mal place. The solution of linear systems of algebraic equations is treated from the same standpoint, specimen solutions exhibiting methods which reduce labor to a minimum. Methods involving matrices are used to obtain dominant roots of algebraic equations of higher degree. Here the methods are interesting, but the results are not spectacular from the standpoint of the saving of labor.

After the four introductory chapters comes the treatment of differential equations and systems of differential equations by matric methods. While these methods are not essentially new, it is probably correct to say that this book takes more pains than any previous one to develop the theory in an elementary manner, and by means of many specimen problems to bring the methods within the range of the great number of workers who use differential equations in a practical way.

One interesting point in the matric method is its connection with the operational calculus of Heaviside. Some of the successful but unreasonable empirical methods which so delighted Heaviside appear quite reasonable and rigorous from the matric approach.

Next come chapters on kinematics and dynamics of systems, and systems with linear dynamical equations. The treatment is conventional, except that matric methods are used wherever possible, mainly in the solution of the differential equations involved, and that most of the problems relate to aerodynamics.

Chapter X is a collection of problems, each of considerable intrinsic interest, which are worked out in detail and with the expenditure of considerable labor. These problems are: (1) Oscillations of a triple pendulum. (2) Torsional oscillations of a uniform cantilever. (3) Torsional oscillations of a multi-cylinder engine. (4) Flexural oscillations of a tapered beam. (5) Symmetrical vibrations of an annular membrane. (6) A system with two equal frequencies. (7) The static twist of an aeroplane wing under aerodynamical load. (8) The oscillations of a wing in an airstream.

The remaining three chapters are devoted to the dynamics of the airplane, and in them some problems of considerable difficulty and practical importance are worked out by the techniques discussed earlier. The phenomena of ankylosis (or "sticking" of a degree of freedom), and flutter are treated at length with numerical problems and graphic interpretation of results. The last chapter is on pitching oscillations of a frictionally constrained aerofoil.

Judged by American and Continental standards, the book is verbose and somewhat nationalistic in referring to other authors. But clearly the book was written in the hope of converting many applied mathematicians to the use of more elegant and powerful mathematical tools, and it is so skilfully and attractively designed for this purpose that one should judge it from no other angle.

C. C. MACDUFFEE

UNIVERSITY OF WISCONSIN

SOCIETIES AND MEETINGS

THE FRENCH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE[1]

IN response to the kind invitation of the University of Liège, the French Association for the Advancement of Science met from July 17 to 22 for the third time in Belgium; the previous meetings were at Liège in 1924 and at Brussels in 1932.

The International Water Exhibition at Liège which marked the inauguration of the Albert Canal gave the meeting a special interest. Professor C. Fabry, president of the French Association, presided over the meeting, and Professor Dehalu, *administrateur-inspecteur* of the University of Liège, was president of the local committee.

The opening ceremony toook place on July 17 in the hall of the university. Professor Dehalu expressed his pleasure at receiving the Association at Liège for the second time, and Senator Buisseret, speaking on behalf of the burgomaster, welcomed the members of the congress. Professor C. D. Ellis, Wheatstone professor of physics at King's College, London, representing the British Association, and Dr. C. Romaña, representing the Argentine Association for the Advancement of Science, brought messages of good will for the success of the meeting. Professor Fabry, after having expressed the thanks of the association to the local committee at Liège, delivered his presidential address, on interstellar space.

Professor Fabry showed how a profound study of the light of the stars has enabled us to detect, in interstellar space, matter in a state of extreme rarefaction (1 kgm, nearly in a volume equal to that of the earth). In addition to matter, there exists also in interstellar space energy in the form of radiation emitted by the stars. These results have demonstrated the fruitfulness of collaboration of diverse scientific disciplines and of pure and applied science. Such collaboration is also the object of the French Association and of similar bodies.

The scientific meetings were held in the magnificent Institutes of Civil Engineering and Chemistry of the University of Liège at Val Benoît on July 17 and the following days. July 19 was devoted to an excursion on the Albert Canal and to a visit to a colliery at Beeringen. July 21, the day of the national fête of

[1] From *Nature*.

Belgium, was taken up with a visit to the Water Exhibition.

