A survey of photographic astrometry: FRANK SCHLESINGER.[2] Pioneer work in photographic astrometry was done at the Harvard Observatory by Bond. Especial tribute should also be paid to the painstaking investigations which Rutherfurd made in his private observatory at 11th Street and Second Avenue, New York City. Rutherfurd showed definitely, as early as 1865, that star positions could be measured with great accuracy from photographic plates and that the much disputed distortion of the film did not affect the measurements seriously. Rutherfurd's early optimism was more than justified; at present one measurement from a photographic plate can compete in accuracy with ten visual measurements made with a telescope of the same focal length. In 1886 and 1887, conferences of some of the world's most prominent astronomers met in Paris to consider the project of making a photographic map of the whole sky containing stars one thousand times fainter than the faintest star visible to the naked eye. The accuracy with which star positions can now be photographically measured is very great; the accidental error of measurement is equal to only 0.000,020 inch, or 0.0005 mm. In conclusion, some of the most important future problems in this field should be mentioned. Our knowledge of the radial velocities of the stars (motions directly towards us or away from us) is very meager for the fainter stars. Progress in such work can only be expected after what may prove to be a long period of trial and experiment. Success in determining radial velocities by means of the objective prism does not look less promising to us now than was the prospect of determining radial velocities by any method forty years ago. The importance of being able to determine velocities in this way is so great as to warrant years of patient effort on the part of many workers. The importance must again be emphasized of a close cooperation between the astronomer and the chemist who specializes in the chemistry of photography. Astrometry will enter a new era if a method can be found for eliminating the inherent inaccuracies in the measurement of positions on the photographic plate. The cause of these inaccuracies is still to some extent a mystery, but it appears certain that the major source of inaccuracy lies in the plate itself and not in the methods now at hand for measuring it.

The current photographic programs of the Harvard Observatory: HARLOW SHAPLEY. Seven major observing programs and eleven smaller programs are in operation with the Harvard telescopes; nine instruments are in continual use on the programs at the Cambridge station, five at the South African station, and three special cameras with the meteor expedition at Flagstaff, Arizona. Nearly 15,000 photographs have been made since 1924 on the program of Milky Way variable stars—a research designed to give information on the structure and dimensions of the galactic system. The survey of the photographic brightness of the stars is to extend to magnitude 8.5, and includes approximately 120,000 stars over the whole sky; the photographs are made at Cambridge and at Bloemfontein, and are measured with the thermo-electric microphotometer. An extensive program on the motions of the nearby stars is carried on in cooperation with the University of Minnesota. Investigations dealing with the variable stars that have been selected for international cooperation are carried on in conjunction with the University of Missouri, Hood College, Cornell University, the Case School of Applied Science, Connecticut College, and several other institutions. The photographs are made at Harvard and measured at the other observatories. Only nine meteor spectra are now known—three on Harvard plates, three on Moscow plates, two from Mount Wilson and one from Hamburg. In the Harvard collection only about one spectrum plate in 20,000 shows spectra of meteors, but with special cameras it is hoped to get one spectrum out of every fifty to a hundred attempts. In the systematic sky patrol approximately 90,000 photographs have been accumulated—all on glass negatives, 8 x 10 inches in size. These plates form the basis of numerous investigations of variable stars and stellar distribution. Cooperative programs dealing with the structure of the stellar universe are carried on in conjunction with the astronomical departments of Amsterdam and Groningen; for the Groningen work the photographs are taken on specially made plate glass plates. Other active researches at the Harvard Observatory deal with the discovery and measurement of extragalactic nebulae, and with the less remote globular clusters, and the Magellanic Clouds. The classification of the spectra of faint stars in interesting regions is a special problem of the highest importance. A number of special photometric programs, including the determination of standard photographic sequences and the establishment of systems of photovisual and red magnitudes, are also in active operation.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

BUSINESS PROCEEDINGS OF THE EXECUTIVE COMMITTEE

THE executive committee of the council of the American Association for the Advancement of Science met on Saturday, April 23, and Sunday, April 24, in Washington, D. C. Since the executive committee acts for the council when it is not in session, the following items of business transacted are to be interpreted as actions of the council:

1. The Genetics Society of America and the American Sociological Society were accepted as affiliated societies.

[2] Director of the Yale University Observatory.

