Cyanogen becomes liquid at -25°C , and begins to solidify at -30° , assuming a radiated texture. Its boiling point is -20.7°C .

Ammoniacal gas must be perfectly dried before being liquified. Its boiling point is -33.7° .

I have in vain tried to reduce to the liquid state, by a reduction of temperature as far as -50° , the gas which results from the combination of hydrogen with chlorine, bromine, iodine and phosphorus.

We may obtain sulphuretted hydrogen in a liquid state by subjecting hypersulphuretted hydrogen to decomposition in a tube; but it requires the presence of a little water. If bits of chloride of calcium be introduced into the tube, the hypersulphuret may be preserved intact while the tube remains hermetically sealed.

Annales des Mines, tom. xvii, p. 317.

Chemical constituents of Sugar Beet. By HENRY BRACONNOT.

It results from the researches that I have made on the Sugar Beet of Silesia, that this root contains—1, crystalizable sugar; 2, non crystalizable sugar; 3, albumine; 4, pectine; 5, mucilaginous matter; 6, lqueous matter; 7, phosphate of Magnesia; 8, oxalate of potash; 9, niclate of potash; 10, phosphate of lime; 11, oxalate of lime; 12, an acid fat having the constitution of tallow; 13, matter analogous to wax; 14, chloride of potassium; 15, sulphate of potash; 16, nitrate of potash; 17, oxide of iron; 18, animalized matter soluble in water; 19, an unknown odorous and acrid matter; 20, indeterminate sal ammoniac in small quantity; 21, pectic acid.

Ann. de Chem. Dec., 1839.

Manufacture of Lead bullets, by rolling.

At the Arsenal, at Woolwich, in England, they now manufacture leaden bullets by drawing and compression.

These bullets have the advantage of being without *blows* or air cavities, and are rolled out of round bars of lead, which are passed between rolls formed like the roulettes used for ornamental work on the lathe.

The rolls are constructed with hemispherical cavities, each one of which forms one half of the ball, whilst the correspondent cavity forms the other half; the bullets are then finished by removing the extra metal, and being rolled together in a barrel.

Journal des Usines.

On the Irregular Movements of the Barometer. By T. HOPKINS.

Mr. Hopkins maintained that the *irregular* movements of the barometer arise, not from the alterations of surface temperature, but from the condensation of aqueous vapour, and the consequent formations of rain. This (he said) caused local heatings of the atmosphere and considerable reductions of its pressure in the locality, particularly in the colder latitudes. Within the tropics, the barometer does not ordinarily fall as much as in colder latitudes, notwithstanding the abundant rains which take place there, because the conden-

