

The amount of mill tax reported is \$116,362 04, exclusive of ninety-nine townships that made no report under this head.

The whole amount of money raised by township and district taxes, for educational purposes, as indicated by the reports received, is \$551,004 44. To this sum add \$107,395 13, the same being the amount of Primary School Interest Money apportioned at this office during the year, and we have \$658,399 57, as the total amount expended for the support of Primary Schools in the State, during the past year, as indicated by the reports received at this office.

The number of township libraries reported is 487, containing in all 168,977 volumes. Under this head 118 townships have failed to report. Many of the reports received are defective, and they often indicate great neglect on the part of officers having the libraries in charge.—*Ibid.*

#### SCIENTIFIC INTELLIGENCE.

—The citizens of Montreal have recently presented Sir William Logan with a handsome piece of plate as a testimonial of their appreciation of the services he has rendered to, and the honor he has conferred on his native country by his scientific researches and discoveries. An address was made by the Right Revd. the Anglican Bishop of Montreal, to which Sir William replied in appropriate terms.

—It appears from the researches made by Dr. Benus, of Kentucky, that 10 per cent out of the deaf and dumb, 5 per cent out of the blind, and 15 per cent out of the idiots in the public asylums of the United States, are issue from marriages between first cousins; and that out of 757 such marriages, 256 have had among their issue individuals afflicted with one of the above mentioned infirmities.

—It is asserted that Professor Mitchell has accepted the superintendence of the Observatory at Albany. The French Government has decreed the establishment of an observatory near Algiers and made ample provisions for its support.

—On the nature of simple bodies.—The *Comptes Rendus* for December contains a long memoir by Despretz on his researches to ascertain whether certain of the so-called elements are decomposable. His laborious and careful investigations have led to no decomposition, and he announces the conclusion that the substances called elementary are really elementary or incapable of decomposition. The author should have added, that they were not decomposable by the methods he used, for it is not probable that there is nothing more to be done in this branch of research. His process consists in submitting the element—cadmium for example—to the physical and chemical reagents ordinarily employed in analysis. He transforms it into an oxyd, then into salts of all kinds, decomposes these salts by chemical and galvanic methods, precipitates the metal at one time at the positive pole, at another at the negative, examines the crystalline form, turns it again into salts, which he decomposes, vaporizes the metal by means of the pile; and thus causes an element to pass through a great number of different states, and still arrives at the same element. While rendering justice to the zeal and patience of Mr. Despretz, we have to regret that these good qualities have been here wasted, for the researches would be a hindrance to the progress of science if taken seriously.

Dumas took upon himself the refutation of Mr. Despretz, and brought to the subject his well known ability.

Since the radicals (elements) in mineral chemistry present the same general relations as those in organic, he believes there is reason for bringing the two branches more closely together than is usually done. We can decompose the latter, and there is no proof that we may not decompose the former. The following are the conclusions in his memoir which will soon be published.

(1.) The compounds which the three kingdoms offer for our study, are reduced by analysis to a certain number of radicals which may be grouped in natural families. (2.) The characters of these families show incontestible analogies. (3.) But the radicals of mineral chemistry differ from the others in this, that if they are compound, they have a degree of stability so great that no known forces are capable of producing decomposition. (4.) The analogy authorizes the enquiry whether the former may not be compound as well as the latter. (5.) It is necessary to add that the analogy gives us no light as to the means of causing this decomposition, and if ever to be realized, it will be by methods or forces yet unsuspected.

—Ozonometry in the Crimea.—During the Crimean war, the French army physicians, established three observatories for ozonometric, thermometric and other meteorological observations, morning and evening each day, and also for keeping statistics of diseases and deaths. Dr. Berigny, of Versailles, has in charge a reduction of the observations, and the following are his conclusions on the subject of ozone.

(1.) The more the ozonometric test papers were colored in the open air, the more numerous were the sick that were taken to each of the hospitals. One of these hospitals was situated at the general quarters at Sebastopol (Observatory No. 1), the second at the south border of the Inkerman plateau (Obs. No. 2).

(2.) The higher the temperature the smaller the number of sick entered and also of deaths.

(3.) At the three observatories, the ozone curve was essentially the same; and (4.) the same was true for the temperature.

(5.) At observatory No. 1, the less the ozone, the greater the number of deaths, whilst at observatory No. 2 it was the reverse.

This is almost the only positive result which science and humanity have derived from that destructive war, which has cost so much money and so many lives.

