and is depositing all its material in the State Museum. The North Carolina Academy maintains no separate museum, but members of the State Museum are active in the academy and there is close cooperation.

Nine academies have no libraries. Two have no separate libraries; Iowa deposits its books in the state library, while Michigan has merged its library with the State University Library. Eight academies have libraries: Tennessee "only a few volumes, just beginning"; Illinois about the same; Ohio about 300 volumes; Kansas 4,000; Indiana 6,000, and Wisconsin several thousand volumes and 700 exchanges. The Indiana Academy library is in the same building with the State Library; the Wisconsin Academy library is incorporated with that of the State University. The Oklahoma Academy library is handled as part of the State University Library, but books are cataloged and shelved separately and book-plated "Academy." Provision is made for the removal of all academy books at any time. Most of these academy libraries aim to be extensive collections of scientific literature in general, rather than smaller collections of such reports of scientific investigation as the members might not find in their university libraries. The Maryland Academy library, however, contains many rare scientific volumes.

The Maryland Academy is the only one on our list that owns its own building. The fact that nine academies are incorporated shows that they are looking forward to future material resources and broader activities.

All academies but two (Georgia and New Orleans) issue some kind of a publication. *Proceedings, Transactions, Journal* and *Annual Reports* are titles most frequently used. *Abstracts* as a title is used once, as also is *News-Letter*. These printed reports vary in size from a 20-page pamphlet to a 450-page volume; they average perhaps 150 pages per year. In eight cases the publication is financed from the dues or general fund of the academy. In five cases the state finances the undertaking; in two out of these five cases (Indiana and Wisconsin) the state appropriates $1,500 annually. In two states (Michigan and Oklahoma) the state university pays for part or all of the academy report. The academies of Nebraska and Oklahoma are planning endowments to take care of all the publication expenses. For the North Carolina Academy the Proceedings are published by the Journal of the Elisha Mitchell Scientific Society, of the University of North Carolina, the university and the academy dividing the expense between them. The extent to which state academies have gone into the publication of reports is shown by the fact that the Indiana, Iowa and Kansas academies have each published over thirty volumes. Several of the publications are well illustrated. Alabama publishes simply abstracts of its papers in pamphlet form. New Hampshire has not yet entered the printed-page field, but it has furnished to its members mimeographed *News-letters,* somewhat irregularly, but on the average of about one a month. These contain the programs and announcements of the meetings, abstracts of papers read, and—what does not appear in any of the literature received from the other academies—news items about the members. In this last respect we appear to be a step ahead of the procession.

In another way the New Hampshire Academy appears to stand alone; no other academy has published any handbooks of its state, such as the Handbook of the Geology of New Hampshire, prepared by Professor J. W. Goldthwait for the academy and financed from the academy funds.

* * *

If we take as a starting point the foregoing outline of what the twenty-one affiliated academies have accomplished in the various states and how those accomplishments have been brought about, we may now look into the future through the lenses of what appear to be present opportunities, to secure some suggestions for the further development of the academy idea. It seems perfectly clear that state academies of science have been and are very valuable indeed, not only to their members but also to the progress of science and education in general in their respective states and consequently to the public at large. Such a conclusion is strongly supported in a very notable way by the enthusiastic and cordial response with which the academy secretaries to whom our questionnaire was sent have responded to our questions. As has been said, many of these secretaries, all of whom are very busy men, answered our queries with much more than perfunctory care; their replies indicate a very high degree of painstaking interest and enthusiasm for the work of their academies and for the cooperation of these organizations through their official affiliation with the American Association. To these secretaries is primarily due

any value that lies in the present paper and to them I wish to express my cordial thanks.

Besides reflecting their own faith in the work of their academies and the similar and obvious faith of their fellow members, these replies from the secretaries of the affiliated academies also strongly reflect what appears to be a very wide-spread and general feeling that the work of the academies should be strengthened and broadened more and more through alertness to take advantage of all opportunities that may arise in each case. As a concluding part of this paper I may mention some of the kinds of opportunities that seem to lie before these organizations, as such opportunities have been suggested by this study of the affiliated academies. These suggestions may be classified in two groups, opportunities for strengthening and enlarging the work of each academy in its own state and opportunities for broader and more active cooperation among the several academies, for mutual help and for the advancement of science and education throughout the country as a whole. It will be convenient and perhaps most serviceable to present these two categories of suggestions from the standpoint of our own New Hampshire Academy, with which I am naturally best acquainted.

From the standpoint of our own work in our own state, the following suggestions are tentatively put forward:

1. We might continue to increase our membership, to enroll with us all persons in New Hampshire who legitimately belong with us through their work and interests. This implies an active and continuous campaign to attract new members.

2. We might make our news-letters so interesting that those publications might aid greatly in holding, as non-resident members, all members who move into other states.

3. We might put into operation the plan that Secretary Hartshorn and myself outlined last June (for reasons that seemed to us good and sufficient it could not be put into complete operation this year): *viz.*, to bring out the *News-letter* regularly—as on the fifteenth of each month—and to give it such interest that members would look forward to its coming each month.

4. We might show our appreciation of the really remarkable little "Handbook of Geology," which Professor Goldthwait has generously written for our academy, by increasing its circulation as rapidly as possible and preparing for a second printing.

5. We might logically select from the fauna, flora, forestry, mineralogy or ornithology of New Hampshire suitable subjects for one or more additional handbooks, starting the preparation before the call for such service to our state, which is becoming manifest, has become so loud that we may seem to be neglecting our opportunities.

