CLOSING MEETINGS OF BIG CONVENTION HELD SATURDAY

INSTITUTE IS SCENE OF GREAT ACTIVITY

Over Two Thousand Scientists Visit Harvard and Technology

ALL SCIENCES THERE

During the past week the Institute has been quite as busy as at any time when the regular work of the school is in full swing, despite the fact that the student body has been having a vacation and doing its best to forget, temporarily, that there ever was such a place as Technology. The cause for all this activity was the annual convention of the American Association for the Advancement of Science, which opened here last Tuesday and continued throughout the remainder of the week.

Arrangements for the convention were laborious and detailed, and called for about as much juggling on the part of the committee as is required of the registrar in arranging the tabular view so that not more than two classes shall be meeting in the same room at the same time. The local committee on arrangements headed by Professor Prescott showed wonderful forethought by providing for such things as the reception and sending of telegrams, the holding of mail, a registry of home and convention addresses, and a lounge and smoking room.

Hold 1000 Sessions

Over one thousand sessions of the various societies that are affiliated with the A. A. A. S. were held, and it is estimated that at times as many as twenty meetings were heing held simultaneously. While the chemical and physical investigators from institutions of learning all over the country were discussing what goes on inside the atom, and talking in terms of electrons and protens, which are far too small to be visible even with the aid of a microscope, the astronomers were listening to papers in which the unit of measurement was the light year, the distance travelled by light in a year's time. While the entomologists compared notes on the behavior of the tiniest insects, the psychologists dealt with the mind of man. In one room a group of men talked forestry; in the adjoining room the subject was microscopic plant growths. There was a symposium on "humanizing knowledge"; and meanwhile learned men debated matters as difficult to humanize as "the reduction of singularities of plane curves by birational transformation."

Necessity of Team Work Shown

Team work among men of science, however, was the keynote of the entire convention, and many joint sessions in which different groups such as the astronomers and the physicists were held for the purpose of considering problems of common interest from their different points of view.

One of the most important features of the big convention, which was one of the largest convocations of science ever held, was the first Sedgwick Memorial Lecture given by Professor E. B. Wilson, the distinguished biologist of Columbia University. The title of the lecture, which was given in Huntington Hall, Rogers Building, was "The Physical Basis of Life." The lecture was given last Friday afternoon which was the birthday of the late Dr. William Thompson Sedgwick in whose memory the lectureship has been founded. President Livingston Farrand of Cornell University also gave a very important and interesting lecture on "The Nation and Its Health." This latter was the annual Sigma Xi lecture. Many prominent scientists read papers. Among them was one by our own former President, Dr. Earnest Fox Nichols.

Many important business meetings were also held. Chief among these was the annual election of officers which was held Friday morning, at which Dr. C. D. Walcott, secretary of the Smithsonian Institute of Washington, was chosen for president for the coming year.

Nearly 2500 scientists registered at the desk in the museum of naval architecture, and it is estimated that nearly 1000 persons not members of the Association attended one or more of the Association's meetings, for many of them were open to the public.

SHOULD HUMANIZE NEW DISCOVERIES

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is an aftermath of the sessions at Salt Lake City.

Necessity of Comprehension

As one looks over this tremendous program here, notes all the detailed discussions, realizes that as these various papers are read there are perhaps hardly half a dozen in any of the thousand audiences who very fully realize or are deeply interested in the significance of the papers, it seems as though all this, or a great part of it, was so remote from our human interests that something ought to be done to explain at least its general significance and give it some kind of a setting. That is the humanizing of knowledge would be bringing our knowledge into our daily thought.

Now I am a historical student and would hardly be classified as a scientist in the sense in which those who deal with the malpigian vessels, or the equipment for photographing small objects like mosses and hepatics and lichens, and so forth, are so classified. These are the scientists, and I am not one of that kind.

Problem Is to Educate

Now, the problem is, what has all this in it for you and me? The scientist plays his own particular game usually, and he is content to go without very much appreciation. And, moreover, he is discouraged about any attempt to explain to any number of people what he is up to. But as an historical student it has seemed to me that if we permit the scientist to function and change our lives as he has done, that we must in some way understand it better than we have hitherto done. Knowledge of the more exacting type has always been the prerogative of relatively few people. In the Middle Ages it was customary for people who corresponded to our scientists of modern times to write in Latin in an obscure fashion for the very few. Then as natural experimental science developed 300 years ago it became necessary for the investigators to isolate themselves just as far as possible from the old anthropomorphic interpretations in order that science should make its advance, and, consequently, as I pointed out at Salt Lake City, science should be de-humanized. That is, the less of ourselves gets into it, the better the science.

