radiations corresponding to equal heights of the sun above the horizon. In the latter case, it would be the dark part of that radiation, situated beyond the limit of the violet, which would undergo, on its way, a greater or less absorption, in virtue of a certain modification, which might not alter the transparency of the atmosphere. It is true that, on this hypothesis, we must admit that the permeability of the air for the dark chemical rays, may be different in certain cases from its permeability for luminous rays. But are we not in possession of very many facts which prove that this is actually the case with regard to optical, calorific, phosphogenic and chemical effects produced by the same radiation?

Ann. de Chem., Nov. 1839.

On the force of tension of some condensed gases. By M. BUNSEN.

I first measured the resistance of the glass tubes which I intended to use. I filled them completely with water (after introducing a small manometre) and then plunged them into water, which I gradually heated to the boiling temperature—which, by the expansion of the water within the tubes, represented a pressure of 150 atmospheres. When the tubes burst under this pressure there were generally an infinite number of longitudinal parallel fissures and accompanied by a piercing noise.

A tube of $11\frac{1}{2}$ millimetres in internal diameter and $1\frac{1}{2}$ mill. in thickness, burst under a pressure of 80 atmospheres, and I found tubes of a smaller diameter which resisted 200 atmospheres. But after a while their tenacity became so diminished that some of them which had supported 30 atmospheres, suddenly broke under a pressure of scarcely 4 atmospheres. I attribute this to a diminished elasticity in the glass, like that of all other bodies, in proportion to the length of time in which they have been subjected to great pressure.

I have submitted cyanogen, sulphurous acid, and liquid ammonia to different temperatures, in glass tubes containing a manometre, and the result was the following tensions, calculated in metres of mercury.

Temperatures.	Sulphurous Acid.	Cyanogen.	Ammonia.
— 33.7			.749
— 30.0			
— 25.0			
— 20.0		.80	
— 15.0		1.10	
— 10.0	.78	1.41	
— 5.0	1.11	1.73	3.64
0.	1.48	2.07	3.61
+ 5.0	1.91	2.44	4.26
+ 10.0	2.89	2.88	4.98
+ 15.0	2.93	3.33	5.78
+ 20.0	3.54	3.80	6.67
+ 25.0	4.20		

Sulphurous acid boils at $-10^{\circ} 5$ under a barometric pressure of 0.744 metres.

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-