6. We might try to attract to our academic fraternity the workers in our state departments, adopting some of the relationships which have been found advantageous in other states and thereby bringing about increased and enlivened cooperation between state departments and the academy.

7. We might develop especially the interest we have already shown in the educational problems of our state, as by offering our services in connection with the numerous educational activities. This might be accomplished through cooperation with the State Department of Education or independently. The academy might undertake to furnish speakers on scientific subjects wherever such speakers are desired.

8. We might contribute more than we now do to the scientific progress of our state by organizing surveys of local conditions, and by spreading the gospel of improving unfavorable conditions through the greater use of scientific (meaning sensible) methods of procedure.

9. We might begin to look forward to and plan for an academy museum and an academy library, well housed and located as centrally as possible in the state, in charge of a permanent curator and librarian who might act as a bureau of information on academic matters of interest to our members. Such an academy museum might house (1) specimens of animal life (native, wild, migratory, and perhaps domestic) found in New Hampshire, (2) specimens of New Hampshire's wild and cultivated plants, (3) exhibits of woods indigenous to the state, (4) specimens showing geological structure and mineral deposits, (5) models of geographical features, (6) exhibits illustrating prominent industrial and educational activities, (7) photographs and charts bringing out prominent scientific features of the state and scientific discoveries made by our citizens, etc.

An academy library might house files of the reports and proceedings of state academies of science and of other similar organizations. It might include scientific publications specially related to New Hampshire or to work being carried on by members of the academy. A special section might be devoted to scientific works published by New Hampshire men. It seems that academy museums and libraries should aim to present and emphasize the interrelations of the different fields of knowledge, especially the close relation between the welfare and happiness of our people and the application of scientific knowledge to every-day affairs. This is perhaps the main burden of the new humanistic revival that seems to be getting so well started throughout the world. It does not

seem generally desirable that such collections should to any great extent duplicate specimens or volumes already available nearby. They might well bring out the various features of the wealth of their respective states. They might be very valuable in connection with the development of the industries of their states.

In a broader way, helping ourselves by cooperation with others, our New Hampshire Academy is surely ready to take part in activities aiming toward the general cooperation of the academies that are affiliated with the American Association for the Advancement of Science. Because state academies of science are generally much alike in their organization and are confronted with similar problems, frequent and free interchange of ideas and experience would undoubtedly be beneficial to all. There is a strong movement toward the realization of such cooperative interchange and that movement has been fully recognized by the American Association, which has already furnished valuable aid to the academies affiliated with it. A special committee on academy relations has recently been formed, including representatives of all the affiliated academies and of the executive committee of the association. We expect the new committee to study the problems of academy work and to make suggestions and inaugurate facilities for much progress in inter-academy relationships, making use of the already well-established organization of the American Association. Each affiliated academy has a representative in the council of the association, being thus in direct touch with association affairs, and the academy secretaries are in close relation with the Washington office of the association. The permanent secretary, Dr. Burton E. Livingston, has informed me that he is enthusiastic about the new academy movement and that the facilities of the Washington office are at the disposal of the affiliated academies in all feasible ways. He has expressed the hope that the affiliated academies may soon become virtually local branches of the larger organizations. They stand for the advancement of science in their several states in somewhat the same way as the association has so long stood in the country as a whole.

Several tentative suggestions as to ways in which our New Hampshire Academy might cooperate with the other state academies and with the American Association are mentioned below, but it is clearly realized that considerable study by representatives of all the academies will be needed before such suggestions may be relatively evaluated.

1. We might invite representatives of other academies to our meetings.

2. We might encourage our secretary to carry on correspondence with the secretaries of other academies, reporting interesting points and suggestions to our council or to our academy as a whole from time to time, perhaps occasionally through the *News-letter* if such an arrangement can be made.

3. We might encourage a similar correspondence between our academy and the permanent secretary of the American Association. Dr. Livingston has said that he will be glad to do his part.

4. We might aid the American Association to secure the attendance of official representatives of the association at our meetings. The association has approved of such representation, but the plan has not yet been generally realized.

5. We might arrange for occasional joint meetings with near-by academies if that proves feasible.

6. We might aid the science workers of other states to establish state academies where there are none at present, hoping that newly-formed state academies might become affiliated in our group with the American Association.

7. We might do what we can toward securing the general realization of the common aims of all the academies through inter-academy cooperation and with help from the association.

With the "Backgrounds" shown us a year ago by Mr. Foster in his presidential address; with a realization of what the New Hampshire Academy of Science has accomplished in the eight years of its existence; and with the courage and faith of a Lindbergh to turn the opportunities of to-day into the realities of to-morrow, let us say, as did Professor B. S. Hopkins, the discoverer of Illinium, in his inaugural address before the Division of Chemical Education of the American Chemical Society at the Richmond meeting last April: "Hats off to the accomplishments of the past; coats off to the accomplishments of the future."

WILHELM SEGERBLOM

HESPEROPITHECUS APPARENTLY NOT AN APE NOR A MAN

IN February, 1922, Mr. Harold J. Cook, a consulting geologist and paleontologist of Agate, Nebraska, sent to Professor Osborn an isolated fossil molar tooth which he had found in the Snake Creek beds of western Nebraska. He regarded it as closely approaching the human type and requested Professor Osborn and his colleagues to examine and describe it. After careful study and comparisons Professor Osborn published an article in the *American Museum Novitates* (April 25, 1922) entitled *"Hesperopithecus,* the First Anthropoid Primate found in America." In this brief article the author described the molar as the type of a new genus and species, which he named