implements, their various uses; the different methods of hafting and the processes employed in their manufacture. The stone age in Europe is treated at length, with descriptions of the implements characteristic of different periods and the arts and manner of life of the men who used them. There are chapters on the Age of Copper and Bronze, The Early Iron Age and Stone and the Metals Outside Europe. Also there is a glossary of terms and a list of books and papers dealing with man's progress from stone to iron.

SOCIETIES AND ACADEMIES

THE AMERICAN CHEMICAL SOCIETY. NORTHEASTERN SECTION

The seventy-fourth regular meeting of the Northeastern Section of the American Chemical Society was held in the Lowell Building of the Massachusetts Institute of Technology, on Friday, February 15, with President L. A. Olney in the chair. About seventy-five members were present.

Dr. David T. Day, of the United States Geological Survey at Washington, D. C., addressed the section upon 'The Conditions of Occurrence of Platinum.'

The speaker began with a reference to the remarkable increase in price of platinum—about tenfold increase within the last four or five years; this is not due to largely increased demands, but has been brought about mainly through the combination of large dealers and hoarding of the metal by merchants and others.

Platinum is always obtained by placer mining, and deposits of value are known to exist in the United States of Colombia, near Choco Bay, but the climatic conditions, and complications caused by government restrictions, render it impracticable to expect an immediate development of the deposits. Platinum was discovered on the Pacific coast of the United States at Pillar Point in 1850, but being much more difficult to recover from the sands, than is gold, in ordinary placer mining, development of these deposits was slow. Deposits have also been located in California in Ute County, along the Trinity River, at Monterey, and on the beach at Santa Barbara; beach deposits occur on the coast of Oregon and Washington; in British Columbia along the Tulameen River, is a valuable deposit well situated for placer mining.

Platinum occurs as an arsenide, sperrylite in many sulphide ores, such as those at Sudbury, Ontario. It also occurs native with gold, magnetite, chromite, serpentine and other minerals in the black sands; here it is in extremely fine grains, as a rule, but the character of the deposit can be easily distinguished by the microscopical appearance of the grains. The modern methods of concentrating the sands have now made a sure supply and no real famine of platinum exists; but no good substitute for it has yet been found in the connections of the incandescent light bulbs, nor, indeed, in any other industry. The present supply of the metal is probably 100,000 ounces per year, and the probable future demand is estimated at 200,000 ounces per year. If worked systematically, the known placer deposits could now supply 175,000 ounces without drawing on the sulphide or arsenide deposits, and it seems unlikely that these ores will be worked until the placer deposits are exhausted. Several valuable by-products are now being thrown away after the gold is taken out of the black sand; the magnetite content probably averages twelve per cent. and this is capable of yielding excellent iron and steel by smelting in the electric furnace.

The lecture was illustrated with lantern slides. In the discussion it was brought out that the value of the platinum in the black sands ranged from ten to fifty cents per ton. Professor Robert H. Richards contributed to the discussion a description of the black sands and the method of concentrating and collecting the fine platinum. The ordinary fire assay is practically useless where the value runs less than twenty cents per ton. But with the Wilfley table and magnetic separators, followed by an amalgamation process with mercury containing considerable sodium, the platinum and gold can be recovered. On removing the sodium by treatment with water, the platinum is practically all thrown down, leaving the gold behind in the amalgam. The

cost of the recovery depends on the costs of transportation, excavation and handling the raw sand. The total cost will probably average at least fifteen cents per ton of sand.

A rising vote of thanks was accorded to the speaker, and the meeting adjourned.

FRANK H. THORP,
Secretary

THE ST. LOUIS CHEMICAL SOCIETY

AT the regular meeting of the society on February 11, Mr. R. S. Sherwin presented a paper entitled 'The Analysis of Fluorides, especially in regard to Calcium Fluoride.' The speaker dwelt chiefly on the difficulties connected with the determination of the fluorine, and the methods of overcoming the difficulties under various conditions. Mr. E. J. Ericson opened the discussion. He dealt chiefly with the determination of silica contained in fluorides. C. J. BORGMEYER,
Corresponding Secretary

