



**THE REALM OF SCIENCE**

NEW YORK MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

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THE American Association for the Advancement of Science is the largest scientific society in America. It was established in 1848 and numbers over eleven thousand members. Its presidents have been the most distinguished scientists that our country has produced, and it has been considered an honor for smaller scientific societies to affiliate themselves and hold their own sessions in conjunction with it, so that there are very few scientific men that are not members of both the great American Association and one or more of its affiliated societies. The association itself is divided at present into a dozen sections, and while the list of these may be large, it is worth while to put it down once at least in print in order to see the extent of its field. Section A is devoted to Mathematics and Astronomy, B to Physics, C to Chemistry, D to Engineering, E to Geology and Geography, F to Zoology, G to Botany, H to Anthropology and Psychology, I to Social and Economic Science, K to Physiology and Experimental Medicine, L to Education, and M to Agriculture. Each one of these sections has of course its own officers and places and hours of meeting.

The Association meets every year during Christmas week in some large city. The place of meeting is different every year as a rule in order to give all its members a chance to attend some time or other without obligating them to travel too far from home. This year New York was selected, where the Association had met ten years ago, when its membership was less than half its present number.

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As the meetings were to begin on the night of December 26th, I bade Omaha a temporary adieu on the 22nd, and after spending one day in St. Louis and a day and a half in Cincinnati, I arrived at my headquarters at Fordham University on 191st Street, New York, in the afternoon of Tuesday, the 26th. I had spent a week at this place about twenty-eight years ago and could recognize many of the old landmarks. The president, Father F. X. Mulry, showed me every hospitality.

That evening at 8 o'clock, in the American Museum of National History, Professor W. W. Campbell, director of the Lick Observatory in California, as retiring president of the Association, gave his address on "The Nebulae," which was profusely illustrated with photographs taken in great part with his own instruments.

With very few exceptions all the meetings of the different sections and of the affiliated societies were held in the buildings belonging to Columbia University. This University is on a scale commensurate with the city in which it is placed. Its chief building is its library, which is not only magnificent in appearance and in its appointments, but is also the architectural center of the whole group of buildings that surround it, and its picture was therefore very appropriately placed on the membership button and badge. The other buildings are devoted to the various departments and there is also a large ball field with a grand stand.

On Wednesday morning, December 27th, at 10:15, the American Astronomical Society met in Room 304 of the Fayerweather Building with twenty-one members present, the number increasing rapidly to thirty-eight. H. Jacoby of Columbia University opened the proceedings with remarks on the "Daylight Saving Movement," according to which the clocks had been advanced an hour during the summer months by the warring nations of Europe. As this practice was being very favorably viewed in this country, he said it would look disgraceful to the American Astronomical Society if its voice had not been heard in the matter. Although to most astronomers the idea of ad-

vancing the clock looked like autodeception, like calling the temperature 80 degrees when we knew it to be 90, still the movement proved to be a success in Europe and would therefore most probably be introduced into this country next summer. A committee of five was accordingly appointed by the president, E. C. Pickering of the Harvard College Observatory, he himself being the chairman, with two members known to be in favor of the idea, and two against it. They were to report at the last session of the society. T. S. Plaskett, of Canada, gave an interesting and illustrated description of the great 72-inch reflecting telescope which had lately been erected near Vancouver's Island, and which will be for a short time the largest telescope in the world until the 100-inch is finished on Mount Wilson in California. F. Slocum of the Yerkes Observatory showed photographs of the libration of the moon, how points on the moon's face seem to oscillate on account of its rotation and the shifting of our point of view. H. N. Russell thought he had found the smallest star, that is, a self-luminous body like our sun, in Krueger 60, which he said was only one one-hundredth as large as our sun. There were also three other and more technical papers.

As the afternoon was reserved for committee meetings, I seized the opportunity to secure my return ticket and to visit the Jesuit College on 16th Street, where I met a few old friends.

