General William C. Gorgas, to study the yellow fever situation, and the second, composed of Drs. Richard M. Pearce, John A. Ferrel and Bailey K. Ashford, to survey the grounds of medical education, hospitals and dispensaries, public health agencies and sanitary progress. In the same year an effective cooperation began with the Brazilian National Department of Health and with the São Paulo University, growing little by little and leading to the great development resulting in the medical and public health institutions and services now in operation. One lasting result of this cooperation is the University of São Paulo School of Medicine, now housed in a magnificent building of many stories and provided with a faculty of distinguished professors. It is a long work begun with the cooperation of Drs. Samuel T. Darling and Wilson G. Smillie, whose services were an honor to American medical science. To-day the São Paulo school is one of the best on the American continent, and its department of hygiene is a leading institute of scientific research in the country. In the field of public health too the cooperation of the Rockefeller Foundation was of the greatest value. The work against hookworm disease begun in 1916 and greatly developed since 1920 has led to the creation of many modern county health units. With the cooperation of the foundation in 1922 the first training school for nurses was founded in Rio de Janiero, and a Nursing Division was started in the department of health of the city with an able body of ten American public health nurses as supervisors. This led to the creation of a few training schools for nurses in several cities of a large country where the professionally trained nurse was completely unknown before. The nursing service of the department of health of Rio de Janeiro is now an efficient and popular modern agency of health. With the help of the International Health Board of the Rockefeller Foundation, the School of Hygiene and Public Health of the Johns Hopkins University lent the services of two able professors, Drs. Allen W. Freeman and James A. Doull, to start a course of instruction for sanitarians in the medical school of Rio de Janeiro, and the foundation granted fellowships to many Brazilian public health workers, who went to the United States to study at leading American schools and to visit different public health organizations.

With the support of the Rockefeller Foundation a complete survey of the yellow fever situation developed in the discovery of the jungle form of the disease, the disclosure of sylvatic mosquito vectors other than Aedes aegypti (as Hemagogus capricorni and Aedes escapularis), the invention of the viscerotome as the leading means of postmortem diagnosis of yellow fever and, through the work of the Rockefeller Institute, the creation of an efficient vaccine, now injected into millions of people, thus protected against the sylvatic yellow fever, as the only practical prophylactic resource. Brazil is also indebted to the Rockefeller Foundation for the help in the fight against Anopheles gambiae, the worst vector of malaria, imported into Brazil from the west coast of Africa. Some species of anopheles are more susceptible to infection than others; some anopheles mosquitoes will not bite man at all; others will bite man only when other animals are not available. Anopheles gambiae of Africa, which had spread through the states of Rio Grande do Norte and Ceara, entering the great airport of Natal, Brazil, has probably the highest infectibility and the greatest preference for man of all Anophelines. This makes that species the most important vector of malaria in man. The intensive campaign against the gambiae conducted by the malaria service of the Brazilian health department with assistance in funds and personnel from the International Health Board of the Rockefeller Foundation is an outstanding example of "species sanitation." The measures concentrated on were those which would prevent the breeding of gambiae. The eradication of the imported Anopheles gambiae is a paramount example of what is possible through the use of modern antimalarial technic, available to the Brazilian health authorities through the invaluable cooperation of the Rockefeller specialists.

Professor Peixoto praised the humanitarian work of the Rockefeller Foundation in Brazil and commended Dr. Soper for his ability to win the friendship of Brazilian physicians, thus insuring once more the unity of the Americas.—*Rio de Janeiro Correspondent of the Journal of the American Medical Association.*

SOCIETIES AND MEETINGS

THE CRYSTALLOGRAPHIC SOCIETY

A STATED meeting of the Crystallographic Society was held on November 17, 1941, in Room 4–345, Massachusetts Institute of Technology, Cambridge, Mass. Twenty-six members were present. The proposed constitution and by-laws were discussed and approved, and the organization was placed on a formal basis. The following officers were elected for 1941–42: Professor Martin J. Buerger, *President;* Professor Harry Berman, *Vice-President;* Dr. Clifford Frondel, *Secretary-Treasurer.* At the close of the business meeting, Mr. Joseph Lukesh spoke of work carried on jointly by him and M. J. Buerger

on "The Tridymite Problem." The talk was followed by a lively discussion bearing on the geological implications of the unusual thermal behavior reported, and on the mechanism of formation of super-structures based on silica frameworks. The speaker's abstract of his talk follows:

THE TRIDYMITE PROBLEM

Crystals of tridymite from Plumas County, California, have been investigated by the Weissenberg method. The diffraction symmetry of the low temperature form is *mmm*. It is based upon a face-centered orthorhombic lattice, the cell having the following dimensions:

$a_o = 9.91$Å $b_o = 17.18$Å $c_o = 81.57$Å

Possible space groups include *Fmm*, *Fmmm* and *F222*. The abnormal length of the *c* axis prompted investigation of tridymite from other localities. A sample from San Cristobal, Mexico, was found to have the same *a* and *b* axes, but the *c* axis was one half as long. The *c* axis rotation patterns of the two materials were substantially identical as regards distribution and relative intensities of all reflections except that the intermediate layer lines found on the pattern of the Plumas County material were missing on the pattern of the San Cristobal material.

Spectroscopic and chemical analyses of the Plumas County tridymite indicate a high impurity content, with an empirical formula approximating $NaCaAl_3Si_{15}O_{36}$. The presence of the impurity atoms is believed to be the cause of the doubled *c* axis.

Attempts were made using a controlled-temperature Weissenberg camera to locate the two inversions of tridymite at 117° C. and 163° C. as determined by Fenner from thermal observations on artificial material. The Plumas County material inverted directly from the low form to the high form at 127° C. with no evidence of a middle form. The tridymite from San Cristobal showed two inversions, low to middle at 121° C. and middle to high at 135° C. The absence of a middle form in the case of the Plumas County material and the smaller temperature range than expected in the case of the San Cristobal material are attributed to the presence of impurities.

Weissenberg patterns of the Plumas County tridymite were taken just above the inversion. In addition to the pattern to be expected from the hexagonal silica framework, there was found superimposed an orthorhombic pattern of satellite reflections which varied in their distribution in a definite manner with temperature, but not with time. The sequence was not reversible, and once it had been carried through to completion, it could not be obtained again on the same crystal. A similar, but less complicated, sequence was found using the material from San Cristobal. The presence and the behavior of the satellite reflections can be explained by the migration of the impurity atoms from positions taken at the time of formation of the crystals, when electrostatic forces only were satisfied, to positions taken during heating that are more compatible with packing requirements. It appears that both the Plumas County and the San Cristobal tridymite must have formed below 121° C. and 127° C., respectively, inasmuch as the temperature inversions are irreversible.

CLIFFORD FRONDEL,
Secretary

THE NEW HAMPSHIRE ACADEMY OF SCIENCE

THE twenty-third annual meeting of the New Hampshire Academy of Science was held at the University of New Hampshire, Durham, on Friday and Saturday, November 14–15, 1941. At the Friday evening session, Professor Herbert E. Warfel of the university and the State Fish and Game Department presented the principal address, "Biological Basis for Fish Management in New Hampshire." Several reels of motion pictures of scientific interest were shown.

Saturday morning was given over to the reading of nine different papers by members, in the fields of geology, botany, ecology and anatomy. On Saturday afternoon, two papers were read in the field of meteorology.

At the annual business meeting, it was voted to award the grant-in-aid for the current year from the American Association for the Advancement of Science to Mr. Paul R. Doe, of Spaulding High School, Rochester, N. H., for a continuation of his work with time-lapse photography.

The following officers were elected for 1941–42: *President,* Dr. Charles D. Howard, State Board of Health, Concord; *Vice-president,* Professor Guy Williams, Colby Junior College; *Secretary-Treasurer,* Dr. Robert H. Denison, Wilson Museum, Dartmouth College; *Councilors,* Professor J. H. Gerould, Dartmouth College, for three years, and Professor Donald Chapman, University of New Hampshire, for four years; *representative* to the Academy Conference, W. W. Ballard, Dartmouth College.

The Executive Council voted to hold the next annual meeting at Keene, N. H., in the fall of 1942.

The address of the retiring president, Professor Bancroft H. Brown, of Dartmouth College, was on "Teaching and Research in a Democracy."

W. W. BALLARD,
Retiring Secretary

REPORTS

THE NEW ENGLAND FIELD GEOLOGISTS

THE thirty-seventh annual field meeting of the New England Field Geologists was held on October 10, 11 and 12, at Northampton, Mass. The headquarters for the meeting was in Seelye Hall, Smith College. Dr. Robert Balk, of Mount Holyoke College, was in charge