THE GEOLOGICAL SOCIETY OF WASHINGTON

AT the 186th meeting of the society, on January 23, Mr. M. R. Campbell described informally some peculiar fine striations, resembling glacial striæ, on one of the bedding planes in the Portage flags in a quarry at Watkins, New York. The striæ are almost exactly parallel and absolutely straight for ten or fifteen feet, as exposed in the quarry. The surface of the rock shows the development of slaty cleavage normal to the direction of the striæ. The appearance of the striations indicates that they are the result of movement, either of a glacier or of the overlying rock mass. In the vicinity of Watkins the hills rise 300 or 400 feet high, and consequently this particular bed of rock is overlain by an average thickness of 200 or 300 feet of strata. The objection to the hypothesis of rock movement is that in places there are cross striæ at an angle of 20° or more from the principal lines. Seemingly this could not have been produced by movement in the rock mass, and the only other explanation that seems to apply is glacial movement, which, if true, would mean that a glacier invaded this region in late Devonian time. This hardly seems possible, and specimens of the striated rock were exhibited in the hope that suggestions would be offered regarding their mode of origin.

Mr. Fred E. Wright exhibited an interesting aggregate of artificial copper and silver crystals prepared in the geophysical laboratory and formed in the upper part of a steel bomb lined with a silver-plated copper tube. Into the bomb 25 c.c. of water, 1 gr. ammonium chloride and 1 gram of tremolite had been introduced and the whole heated in an electric resistance furnace at 500° C. (465–540) for three and one half days—the water being above the critical temperature and under a pressure of considerably over 200 atmospheres. The solution attacked the silver-copper tube near its base and redeposited the copper and silver in separate crystals in the upper and cooler part of the tube. In the lower, hotter part of the tube, particles of copper silver alloy and not separate crystals were observed. The inference was drawn that the aggregates of native copper and silver of the Lake Superior region, which are not alloyed, were formed at temperatures below 400°; a well-established fact deduced from abundant geologic evidence.

Regular Program

Artificial Magnesian-Pyroxenes and Amphiboles: Mr. FRED E. WRIGHT.

The results of an extended series of experiments on these minerals performed by Messrs. E. T. Allen, J. K. Clement and the speaker, in the geophysical laboratory of the Carnegie Institution of Washington, were described briefly, and obvious geologic conclusions deduced therefrom. Four forms of magnesium-metasilicate were prepared artificially, and found to correspond respectively to monoclinic pyroxene, to enstatite and to monoclinic and orthorhombic magnesian amphiboles. The monoclinic pyroxene was formed in a number of ways, and although it closely resembles other pyroxenes, both optically and crystallographically, it is easily recognized in the thin section by its polysynthetic twinning after the orthopinacoid and by the normal symmetric position of its plane of optic axes. Measurable crystals of the other forms were

not produced, and their identification was accomplished by determining their physical properties—optical characteristics, specific gravity, hardness, etc.

The conditions of formation of each of these four forms were described, and attention called to the stability of the monoclinic pyroxene form at all temperatures—the other forms bearing monotropic relations to this form. Above 1,250° both artificial and natural enstatite change into the monoclinic pyroxene with evolution of heat. The stable form melts at 1,521°. The experiments show that temperature and viscosity are factors of prime importance in the formation of unstable bodies. Thus, from melts or from silicate solutions, the stable monoclinic form of magnesium metasilicate crystallizes at the highest temperature, enstatite next, and the amphiboles probably lowest of all. From thin solutions the stable form is obtained at still lower temperatures, 800° to 1,000°, while from aqueous solutions at 375° to 475° an amphibole results. The intergrowths of enstatite with the monoclinic pyroxene, and of the two amphiboles, which were obtained in close resemblance to those of nature, are cases of false equilibrium, and their occurrence establishes the fact that it can not be assumed that all rocks or mineral aggregates are systems in true equilibrium. The study of the enstatite from the Bishopville meteorite indicates that it must have cooled very rapidly from a high initial temperature, and there is evidence that the same is true of other meteorites. The conditions of formation of the four forms of magnesium metasilicate are in accord with the mode of occurrence of the natural minerals of similar composition.

Local Glaciation in Maine: Mr. Frederick G. Clapp.

In various parts of Maine there are evidences of local valley glaciers of post-Wisconsin or late Wisconsin age. These are most pronounced in the vicinity of Mt. Katahdin. Several valleys in the northern slopes of that mountain are shown by the position of moraines to have been occupied by glaciers, and more extensive evidences are found throughout the region southeast of the mountain. The indications consist chiefly in the existence of numerous moraines formed entirely of large granite boulders of the character of granite found only on Mount Katahdin. As the direction of glacial striæ in northeastern Maine is directly south, and as the granite moraines are found both south and southeast of the mountain, the material is shown to have been deposited by glaciers of post-Wisconsin or late Wisconsin age moving outward and south or southeastward from Mount Katahdin as a local center. Further indications are furnished by the depth of weathering in some of the more sandy moraines situated farther from the mountain. The glaciers extended at least twenty miles from the mountain. References were cited of descriptions of similar local glaciers in the White Mountains of New Hampshire, the Green Mountains of Vermont and the Katskill Mountains of New York.

