and A. F. Woods, and probably contains the results of the investigation referred to by Mr. Spencer in his aforesaid report of August, 1933. In any event, the report of the American Association's committee of scientists contains a statement as follows: "A careful analysis of the whole problem, however, has led the committee to the opinion that no effort should at present be made to develop a plan for protecting scientific property. There appears to be no need for such legal protection from the viewpoint of incentive to the scientist or public policy. The committee recognizes that the present economic crisis has tremendously diminished the normally available funds for carrying on research so that other sources of potential funds are to be carefully considered at this time. It believes, however, that the legal and practical difficulties involved in enforcing any scientific property would eventually arouse an unfavorable public opinion against scientists, owing to the difficulty of enforcing scientific property and the inherent nature of its broad monopoly. . . . The committee's views being negative as to the first question asked by the American Bar Association it can not undertake to answer the second question in regard to indicating a feasible and practical way of affording this protection."

Since the scientists themselves have made a negative report, your committee recommends that no further study be given to this question at present and that the subject be dropped from the committee's agenda.

THE RECORD-BREAKING HEAT OF JULY

JULY brought record-breaking heat to the United States, notably to the Middle West and Southwest. Never before since the weather records began more than 60 years ago has the heat in any one month been so intense over so wide an area in this country, nor have such abnormally high temperatures persisted day after day without a break, according to J. B. Kincer, of the Weather Bureau. The nearest approach was in July, 1901.

The highest temperatures recorded for July this year in the Middle West and Southwest closely paralleled, and in many places topped the July, 1901, record in the same area. This year the highest ranged from 104 degrees, or 13 degrees above normal, at Oklahoma City, Okla., to 108 degrees, or 22 degrees above normal, at Des Moines, Iowa. At Columbia, Mo., the maximum of 112 degrees was 24 degrees above normal and at North Platte, Neb., the maximum of 108 degrees was 21 degrees above normal. In July, 1901, they ran from 102 degrees, or 11 degrees above normal, at Oklahoma City, to 109 degrees, or 23 degrees above normal, at Des Moines.

The number of successive days when the thermometer registered 100 degrees or over puts July, 1934, in a class by itself in the records of the Weather Bureau. Des Moines reported 12 days with 100 degree and higher temperatures; 9 of these were successive. In 1901, there were the same number of high-temperature days at Des Moines, but only 6 were in succession. Columbia, Mo., had 21 such days, with 16 in succession, in July, 1934, and 18 with 7 in succession, in July, 1901. North Platte, Neb., had 16, with 13 in succession in 1934, against 7, with 2 in succession, in 1901. Concordia, Kans., had 23, with 18 in succession, in July, 1934, and 19, with 10 in succession, in July, 1901. Oklahoma City, Okla., had 20, with 10 in succession, in July, 1934, and 4, with 2 in succession, in 1901. Fort Smith, Ark., had 24, with 17 in succession, in 1934, and 13, with 5 in succession, in 1901.

The average maximum temperatures for the two successive hottest weeks in both years' heat waves were uniformly higher in 1934 than in 1901. At Des Moines these average maxima for the two weeks were 102 degrees in 1934 and 101 degrees in 1901; at Columbia, 106 degrees in 1934 and 102 degrees in 1901; at North Platte, 103 degrees in 1934 and 98 degrees in 1901; at Concordia, 106 degrees in 1934 and 101 degrees in 1901; at Oklahoma City, 102 degrees both years; at Fort Smith, 104 degrees in 1934 and 101 degrees in 1901.

The 1901 heat wave broke permanently about July 26. The 1934 heat wave broke, temporarily at least, about the same time in the month, except in the more Southwestern sections, especially in the Southern Plains, where it continued.

The exceptionally high temperatures of July were preceded this year by very high temperatures in June in the Middle West and Southwest, which was not the case in 1901. For example, at Des Moines, Iowa, the July, 1901, mean temperature of 8.4 degrees above normal followed a mean June temperature only 2.6 degrees above normal. This year, however, at the same point the mean June temperature was 8.4 degrees above normal and the July mean, about 7 degrees above normal. At Columbia, Mo., another high temperature center in both years—the mean June temperature of 1.5 degrees above normal rose to 9.6 degrees above normal in July in 1901. This year the June temperature at Columbia was 7.6 degrees above normal and the July temperature, nearly 12 degrees above normal.