The next day, Thursday, at the Astronomical Society, F. Schlesinger discussed the errors that may affect calculations when the sum of a number of tabular quantities is used, in which the last decimal given is necessarily rounded off. F. D. Urie spoke of the small time lag that occurred between sending time signals from Arlington to the Great Lakes by wire telegraph and receiving their automatic wireless response. This was about one-sixth of a second and due mainly to the nine relays in the telegraph circuit. After this came my own paper on the South Polar Eclipse of 1917, December 13th, in which the central line of the eclipse will pass exactly through the "pin-point" of the south pole if that is 9107 feet above sea

level. As the precise elevation of the south pole is not known, although it has been reported by Amundsen and Scott to be in the neighborhood of ten thousand feet, it is doubtful whether the central line will pass exactly through the pole or on its noon or on its midnight side. There were nine drawings projected upon the screen, and the paper will in due time appear in print in the Chronicle.

H. B. Hedrick showed examples of interpolation tables which he had in the press, and which greatly abridged the labor of computation. L. A. Bauer, chief of the magnetic department of the Carnegie Institute, who was my traveling companion last year from Denver to San Francisco, spoke of the work done in the magnetic survey of the oceans, how his non-magnetic ship had already traveled over ten times the circuit of the globe and had found errors in existing charts amounting to as much as sixteen degrees. There were also four other more technical papers.

In the afternoon at two o'clock in Room 301, Hamilton Hall, there was a joint session of section A of the American Association, the American Astronomical Society, the American Mathematical Society, and the Mathematical Association of America, at which E. W. Brown of Yale University read a paper on "The Relation of Mathematics to the Natural Sciences," and showed how necessary mathematics was to the study of any science. Professor Brown has already immortalized himself by his researches on the errors of the moon's orbit. M. W. Haskell, of the University of California, then read the paper of A. O. Leuschner of the same university, on "Derivation of Orbits, Theory and Practice." Professor Leuschner is one of the greatest living authorities in the computation of orbits. It was his genius that found the lost planet, the asteroid 1911 M T, as described in the Chronicle of November 1912. The first paper was forty-five minutes long and the second fifty-six. Both were read with sufficient loudness and distinctness, and could readily be understood by all that possessed even a general idea of the subject.

As these same four organizations that held the joint afternoon meeting were also to have a joint banquet in the Park Avenue Hotel at 6:30, I devoted the interval to the "Exhibition of Scientific Apparatus and Results" in the University Hall of Columbia University. Here was every variety of optical projection apparatus in operation; there were table microscopes with interesting objects in position, all kinds of scientific glassware, ultra-violet-ray apparatus, vacuum pumps, spectrum tubes of the rare elements, photometers, electric measuring instruments, lamps, electric furnaces, physiological, psychological and mathematical apparatus, botanical specimens, maps of the theatre of the European war and many other things too numerous to mention.

The joint banquet drew the largest gathering that had ever assembled under its heading. There must have been about one hundred and fifty persons present, less than five per cent of whom were ladies. I had the pleasure of sitting next to William Bowie, chief of the computing division of the United States Coast and Geodetic Survey, with whom I had dined in Atlanta. When the meal had been served, there were about six short impromptu speeches, some, if not all, of the speakers having been notified only after the banquet had been well under way. W. Bowie gave a short account of the work of the Coast Survey, and showed how anxious it was to serve the needs of the nation in its own field. John A. Miller, of Swarthmore College, where the Astronomical Society had met last August, said that the students in our educational institutions showed less and less liking for mathematics every year, and he thought this might be due in part to the uninteresting and dry way in which this subject is often taught. Another speaker, whose name I could not get, was a wealthy New Yorker, a publisher, I think, whose hobby it was to gather together the most valuable works on mathematics. He felt himself happy in possessing the oldest Latin translation of Euclid, which had been the personal property of one of the Popes, and he told us how he had tried, so far ineffectually, to procure an ancient

Greek copy of Euclid which he had found in Constantinople. He said he intended to present his collection to the City of New York so that all interested scholars could have access to it. There were about three other speakers. The presiding officer was L. P. Eisenhart, of Princeton University, who did his part well and agreeably.

The next morning, Friday, there were seven, mostly technical, papers in the Astronomical Society. In one of these E. S. King, of Harvard, spoke of the changes that came over a photographic plate when its development is delayed nine months. In several cases the brilliancy of star images had diminished eighty per cent. This was of special importance in the photometry of the stars.