The Late History of the Lower Colorado River: Mr. W. T. Lee.

The paper dealt mainly with the geographic and geologic features of the Colorado Valley from the mouth of the Grand Canyon to the Gulf of California. It was shown that the data, principally physiographic, warranted a subdivision of Tertiary and Quaternary time into epochs, the sequence of which is apparently clear, as announced by the speaker in the *Bulletin of the Geological Society of America* for 1906. Briefly stated, these epochs are as follows, given in order from youngest to oldest.

1. Sedimentation—formation of flood plains.

2. Erosion—during which the river cut through the Chemehuevis gravels.

3. Sedimentation—accumulation of about 700 feet of sands and gravels which extend from the Grand Canyon to the Gulf of California and are known as Chemehuevis gravels.

4. Erosion—diversion of the river from its former course in Detrital-Sacramento Valley to its present course west of the Black Range, and the cutting of Boulder, Black, Mohave and Aubrey canyons to a depth of 2,000 feet or more.

5. Sedimentation—wide-spread aggradation over the basin region. Deposition by the

river of 2,000 feet or more of sand and gravel, known as Temple Bar conglomerate.

6. Profound faulting and uplift of the plateau and erosion of Grand Canyon.

7. Erosion—during which moderately mature valleys were formed, the most conspicuous in western Arizona being Detrital-Sacramento Valley, presumably formed by the ancient Colorado.

8. Eruption of 3,000 feet or more of rhyolite and andesite.

9. Erosion—formation of Mohave peneplain.

10. Uplift and eruption of older andesite.

11. Erosion.

After a statement of the evidence upon which the subdivision is based, it was shown that the epochs might be correlated with those of neighboring regions. The more recent ones, as given above, were compared with those of Lake Bonneville and the older ones compared with the epochs of erosion, uplift and volcanic activity of the plateaus. The marine sediments of the Pacific Coast, while far from the region described, are divisible by unconformities and changes in fauna into formations representing epochs of uplift and volcanic activity alternating with epochs of quiescence similar to those of the Colorado River region, and may, upon further study, prove valuable for purposes of exact correlation.

In summing up the results of his studies, the speaker emphasizes the fact that in the Lower Colorado region, where fossiliferous strata are absent, so far as known, the sequence of Tertiary and Quaternary events can be established from physiographic evidence; that the epochs established on this basis are comparable with those of neighboring regions; and that certain lines of evidence, especially the one relating to mid-Tertiary peneplaination, give promise of definite correlation.

RALPH ARNOLD,
Secretary

DISCUSSION AND CORRESPONDENCE

FAKES AND THE PRESS

ON January 24 a paragraph, starting apparently from St. Louis, was disseminated throughout the country by the various press associations stating that a sudden diminution in the flow of oil in the wells of south Texas and Louisiana had taken place immediately after the earthquake at Jamaica, accompanied by a corresponding increase in the flow of the wells of northern Texas and Louisiana. Investigation has shown that this statement is a so-called 'fake,' namely, a lie perpetrated either as a joke or for the purpose of affecting business transactions in oil and land. The geologists whom the present writer consulted assured him at the beginning that the statement could not possibly be true, but he thought it worth while to endeavor to trace the matter back to its source. Of course the author is anonymous and unknown. Very few items in the daily newspapers appear as based upon the statements of responsible persons who are willing to vouch for their correctness. A newspaper is essentially a collection of the gossip and hasty impressions that have occurred during the day, set off in skilful headlines by the managing editor. The readers must therefore accept every statement with a grain of allowance. 'Newspaper science' has come to be a byword of reproach, and we have on several occasions in the last twenty years exposed fake tornadoes, meteors, lightning and grossly exaggerated earthquakes. In some cases like that of the present instance the newspaper report, by misleading investors, has a certain money value to the community, that is to say it can cause a loss, but no gain. It is analogous to a libel, but it is not clearly provided for by any law. It is a grave question whether Congress can not by some legal enactment check the publication of all items that convey erroneous impressions relative to matters in which the whole community is interested. The community has a right to protect itself from every species of crime. The law is made for the community, as well as for the individual. Can not some of our legal friends devise a law that will check the publication of fakes or condemn the fakist to the insane asylum, as being a joker dangerous to the community?

C. A.