The several sections of the association showed great activity. The question of water occupied a prominent place in the program and was the subject of the following papers: M. Wyart, the states of solid and liquid water studied by x-rays; M. Cabannes, the Raman spectrum of liquid water; M. Kraft de la Saulx, history of the construction of hydraulic machines; M. Tongas, thermodynamic properties of steam; M. Trochon, microphysics of mists considered as aerosols; M. Roulleau, hygrometry; M. Rocard, kinetic theory of liquids; M. Hubault, pollution of waters, their industrial utilization and modifications of their fauna.

The Section of Civil and Military Engineering, under the presidency of M. Campus, was divided into three subsections: theoretical and applied hydraulics; navigable channels and ports; hydraulic works. One session was devoted to colonial hydrography.

The Section of Physics heard communications, among others, from Professors F. Joliot and F. Perrin. The work of the Section of Geology was completed by field excursions; the Section of Botany also had excursions in which the Royal Society of Botany of Belgium and the Liège Botanical Circle joined.

The Sections of Biogeography and of Zoology held several joint sessions with papers on the biology of equatorial lakes (M. Damas), the relations between the internal and external media in aquatic animals (M. Florkin) and the phreatic fauna (M. R. Leruth).

Mention should also be made of the communications presented to the Section of Geography (streams, their utilization and management, demographic and social aspects of water); and to the Sections of Medical Sciences (metabolism of water), of Psychology and Pedagogy, of Radiology and of Odontology.

Special subsections considered technical applications of water, applications of electricity, archeology and folklore.

The communications presented at the meeting will form a special volume published in connection with the Liège meeting.

THE MEDICAL LIBRARY ASSOCIATION

THE Medical Library Association held its forty-first annual meeting from June 27 to 29, 1939, at the Academy of Medicine of Northern New Jersey, Newark. Officers for 1939–40 are: *President,* Colonel Harold W. Jones, Washington, D. C.; *Vice-president,* Dr. John M. Armstrong, St. Paul; *Secretary,* Miss Anna C. Holt, Boston; *Treasurer,* Miss Louise D. C. King, Baltimore; *Chairman of the Executive Committee,* Miss Mary Louise Marshall, New Orleans.

Miss Linda H. Morley described the varying services and requirements of three general types of medical libraries: those serving educational institutions; those serving organizations, and those affiliated and housed with a particular organization's staff.

Dr. George H. Lathrope answered the question, "Why Medical History for the Medical Librarian?" First, one's patrons are growing interested in this subject; second, it is a pleasant aid in developing acquaintance with medicine and its terminology; third, it has a distinct cultural value; and fourth, medical history is an almost untouched field for research.

"The Hospital Library and Its Administration" formed the subject of a most useful paper by Miss L. Margueriete Prime. She showed how the medical profession and friends of medical libraries have developed good hospital libraries. Standards have been established for them by the American Medical Association, the Canadian Medical Association and the American College of Surgeons. A general discussion of the organization and administration of the hospital library followed.

Another phase of the library connected with the hospital was portrayed by Miss Ethel Wigmore in her discussion of "The Responsibility of the Medical Library to the Nursing Profession." After sketching the development of libraries for nurses, with special reference to Bellevue, Miss Wigmore drew a picture of their present status in nursing education and of the growth of nursing literature.

Miss Margaret Bates showed in lantern slides a most interesting series of medical postage stamps.

Dr. Karl M. Scott gave a paper on "The Literature of Syphilis," in which he presented a broad picture of the whole subject and its application to the present-day campaign for control of the disease.

Real assistance in the association's endeavor to enlarge its supporting membership was rendered by Dr. Arthur H. Sanford, of the Mayo Clinic, who described the mutual benefits to be secured thereby. Dr. Joseph E. Raycroft's discourse on "Old Wine in New Bottles" quoted writings and archeological records to show that the ancients used certain treatments which are still valuable.

Dr. Max E. Soifer discussed "Dr. Horace Wells, the Discoverer of Anesthesia." "Problems of Microphotography," by Miss Dorothy Hale Litchfield and Dr. Mary A. Bennett, of the Film Library of Columbia University, dealt with the making, use and care of microfilms in libraries.

Dr. Charles H. Young made most interesting his account of the benefits and dangers of aviation to mankind. Aviation medicine is really preventive medicine.

The 1940 annual meeting of the association will be held in Portland, Oregon, at the invitation of the University of Oregon School of Medicine.

ANNA C. HOLT,
Secretary