lebores and pyrethrums were generally found of good quality. The roach powders, some of which are also sold for killing fleas, ants and other insects, were found to consist generally of borax or pyrethrum, or both. The price at which these are sold should yield a satisfactory profit to the manufacturer, one specimen of borax containing nearly seven per cent. of impurity, selling at one dollar per pound. Roach pastes contain one per cent. more or less of phosphorus, mixed with flour, meal, sugar, molasses or lard. Several bug poisons consist of gasoline or of turpentine. 'Rough on Rats' is a mixture of arsenious oxid with barium carbonate. Altogether the report makes very interesting reading and is valuable for reference. A point of particular interest to chemists is the description of the methods of analysis used in each case.

From his investigations of the metallic carbids Moissan has recently drawn several geological conclusions and developed a new theory regarding the origin of petroleum. According to his views, in the early periods of the earth's history almost the entire quantity of carbon was combined with metals. Later, water reacting with these carbids formed hydrocarbons, and from these carbon dioxid was formed by oxidation. The origin of natural gas is the action of water upon aluminum carbid, by which methane is evolved. From other metallic carbids liquid carbon compounds have been formed, although a different origin is possible for some petroleums. Certain volcanic phenomena may be caused by the action of water upon easily decomposable carbids, while in other cases a similar action might give rise to earthquakes. After all, Moissan's theory seems to be an extreme development of that put forth a number of years ago by Mendeleef, and which has been furnished very strong support by the experimental work of Moissan.

Moissan has continued his researches upon liquid silicon hydrid, and finds from its vapor density that its formula is Si_2H_6. It ignites on contact with the air, and when dried by sulfuric acid it explodes still more violently on coming to the air. When the electric spark is passed through the vapor under reduced pressure it is completely decomposed and amorphous silicon obtained in long filaments. This amorphous silicon, probably thus for the first time obtained in a pure condition, possesses remarkable reducing properties. Potassium permanganate is slowly reduced in the cold, copper sulfate and gold chlorid are reduced to the metal on boiling, and mercuric chlorid is reduced to calomel.

The deterioration of platinum crucibles, even when carefully used, is well known and has been generally attributed to the action of the carbon of the flame, though other explanations have not been wanting. The matter has been taken up recently by W. Rosenhain, and his results have lately appeared in the *Proceedings* of the Royal Society. He attributes the cause of the brittleness of platinum which has been used for a long time to a recrystallization of the metal, which has taken place at a temperature far below the fusing-point. Similar changes are known to take place in the case of lead, tin, zinc and cadmium. When platinum is heated to a high temperature, even in the presence of a large excess of oxygen, it gradually becomes quite brittle, so that when at a low red heat it is easily shattered by a blow. An examination of the fragments reveals a crystalline structure throughout the metal. Under such circumstances the surface assumes a crystalline appearance, and this crystalline structure is not merely superficial, but penetrates the metal. Indeed the external appearance is probably due to an etching action of the gases of the flame.

J. L. H.

THE COMET B, 1902, AND THE MASS OF MERCURY.

MR. F. E. SEAGRAVE calls attention to the close approach of Comet *b,* 1902, to Mercury on 1902, November 29^d 17^h. The heliocentric coordinates of Mercury at that time are $\lambda = 225°6'$, $\beta = +0°14'0''$, log. $r = 9.65328$ and of the comet, according to the elements given in the Lick Bulletin No. 25, $\lambda = 225°18'$, $\beta = -1°50'40''$, log. $r = 9.63581$. The logarithm of the least distance will, therefore, be 0.0177, corresponding to a distance of 1,644,000 miles.

This result may be checked by the geocentric positions. At November 29^d.5, the geocentric coordinates of Mercury are R.A. = 15^h 50^m 58^s, Dec. = — 20°1′.6, log. δ = 0.1500. The coordinates of the comet, according to the ephemeris mentioned above, are R.A. = 15^h 53^m 23^s, Dec. = —20°44′.3, log. δ = 0.1451. According to Nijland's ephemeris (A. N. 160.14), the coordinates of the comet are R.A. = 15^h 54^m 54^s, Dec. = — 20°37′.7, log. δ = 0.1443. The comet will probably be visible for some time after passing perihelion, as is shown by the following extension of the ephemeris by Mr. Seagrave.