2. The defunct American Federation of Teachers of the Mathematical and Natural Sciences and the Botanists of the Central States were dropped from the list of affiliated societies.

3. A constitutional amendment to permit each division to name two council representatives was ordered brought before the council at Atlantic City.

4. The proposal that the association cooperate with Sigma Xi in commemorating the fiftieth anniversary of its founding at Cornell University was discussed and the permanent secretary was asked to secure from the society possible alternatives for such cooperation for consideration at the next meeting of the Executive Committee.

5. The resignation of Dr. A. G. McCall as auditor was accepted and Dr. W. J. Humphreys was elected auditor.

6. The executive assistant was authorized to sign checks drawn against the checking account No. 1 of the Association in the American Security and Trust Company. In the absence or inability of the executive assistant the checks are to be signed by the permanent secretary. A joint bond of $20,000 to cover the responsibility of the executive assistant and the permanent secretary was ordered.

7. $15,000 now in the reserve funds of the office of the permanent secretary were ordered transferred to the treasurer for investment in such a manner as to remain subject to the order of the officers of the association. The permanent secretary was authorized to invest $5,000 in U. S. Treasury Certificates, purchase to be made from reserve funds of the office of the permanent secretary. The balance of the permanent secretary's reserve funds were ordered deposited in savings accounts of two Washington banks.

8. A report on the Hector Maiben bequest from Mr. Wm. G. Long, Seattle attorney, was accepted. It was reported that the appraised value of the estate, fixed by the court, amounted to $37,833.40. Inheritance tax and administration fees will be deducted from this amount. An honorarium of $150 was voted for Mr. Wm. G. Long in appreciation of his services, this sum to be paid from the treasurer's current funds. Mr. Ben Maiben, brother of Hector Maiben, was appointed as the association's local representative in Nebraska with authority to act in all cases where problems or exigencies may arise in connection with securities on property in Nebraska obtained through the will of his brother.

9. In memory of Hector Maiben, a Hector Maiben lecture to be given each year at the annual (winter) meeting of the association was established. This lecture will carry an honorarium of $200 and traveling expenses for the lecturer. The first Maiben lecture will be held at Atlantic City.

10. The expenses of the secretary of the academy conference in attending the annual meeting were authorized to be paid on the same basis as expenses of section secretaries.

11. It was voted that members of the executive committee attending the meetings of the committee at Syracuse will be expected to pay their own expenses.

12. It was voted to pay expenses of only those section secretaries who take an active part in arranging programs for the Syracuse meeting.

13. A new half year membership at one half the regular annual dues was authorized for those joining the association between April 1 and October 1. Such new members will receive a journal subscription for the six months beginning July 1. Members joining under this plan will be billed for a regular year's membership at the time of the October billing.

14. An additional appropriation of $649.12 was made to cover over-expenditures of the Science Exhibition committee at New Orleans. Total expenditures were reported as $3,149.12.

15. A letter from Dr. Otis W. Caldwell, chairman of the Committee on the Place of Science in Education, was read, recommending that the committee be discharged, and that the unexpended balance of the committee's funds be held in the association's reserves. The report was accepted and the permanent secretary was asked to confer with Dr. Caldwell.

16. The president and the chairman of the executive committee were asked to select a delegate to attend the meeting of the British Association for the Advancement of Science to be held in York, England, August 31 to September 7.

17. It was voted to hold the next fall meeting of the executive committee in Atlantic City on the third Saturday and Sunday in October.

18. The committee adjourned to meet in Syracuse on June 20.

CHARLES F. ROOS,
Permanent Secretary

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A SHORT METHOD FOR CALCULATING MOISTURE PERCENTAGES[1]

THE determination of moisture is an essential part of many analytical procedures and the calculations involved are somewhat tedious. Careful checking is required to prevent errors. The use of a calculating machine naturally increases the speed and accuracy of the work. In connection with a large number of routine analyses, a short method of computing moisture percentages with the aid of a calculating machine

[1] Approved for publication by the chief, U. S. Bureau of Chemistry and Soils.