

Dulong and Petit's Law

states that the product of the specific heat of a substance and its atomic weight is a constant. It is one of those rules-of-thumb which have been immensely useful in determining the properties of new elements.

Mm. Dulong and Petit

will tell how they discovered it in

NEXT WEEK'S CLASSIC OF SCIENCE

their gardens, believing that they were shoots of some very hard plant, out of which they hoped that the life was not altogether extinct.

After the Stone Age had come to an end the true meaning of the stone implements was soon forgotten. When they were from time to time found in the ground they were called "thunder bolts" or "Thor's bolts", and were believed to have fallen with the lightning. This belief and this name, both still very general in Sweden, are found also to a remarkable extent in all parts of the world, from Japan to South America. . . .

The Bronze Age

Before the Stone Age ended the inhabitants of Sweden had raised themselves considerably above the savage state; but, so long as they were completely ignorant of metals, it was impossible for them to reach a higher degree of civilization. But at last the fruits of the civilization attained by the cultured races of the East spread to the distant regions of the North; and through the knowledge of metals, at first only bronze and gold, there began for those lands a new era known as the Bronze Age.

By these words is understood that period in the earliest civilization of the Northern races, when they made their weapons, tools, etc., of bronze, a mixture of copper and tin. Besides bronze, they knew only of one metal, namely, gold. Iron, steel, silver, and all other metals were still completely unknown in these countries.

Before we go further we must call attention to the inaccuracy of an opinion which not unfrequently finds expression, that all antiquities of bronze should be referred by antiquarians to the Bronze Age. Vessels, rings, buckles, needles and the like were, as we might have supposed, still made of bronze after the end of this period, just

as they are even in our own day, but generally of a somewhat different composition from that used in the Bronze Age. To this age belong only weapons and edge-tools made of bronze, and such vessels and ornaments as are usually found with them. . . .

We have already mentioned that the end of the Stone Age, and therefore the beginning of the Bronze Age, in the North, must be regarded as having taken place 3,500 years ago. The latest investigations have shown that the Bronze Age proper came to an end in these regions in the beginning of the fifth century, B.C. It lasted therefore about a thousand years. . . .

The Iron Age

By "The Iron Age" is understood, as we have already seen, that part of *heathen times* in which iron was known. We might certainly say, if we regarded only the proper meaning of the words, that the Iron Age is even

now still going on; but for the antiquarian's purposes the Iron Age in Sweden ends with the victory of Christianity over the Asa-gods.

During the Iron Age the inhabitants of Sweden became first acquainted with iron, silver, brass, lead, glass, stamped coins (of foreign production), and learnt the art of soldering and gilding metal, etc., etc. And as works of iron could not, like those of bronze, be produced only by casting, the smith's craft came to have far greater significance than it had had during the Bronze Age. But of the new discoveries of this period one of the most important was the art of writing, which the inhabitants of the North seem to have acquired soon after the beginning of the Christian era. The earliest alphabetical symbols in Sweden—indeed the only ones used in that country during the whole of heathen times—were the *runes*.

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PHYSIOLOGY

Migraine Headaches Believed Like Hives on Brain

DEBILITATING migraine headaches, from which four per cent. of our population suffers, are like hives of the brain, it appears from researches of Drs. Ray M. Balyeat and Herbert J. Rinkel of Oklahoma City.

In hives of the skin, there is a dilatation of the blood vessels of the skin followed by swelling due to accumulation of fluid in the tissues. In migraine, the same condition exists in the brain, the Oklahoma City scientists believe.

Nor is this the only resemblance between the two conditions. Migraine, urticaria or hives, asthma and hay fever, and even epilepsy seem to go together. One patient may suffer from one or several of these conditions, and usually one or all of them have appeared in other members of his family, Drs. Balyeat and Rinkel found from their studies of several hundred persons.

Migraine, like asthma, hay fever and urticaria, is caused by sensitization to certain proteins, either in food or in pollens or animal hair. Their method of treatment is based on elimination of the offending protein from the diet or the environment. With migraine, it is usually a dietary protein.

About 4,000,000 people in the United

States today suffer from migraine. Of these, at least 1,000,000 are under 12 years of age, Dr. Balyeat calculated.

Migraine is more common among business men, teachers and professors than in the population at large. Day laborers are rarely afflicted by it.

Migraine headaches are generally known as sick headaches, because they are almost always accompanied by nausea and vomiting. The attacks occur at varying intervals, sometimes every two or three weeks and sometimes every two or three months. Once in three weeks was the average.

Typical attacks of migraine have four stages. In the first one the patient usually feels nervous and irritable, sometimes drowsy, and the sleep is often unnatural the night before the headache. The second stage is characterized by faintness or dizziness, spots before the eyes or other visual disturbances. The third stage is while the actual headache and accompanying nausea are present. During the fourth or post-migrainal stage, the patient generally is exhausted, sleepy, and may suffer from a watery nasal discharge, similar to that of a cold or hay fever.

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