Progress Must be Accepted

Now, the accumulations of science are tremendous already, and are increasing with increasing rapidity. And, so, inasmuch as this knowledge has changed our modes of life and gravely affected our general conceptions of ourselves and the universe and our history and our setting and our possibilities, something must be done, something urgently needs to be done in order to bring this special knowledge in relation to our lives, give us more knowledge, and surely ought to make us more intelligent and wise in the conduct of life. And when we realize as a result of recent developments that so tremendous a patron of thought as that which we include under the term "Evolution" has made such slight impression on mankind and is still really a dangerous thing to adhere to in many of our colleges, we see as I say that this problem is all ahead of us. We really have done nothing about it, and those of us who come together here to discuss the matter are I presume all of us very much in doubt as to what ought to be done. ow, our ideal, I think that all who are participating in this discussion actively would agree, is the ideal of creating in some way a scientific attitude toward man's ever increasing knowledge about the world in which he lives and about himself, because the particular knowledge obviously cannot be crowded into the head of even the most assiduous student. But there could surely be an attitude of mind created, if we only set our hearts on doing it and develop the technique for bringing it about.

Wasted Efforts in Colleges

Our education from that standpoint is, of course, woefully deficient. A few weeks ago I was addressing an audience in Ford Hall and was engaged in criticizing our whole educational system, and I said that the worst thing, the most striking thing that could be said about it in conclusion was, if I moved about through that audience of twelve or fifteen hundred people I could not tell who had been through college and I should have no curiosity as I talked to people as to whether they had been through college or not. That is, we have a way of wasting four years in such a manner as to leave no appreciable effects in the general attitude of mind of those who submit to a college education as over against people of similar intellectual alertness who had not done so.

Now, there we have one great problem at the start. The reason that science makes so little impression is I think for two reasons which I will suggest, as I do not want to take up much of your time. One of them—and I think many scientific men would agree to this—is that when we give what we call the elements of a science, we give exactly those things which have the least possible effect on the person who is studying the elements. What do we mean by the elements of a science? We mean those logically tabulated results which were never reached in the way in which the subject is presented, but which are what one might almost call the playful outcome, if it were not so solemn and tragic, of the kind of people who write principles of things.

Inconsistencies of Authors

As I was coming down to take the train in New York a poor little black girl sitting next to me was studying the principles of political economy, and I noticed that the page she was just then mastering was on the subject of demand and that she was referred to the second volume of the translation of Russia's Treatise on Political Economy, part 3, we will say, page 266 and following. Well, now, very likely the writer of that book had never read Russia's book at all. I know enough about text book writers to know that. But he thought that he was increasing his self-esteem by sending the little black girl to a book which would not be readily found anywhere in New York except in an occasional large library perhaps. It is that peculiar unreality of things which seems to me so shocking. Now, what the little black girl would be up against in the matter of social environment is not in any way provided for in the treatise on political principles or political economy.

Public Not Interested in Principles

In short, the principles of a subject are generally those things about the subject in which nobody is interested and which could have no possible effect in illuminating the path of life. That is one of our troubles, that our whole instruction is artificial and remote. Then the second trouble is more or less analogous to it, namely, that our scientific information is classified under more or less ancient designations. As you look over the imposing program of these meetings, you will find some things that are called physics, some chemistry, there are some things that are called zoological sciences, and there are some things that are called botanical sciences. Then we come on to anthropology and psychology, and the so-called social and economical sciences. Then we go on to the engineering and the medical sciences and then to agriculture, as if agriculture might not be at once an engineering, a social and an economical science, and a zoological and botanical science. That is the trouble with the thing. In our instruction these principles are principles of highly artificial classifications of our knowledge, and I personally think that we will never make any great progress until we desert almost all our sanctified ways of presenting scientific information. We can of course have a little gossip about recent scientific discoveries. It rarely makes any particular effect on our minds. We can tell about some new alleged findings. But there is no way as yet, either for students in colleges or for adults after they are out of college, in which they can readily acquire a scientific attitude of mind. There is where our failure is. They have more or less scientific information. I was reading a work of an English novelist of distinction,—Galsworthy, the other day, and, in one of the touching scenes of the work he has the new moon rising over the trees. Well, I wondered how anybody could be so old and wise as Galsworthy and still think that the new moon ever rose over the trees. Don't we ever think about the moon? No; apparently we do not. One of my friend who is an astronomer once said that he thought the only assured result of a course in astronomy was to enable the student at the end of it to distinguish between the sun and the moon. Even that does not happen in any satisfactory way, because you easily get confused at least about the apparent relations of the sun and the moon in the moon's monthly progress.