sation occurs, and the temperature is increased at a greater height in the atmosphere, and the reduction of the incumbent pressure in the part is spread over a wider area. The condensation takes place too at an elevation, where the air, from being subjected to inferior pressure, is more attenuated, and the heating is consequently more diffused. Rain is formed in certain latitudes, say at an average height of 3,000 feet, where the air has a density proportioned to that height, and where the whole effects of the local heating are confined to an area of moderate extent, thus reducing the pressure of the atmosphere on the barometer in every part of that area in a considerable degree; whilst, in other parts nearer the equator, the condensation which produces rain takes place at an average height of, say 6,000 or 9,000 feet, where the air is rare in proportion to the height; the heating effects are, therefore, diffused to a corresponding extent, whilst the reduction of pressure at the surface is spread over a wider area. It follows, that with equal amounts of rain, the fall of the barometer will be the greatest and confined to the smallest area, in the coldest climates. Mr. Hopkins also represented that the *diurnal* oscillations of the barometer arise from, first, the condensation of aqueous vapor into cloud, and then from the evaporation of the particles of water that constitute that cloud. He stated, that the morning sun warmed the lower air, and caused it to rise until condensation formed cloud, and liberated heat sufficient to warm a mass of the atmosphere, and thus to cause the barometer in the locality to begin to fall at, say about ten o'clock in the morning, which fall continued until about four o'clock in the afternoon, when condensation ceased. From this time, evaporation of the cloud commenced which cooled the air in part—made it heavier—and caused the barometer to rise until about ten o'clock, P. M., by which time the cloud was evaporated. The cooled and heavier air now descended to the surface, from which it absorbed a portion of heat, and became somewhat warmer. From this second warming of the air, and from a reduction of the quantity of aqueous vapor in the atmosphere, as is evidenced by the fall of the dew point, the barometer again fell, and from the operation of these two causes, continued to fall until four in the morning; from which time, those general cooling influences that operate in the absence of the sun, caused the barometer again to rise till ten in the morning, thus completing the two risings and two fallings in the twenty-four hours.—This was shown to be in general accordance with the tables of the Plymouth observations for three years, and with those made at Madras and Poona. The fact, also found in the Plymouth observations, that the dew point rose with the temperature until eleven o'clock, A. M., when, although the temperature continued rising, the dew-point did not rise higher, showed that the vapor formed during the hottest part of the day was expended in supplying that which was condensed in forming the daily cloud. According to these tables, also, the dew point at the surface continued stationary until four o'clock, P. M., when it began to fall, and continued falling with the declining temperature until the great cold resulting from evaporation ceased. The diurnal fluctuations were also shown to be the least, when the irregu-

lar were the greatest (as observed by Mr. Birt,) because rain was then produced, and evaporation prevented from cooling the air at the regular diurnal period, and in that way prevented the rise of the barometer at that recurring period.

London Athenæum.

Statistics of Hosiery.

Mr. FELKIN read a paper on the statistics of the Hosiery manufactured by machinery in the United Kingdom, compiled from an actual census taken under his direction in the present year. He stated that before the age of Elizabeth, stockings were either knitted of coarse woollen thread or cut out of linen and silken tissue. Towards the close of the sixteenth century the Rev. W. Lee succeeded in producing the stocking-frame, and his ingenuity was appreciated by Queen Elizabeth, who visited him at his lodgings, and accepted specimens of his productions. Her kinsman, Lord Hunsdon, entered into a kind of partnership with Lee, and one of the Tudor family became the first stocking-makers' apprentice. James I. refused to follow the enlightened policy of Elizabeth; and Lee, neglected in England, accepted the offers made by the French minister Sully; he established a manufactory at Rouen, but after the murder of Henry IV. the patronage he had received was withdrawn, and he died of a broken heart. The stocking-frame spread rapidly over England, France, Spain, and the Netherlands; Lee's brother introduced the manufacture into London, where the "Frame-work Knitter's Company" still exists, though it has been long an empty name. Out of 660 frames, in 1669, there were 460 in London, three-fifths of the whole being employed in the manufacture of silk goods. In 1710 there were 100 frames destroyed in London on account of disputes about wages, and in 1714 there were 2,500 frames in London, 600 in Leicester, 400 in Nottingham, and about 8,600 throughout all England. From this time the trade began to leave London, probably from the vexatious nature of the company's regulations; and in 1753, when the total number of frames in England was 14,000, London had fallen to 1,000, while Nottingham had risen to 1,500, and Leicester to 1,000. The application of the stocking-frame to the manufacture of imitations of pillow lace, led the way to a great variety of ingenious inventions, and a consequent extension of the trade: in 1782 there were about 20,000 frames in England, of which 17,350 were in the midland counties.—Though the stocking-makers and lace-makers started from the same point, their fate has been very different; the manufacturers of stockings are about the worst paid and those of lace among the best paid of the operative classes. Mr. Felkin stated that there are about 42,652 persons engaged in the manufacture of stockings, and as many more employed to wind, seam, and sew up the hose. He denied that as a class they were idle and negligent; he had known them from boyhood, having worked for his support at their frames, and he knew that they were no worse than hard work and small wages would make any class of the community. To explain the position of the stocking