EPHEMERIS.

Date, 1902-3. d	R. A. h m s	Dec. ° ′	log. r	log. $\triangle$	Br.
Dec. 7.5	15 27 25	— 24 12.9	9.7335	0.1296	10.12
" 11.5	15 15 19	— 26 0.2	9.7868	0.1145	8.49
" 15.5	15 3 13	— 27 52.1	9.8368	0.0958	7.35
" 19.5	14 50 34	-- 29 50.6	9.8827	0.0739	6.58
" 23.5	14 36 53	— 31 58.2	9.9244	0.0494	6.08
" 27.5	14 21 13	— 34 15.3	9.9622	0.0225	5.78
" 31.5	14 2 37	— 36 41.9	9.9968	9.9939	5.63
Jan. 4.5	13 39 54	— 39 15.3	0.0284	9.9642	5.58
" 8.5	13 11 30	— 41 48.0	0.0575	9.9347	5.59
" 12.5	12 35 54	— 44 4.7	0.0844	9.9072	5.60
" 16.5	11 52 18	— 45 39.6	0.1093	9.8842	5.55
" 20.5	11 1 56	— 45 59.7	0.1325	9.8688	5.36
" 24.5	10 8 59	— 44 42.3	0.1543	9.8634	4.97

The effect of the disturbance by Mercury can, therefore, be determined with such accuracy that it is hoped that it will give a good value of the mass of that planet. In any case, careful measures of the position of the comet after November 29 are greatly to be desired.　　　　　EDWARD C. PICKERING.

HARVARD COLLEGE OBSERVATORY.

SCIENTIFIC NOTES AND NEWS.

MR. WILLIAM SELLERS has been nominated for the presidency of the American Society of Mechanical Engineers.

PROFESSOR MARSTON TAYLOR BOGERT, of Columbia University, has recently been elected a vice-president of the Society of Chemical Industry (of England).

DR. J. WALTER FEWKES, of the Bureau of American Ethnology, has left Washington for Porto Rico to continue his ethnological and archeological studies of the West Indian aborigines. His plan of work embraces an examination of caves, village sites, shell heaps and other places of occupation of the prehistoric inhabitants, and a collection of such ethnological data as may shed light on the manners and customs of the Porto Rican Indians. Dr. Fewkes will remain in the West Indies during the winter, and in the course of his work expects to visit Santa Domingo and the Lesser Antilles as far south as the coast of Venezuela.

DR. A. E. KENNELLY has returned to Harvard University from an expedition to supervise the laying of a cable in Mexican waters.

ERNST A. BESSEY, explorer for the United States Department of Agriculture, has returned from his journey into Turkestan, and has entered the University of Halle for further botanical study. The easternmost point reached by him was Andijan, in the province of Ferghana.

AT the annual meeting of the American Antiquarian Society, held at Worcester, Mass., on October 21, 1902, Dr. Albert S. Gatschet, of the Bureau of American Ethnology, and Dr. Alexander F. Chamberlain, of Clark University, were elected members.

THE Hon. C. A. Parsons, F.R.S., known for his work on the steam turbine, has been elected an honorary fellow of St. John's College, Cambridge.

NORTHWESTERN UNIVERSITY will confer the degree of LL.D. on Professor Adolf Lorenz, the Viennese surgeon, at present in this country.

THE committee on science and arts of the Franklin Institute has recommended the award of the John Scott legacy medals and premiums to William A. Doble, of San Francisco, for his improvements in tangential water wheels; to Norton P. Otis, Rudolph C. Smith, John D. Ihlder and August Sundt for their improvements in electric elevators for private residences; to James Reagan, of Philadelphia, for his improvements in grate bars, and to H. Ward Leonard, of Bronxville, N. Y., for his system of motor control.