I had to forego the concluding session of the Astronomical Society on Friday afternoon in order to attend the meeting of the institutional delegates of the Mathematical Association of America. This organization is an off-shoot of the American Mathematical Society, and was called into being a year ago at the Columbus, Ohio, meeting for the benefit of the teachers of mathematics in secondary schools for whom the original society was too technical and on too high a plane. This was, therefore, its second annual meeting. It began with unmathematical precision in that it was twenty-eight minutes late. T. H. Gronwall, of New York, spoke for about half an hour on "A Nucleus for a Mathematical Library." In spite of several requests to speak louder, I could scarcely hear a word although I was only about twenty-five feet away from the speaker. Then, slowly at first, an interesting discussion was held on mathematical libraries for the class-rooms, whether they should suit the different years, whether works in foreign languages should be included, and what the character of the books should be.

Some one asked the vital question of the distinction between ordinary members and institutional delegates. E. S. Slaught of the University of Chicago, one of the original founders, then showed that the chief advantage of institutional membership was the profession made by the institution of its in-

terest in mathematics. It entitled the delegate to vote like any other member. I felt proud to answer "Present" when I heard Creighton University mentioned in the roll call, and to know that its name was among the original charter institutions when the association was founded.

After the discussion, as I had the time, I remained for the election of officers. The presidency was closely contested, two hundred and two votes being cast for E. V. Huntington of Harvard, and two hundred and three for F. Cajori of Colorado College, Colorado City. As I had voted for the latter, I could claim to have elected him, since without my vote there would have been a tie.

This practically finished the sessions of the American Association for the Advancement of Science in New York in 1916, as on the following morning there was nothing more to interest me. While there are so many different sections holding their meetings at the same time, the only profitable thing to do is as much as possible to adhere to one, and then, if there be time to spare, to go to the next cognate subject. It is only in this way that solid information may be gathered, and the personal fellowship of the great men in one's own specialty fostered.

Saturday being, therefore, my only free day in New York, I followed the advice given me to ride in the elevated to the City Hall and then to ascend to the top of the Woolworth building, the highest building in the world, 785 feet above the street. The elevator ascended rapidly, and after discharging passengers at the various floors, landed me on the 54th. A second elevator which barely held six persons, carried me six stories higher to the balcony of the tower. The view is surely the finest of its kind in the world. The whole city, with its surroundings, is spread out like a living map, with the buildings in their rows, the other sky-scrapers modestly hanging their heads, the wharves along the long water fronts, the ships moving on their courses, the bridges over the rivers, the Statue of Liberty in the distance, and the adjacent cities. The day was mod-

erately clear, permitting a view of only about five or six miles. But it was worth immensely more than the fifty cents charged for it, and gave one a very comprehensive idea of the great city.

I then took lunch at the Jesuit College on 84th Street, called at the Loyola School and the Regis High School, in the first of which the number of students in a class is limited to ten. While the professor can thus give more individual attention to his scholars, the plan is not advantageous for the competition which a large class provokes. The president, T. Havens Richards, had been my president in Georgetown College the year I had been at its Observatory, 1895-1896. Father Husslein, one of our western men, on the America staff, in the same series of buildings, took me through the whole institution. The church is especially fine, with its marbles and its large mosaic Stations of the Cross.

Sunday morning, December 30th, was devoted to a long conference with Father J. T. Hedrick, my former classmate during six years and then associate at the Georgetown College Observatory under Father Hagen (now at the Vatican), who had come down from Poughkeepsie for this special purpose.

The next morning, New Years Day, my train left New York at 8:04. As I had arrived on the New York Central, I departed on the Pennsylvania and thus had the privilege of being carried under the waters of the Hudson river in the tunnel, or rather tube, as they call it in New York. The scenery along the Susquehanna and Juniata Rivers, like that along the Hudson, was fine for the season, but cannot compete with that of the Rocky Mountains. It was too dark to enjoy the Horseshoe Curve in the Alleghanies.

A ride of twenty-five and a half hours brought me to Chicago where, of course, I paid a visit to Father Bronsgeest. Another night's ride landed me in Omaha, the Gateway City to the Great West, at 7 A. M. By nine o'clock I was again in the class room.

I must close with expressions of gratitude for all the kindness shown me in Fordham and all along the route, and with apologies for not having been able to mention the names of many friends I met on the way. There was not the least mishap to mar the enjoyment of the trip, and the knowledge gained and the acquaintances made or renewed more than repaid the outlay and the time.

