the flask. Very small quantities of sulphur were carried further mechanically by the sulphurous acid, and deposited in the conducting tube, and the water placed to absorb the gas.

After the conclusion of the process the flask contained only

4½ drachms of sulphuric acid, and
32 grains of unaltered sulphur.

The advantages of this process are:—

1. That it furnishes a pure product;
2. That it is easily effected, and cheap;
3. That the evolution of sulphurous acid gas is very uniform, the reason of which is that the sulphuric acid always acts only upon the outer surface of the melted sulphur, and this always forms a coherent mass; and

4. That no solid deposit settles to the bottom of the vessel of evolution, which, in other methods, so often occasions the cracking of the vessel.—Dingler's *Polyt. Journal*, cl. p. 379; and *Chem. Centralblatt*, Feb. 2, 1859, p. 78.

*Rapidity of Thought or Nervous Action.** By M. ULE, *Revue Suisse*.

The method of transforming the valuation of time into space by the rapid revolution of a cylinder, proposed by Mr. Fizeau, has been applied to the measurement of the rapidity of nervous impulse. Such a cylinder rotating 1000 times a second, and divided into 360 degrees, may measure 1-360,000th part of a second; or rotating 1500 times a second, 1-540,000th part of a second; and even this may be subdivided by a microscope, so as to obtain the 10-millioneth, or perhaps 100-millioneth part of a second. By this extreme minuteness of subdivision of time, it is not difficult to measure even the rapidity of a nervous impulse. If an electric shock be given to the arm, it produces a sensation and a contraction of the muscles. Hence, by noting the interval of time between the shock and the contraction, the time occupied by the transmission of the sensation and the action of the brain, however quick, will be determined. By trying the experiment with different parts of the body, sensible differences have been observed, the shock applied to the thumb being one-thirtieth of a second behind that applied to the face; and this difference pertains to the transmission and not to the action of the brain, and hence enables us to eliminate the latter in the experiments. In this way it has been found by M. Helmholtz, by whom these experiments have been made with the most care:—1. That sensations are transmitted to the brain at a rapidity of about 180 feet per second, or at one-fifth the rate of sound; and this is nearly the same in all individuals. 2. The brain requires one-tenth of a second to transmit its orders to the nerves which preside over voluntary motion; but this amount varies much in different individuals, and in the same individual at different times, according to the disposition or the condition at the time, and is more regular the more

* From the *Edin. New Philosophical Journal*, Oct., 1858.

sustained the attention. 3. The time required to transmit an order to the muscles by the motor nerves is nearly the same as that required by the nerves of sensation to pass a sensation; moreover, it passes nearly one-hundredth of a second before the muscles are put in motion. 4. The whole operation requires one-and-a-quarter to two-tenths of a second. Consequently, when we speak of an active, ardent mind, or of one that is slow, cold, or apathetic, it is not a mere figure of rhetoric.

Uniform Diapason.

A committee was appointed by the French Government in 1858 to examine into the expediency of establishing throughout France a uniform pitch or tone for the regulation of musical instruments. On the report of this committee made by M. Halevy, the composer, a decree has been issued by which a uniform diapason has been created for all the musical establishments in France, Imperial and other theatres in Paris, and in the departments, conservatories, succursal schools, and public concerts authorized by the Government. The *la* (*a'*) corresponds to 870 vibrations per second. It is to be called the Normal Diapason.—*Cosmos*.

The diapason adopted by the *Congres Scientifique* held at Stuttgart in 1834, was *la* (*a'*)=880. This movement is therefore towards lowering the concert pitch. Savart gave as the diapason of the opera at Paris in 1834, *la*=886 $\frac{8}{15}$. Another diapason given by M. Scheibler as that of the Academy of Music at Paris in the same year was 867.5. The starting point will now be *c*=1.01953125. And the gamut will be as follows:—*ut* (*c'*)=522. *re* (*d'*)=587.25. *mi* (*e'*)=652.5. *fa* (*f'*)=696. *sol* (*g'*)=783. *la* (*a'*)=870. *si* (*b'*)=978.75. *ut* (*c''*)=1044.

Use of Words.*

A score of years ago there was talk about *endosmose* and *exosmose*, the gradual escape of gases through the barrier which ought to have kept them apart, and mixture with each other. These things exist in language: scientific words creep into common life, and *vice versa*:—*vice versa* itself is an instance. We know from Walter Scott and others that the sonorous word *meridian* came into Scotland to signify a dram taken at noon. We have recently found in an eminent man of the seventeenth century, no less a person than Huyghens, a proof of the universality of twelve o'clock as the dinner-hour in the seventeenth century. Speaking of the well-known method of double altitudes, he describes it as done by equal altitudes of the sun before and after *dinner*, a sound which he must have held to mean noon as to time, whatever it meant as to substance. It is much to be regretted that men of science never allow the long words to be corrupted down into something easier; what

* From the Lond. Athenæum, Feb., 1859.