Wider View Is Coming

We fail to give people any outlook on the world. We permit them, in learning about themselves, to grow up with all sorts of antiquated conceptions of their working and their application. Now, in these rambling remarks, all that I have done is to try to show you that we have an unsolved problem. I have not put things together very successfully perhaps, because there was so much to say, but the humanizing of knowledge would consist in the first place of a recognition that science, by and large, is nothing more than the best knowledge we have of all sorts of things. Then, this knowledge would in some way have to be sorted out so that we might go through the world with a more bright-eyed perception of what was going on about us, and we should be able to make better terms with life, as a result of this knowledge.

Then, I say that we ought to consistently break down, except perhaps for the purpose of apportioning the various fields of labor, not only all the ancient barriers between the so-called natural sciences, but between the natural sciences and the so-called social sciences, and there is an unfortunate isolation there. A person goes in for some form of natural science and he rather congratulates himself on his general ignorance of everything else, or a person goes in for some kind of literary science and he looks in a very surprised fashion at you if you accuse him of not knowing whether the new moon rises or sets, because, he says, "I am no astronomer." Yes, but it is your moon just as much as it is the astronomer's moon. When did the astronomer get a monopoly on such primitive observation in regard to the moon?

Of course, they are what might be regarded as defense mechanisms, all this tremendous range of excuses we have for remaining fools our lives long.

You can, however, imagine from childhood up, that having sorted out our knowledge and having got a clear notion of what a scientific attitude would be, that the knowledge would be classified and made part and parcel of the current thought, a matter about which Mrs. Austin is going to speak.

Many Educators Interested

Professor Mead, of the University of Chicago, wrote a paper for this occasion on Some Psychological and Social Conditions of the Scientific Attitude of Mind, and then, when he arrived here, he felt some distrust in regard to his paper. He felt that he might have been concise, and, as I judge, he seems to prefer to give you an informal resume of it, which I encouraged him to do.

Then, Professor Thorndike, of Western Reserve University, has devoted his specialty to the history of science. It takes a peculiar preparation to deal with historical matters, and a great many of the scientific men who try to write histories of science, while they may know some branches of contemporaneous science, know very little about the exigencies of historical research. So, Mr. Thorndike, being first and foremost an historical student, devoting himself to this particular question in the development of science in the past, and still does, will deal with that matter, that is, with the question of putting science over from the standpoint of its historical development, which is one of our great possible expedients.

ANNUAL ELECTION OF A. A. A. S. OFFICERS

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Chicago; Anthropological section, Professor E. A. Hooton of Harvard; Section on social and economic sciences, John F. Crowell, director of the World Market Institute of New York; Mathematical section, Professor Harris Hancock, of the University of Cincinnati; Physical section, Professor W. F. G. Swann, of the University of Minnesota; Geological and geographical section, Dr. Nevin M. Fenneman, of the U. S. Geological Survey; Zoological section, Professor Edward L. Rice, of the Ohio Wesleyan University; Psychological section, Professor Raymond Dodge, of Wesleyan University, Middletown, Conn.; Agricultural section, President R. A. Pearson, of Iowa State College of Agricultural and Mechanical Arts. Two secretaries of sections were also elected, Prof. W. D. Harkins of the University of Chicago being chosen for the chemical section, and Prof. R. J. Terry, of Washington University, St., Louis, for the anthropological section.

Dr. Walcott is one of the leading scientists of America and has been secretary of the Smithsonian Institution since 1907. Because of his geological work, especially on fossils in the rocks formed during the time known geologically as the Cambrian, he has international prominence as a paleontologist. He discovered bacteria in the rocks of the Algonkian period, the earliest time when signs of life on this earth are evident. From 1894 to 1907 he was director of the U. S. Geological Survey, and from 1902 to 1907 he was also the first director of the Reclamation Servie. He is president of the National Academy of Sciences, a member of the National Research Council, and chairman of the National Advisory Committee for Aeronautics.

Rings Used in Egypt.

Egyptian garments were often fastened in place by rings which could be sprung open to admit the material and closed to hold it. Then the rings were curved at the ends so that they could be caught together—and behold the germ of the modern safety pin! In fact, genuine safety pins were known as early as 3500 B. C., although they seem to have been little used in Egypt.

Salt Water Softened Cast Iron.

Cast iron that had been covered by salt water for a century, when first brought into the air, could be cut with a knife.

EXPLAINS THEORY OF QUEER NEW YORK HILLS

Colonel Millis Claims It Is Due to Glacier Movements

A new theory explaining the various elongated hills, ridges, and troughs of the New York Finger Lakes district was outlined before the Geology and Geography Section of the American Association for the Advancement of Science by Colonel John Millis of the U. S. Army Engineers Corps.

He attributed these formations, with their remarkably systematic arrangement and fan-like pattern radiating from near the east end of Lake Ontario, to the radial movement of the ice sheet in glacial times out of the deeper parts of the Lake Ontario basin, and the consequent spreading of the ice-front as it advanced.