—Every butcher is acquainted with the disease in the muscles of the domesticated hog, denominated 'measles,' and calls the flesh of such a hog 'measly pork.' It has long been known that those pea-like whitish globules (measles) contain a curious animal, namely, the perfect head and neck of a tapeworm, ending however, not in the long, jointed body of the regular tapeworm, but in a water-bladder. No traces of reproductive organs are to be seen. Such measles are found not only in the hog, but also in other animals, where they are better known under the name of *Hydatids*. For example, they are very often met with in the liver of rats and mice; in the mesentery of the hare; and even, though more rarely, in the muscles of man; and those of the latter have turned out to be of the same species (*Cysticercus Cellulosa*, Rudolphi) as those found in the hog. All the different species of this sort of hydatids are known in science under the generic name of *Cysticercus*.

Again, other hydatids, varying from the size of a pea to a diameter of several inches, are occasionally found in the lungs, the liver, and other organs of man, but more frequently in the liver and lungs of our domesticated Ruminants, such as oxen, sheep, and goats. These hydatids are roundish bladders of a milky-white color, containing a watery fluid, in which swim many whitish granules; each of these granules is, as a good lens will show, a well-developed head and neck of a *Tænia*, inverted into a little bag. This kind of hydatid, also, has been considered as a distinct genus of intestinal worms, called *Echinococcus*.

Again, a disease frequently occurs in the brain of sheep, producing vertigo (German, *Dreher*, French, *tournis*). This was ascertained, years ago, to be caused by another sort of hydatid, appearing as a bladder, often of several inches in diameter; and, as in *Cysticercus* and *Echinococcus*, filled with a watery fluid. On the outside of these bladders are attached a number (often hundreds) of tapeworm heads, all retractile into the inside of the bladder by invagination like the finger of a glove. This hydatid was considered by zoologists as a third genus, called *Canurus*.

These three genera, *Cysticercus*, *Echinococcus*, and *Canurus*, formed until recently an order in the class of intestinal worms, called *Cystica* (Bladder worms, or Vesicular Worms). But we now know that all of this group are merely larvae of tapeworms, and that the whole order of *Cystica*, being composed of larvae of *Cestoides*, must therefore be dropped from our zoological system.

This important discovery was made as follows. Ephraim Götze, a German clergyman and naturalist of the last century, had noticed a singular similarity between the heads of some *Cysticerci* and those of some tapeworms. He had particularly noticed this similarity between the tapeworm of the cat (*Tænia crassicollis*), and the *Cysticercus* which is found in the liver of the rat and mouse (*Cysticercus fasciolaris*). G. T. von Siebold, the most noted helminthologist now living, had observed the same thing, and in 1848 had already alluded to the possibility that all these *Cystica* might be nothing but undeveloped or larval tapeworms. In his system, however, he still recognized the *Cystica* as a distinct order of Helminths.

In the year 1851, F. Kuchenmeister first proved by experiment that a certain hydatid when brought into a suitable place is developed into a tapeworm. He fed a dog with the hydatids (*Cysticercus pusiformis*) found in the mesentery of the hare, and on dissecting the dog, after a number of weeks, found these *Cysticerci* alive in the small intestine. They had, however, lost their tail-bladder, and the neck had begun to form the joints of a true tapeworm, which worm had been long well known as *Tænia serrata*, and as common in the dog. Now, one discovery followed another. Governments, scientific institutions, and wealthy farmers furnished the money and animals to carry on the experiments on a large scale. Siebold fed a dog with the *Echinococcus* of the ox, and thus raised the *Tænia Echinococcus*, Siebold. It was also found in the same way that the *Canurus* from the brain of sheep is the larva of another *Tænia* of the dog, *Tænia Canurus*, Siebold.

Now the question, whence does man get his tapeworm? was ready to be answered. It had been observed that the hydatids of the hog, commonly called 'measles' (in the zoological system, *Cysticercus cellulosa*.) have exactly the same head as the common tapeworm of man (*Tænia Solium*, L.); and after the experiments mentioned above, in relation to the different tapeworms of dogs, no doubt could hardly exist that *Cysticercus Cellulosa* of the hog was the larva of the common human tapeworm (*Tænia Solium*). Kuchenmeister, who wished to make sure of the fact, made the experiment upon a criminal who was soon to be executed, and, as was to be expected, with perfect success. Measles taken from fresh pork, and put into sausages which the criminal ate raw, at certain intervals before his death, were found again, in the post-mortem examination, as tapeworms in his intestine, and in different stages of development, according to the intervals in which the measles had been taken.