THE MINERAL RESEARCH PROGRAM OF THE MICHIGAN COLLEGE OF MINING AND TECHNOLOGY

THE mineral research program authorized by the Federal Emergency Relief Administration and approved by the state planning board for the Michigan College of Mining and Technology, which is now under way, embraces the investigation and development of mineral resources and it is hoped to make it

a continuing program. It will provide constructive work for college people, and, as it is work which must be done in any event, the cost will be much lower than during prosperous times. The college will cooperate with all existing agencies, including the University of Michigan, the Michigan State College and the geological division of the Department of Conservation.

The program calls for investigation of mineral resources, methods of exploiting them and means of providing permanent industrial activity in the field. Among the general projects there are thirteen in the mining, metallurgical and geological fields and three in the electrical field. Research on copper and iron ore already in progress at the college will be continued.

In connection with iron ore research, attention is called to the fact that Michigan produces approximately 16,000,000 tons annually and now has a reserve estimated by the state appraiser of mines of about 175,000,000 tons of high-grade, merchantable ore. The reserve, which varies from range to range, will not last much over a decade.

There is, in addition to the merchantable ore, an enormous tonnage, now non-merchantable, of low grade iron formation. This has been estimated by various authorities at from three and a half to five billion tons. It contains enough iron to supply the entire demand for many hundreds of years. Like the "high grade" ore, this ore varies with the district. The problem is to make these non-merchantable iron formations acceptable as ore and thereby to add to the natural resources of the nation.

Low grade iron ores from all the ranges have been investigated, thousands of samples assayed and ores classified. The major portion of the work to date has been done on the ores of the Gogebic range, the development of a routine of practice and the invention and testing of machines. The iron formation of the Gogebic range has proven about 85 per cent. amenable to concentration. A machine has been developed which has definite promise of success on the coarsely crystalline ores.

In the work on copper, in the first two years of the formal research program, which has been carried out under the leadership of Dr. W. O. Hotchkiss, president of the college, a saving of 10,000,000 pounds of copper was effected and the practise outlined continues at this time. The companies themselves have inaugurated research programs.

THE UNIVERSITY OF CALIFORNIA AT LOS ANGELES CHAPTER OF THE SOCIETY OF THE SIGMA XI

DURING the past year, the following Sigma Xi Lectures were given at the University of California at Los Angeles:

"Space and Time in Atomic Theory," by Dr. Niels Bohr, professor of physics in the University of Copenhagen.

"A Demonstration of Liquid Crystals," by Dr. G. van Iterson, professor of technical botany in the Technical High School of Delft.

"Results of Some Recent Researches," by Dr. R. A. Millikan, director of the Norman Bridge Laboratory of Physics and chairman of the Executive Council of the California Institute of Technology.

"The Molecule in Biological Structures," by Dr. O. L. Sponsler, professor of botany in the University of California at Los Angeles.

"The Realm of the Nebula," by Dr. Edwin P. Hubble, astronomer at the Mount Wilson Observatory of the Carnegie Institution of Washington.

"The Program of Earthquake Study in Southern California," by Dr. H. O. Wood, research associate of the Carnegie Institution of Washington and director of the Seismological Laboratory at Annandale, California.

"The Distances of the Stars," by Dr. W. O. Adams, director of the Mount Wilson Observatory of the Carnegie Institution of Washington.

"Greek Tradition in its Relations to Modern Science," by Dr. E. T. Whittaker, professor of mathematics in the University of Edinburgh and Hitchcock Lecturer at the University of California. Dr. Whittaker also delivered a second lecture on "Mechanism *vs.* a Pan-Mathematical Theory of the Universe."

"A Study of Oceanography of the Pacific," by Dr. T. Wayland Vaughan, professor of oceanography in the University of California and director of the Scripps Institution of Oceanography at La Jolla.

"The Causes and Effects of Earthquakes," by Dr. J. P. Buwalda, professor of geology at the California Institute of Technology.

On June 11 the university chapter initiated one new member and twenty-one new associates. The officers of the chapter for the past year were: Dr. S. J. Barnett, *President;* Dr. B. M. Varney, *Vice-president;* Dr. E. K. Soper, *Secretary,* and Dr. H. W. Stone, *Treasurer.* New officers for the coming year were elected as follows: Dr. B. M. Varney, *President;* Dr. G. Ross Robertson, *Vice-president;* Dr. E. K. Soper, *Secretary,* and Dr. H. W. Stone, *Treasurer.*

E. K. SOPER,
Secretary

SCIENTIFIC NOTES AND NEWS

ON his retirement from the directorship of the Department of Genetics of the Carnegie Institution of Washington, Dr. Charles B. Davenport addressed the members of the department on "Reminiscences of Thirty Years." He was given a purse of over $150 to purchase books and fifteen bookplates, each con-