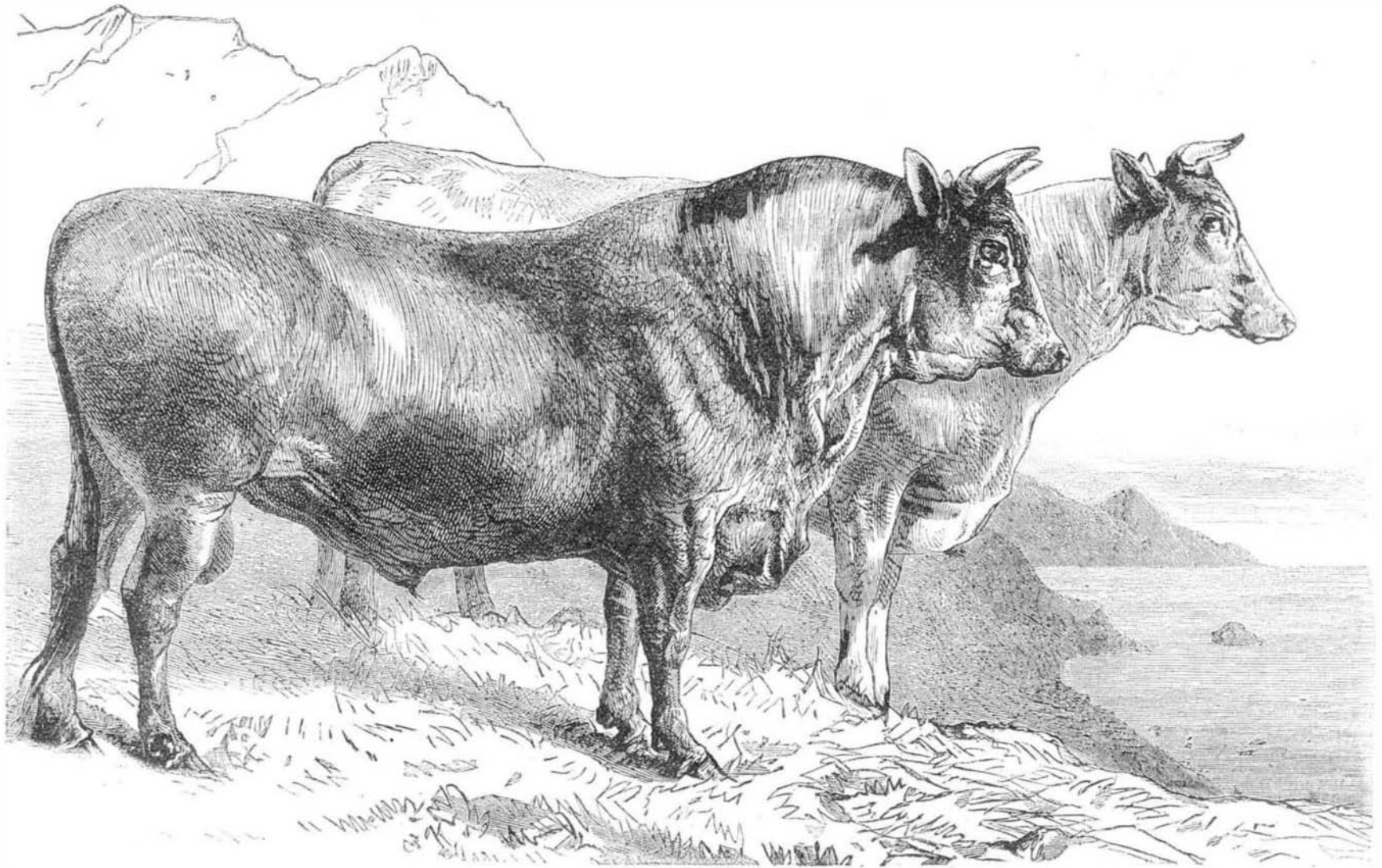


THE GUERNSEY BREED OF CATTLE.

From time immemorial the island of Guernsey has been famous for its breed of cattle, and a very just reputation it is, for there are few localities in Europe, and certainly none in Great Britain, where a more jealous care has been observed to prevent the mixture of foreign element. Of course, the isolated position of the island has greatly aided the inhabitants in their endeavors; in fact, we doubt if any but a locality so situated could, for so long a period, have preserved a breed so intact. The cattle are larger and more valued than even those of Alderney, the name of which is so familiar throughout the world. They are exquisitely delicate in form; colors varying from light red to fawn and dun, with a few black, each generally with white intermixed. The head is



GUERNSEY CATTLE.

long and handsome. eye large and prominent, horns gracefully formed. For flesh giving qualities they are profitable, and for dairy stock they are truly excellent, yielding, on the average (if properly fed and cared for), one pound of the finest butter per day throughout the year. The size is a fair average, and doubtless the breed would be much larger were it not for the peculiar treatment they have ever been subjected to. The farms of the island being limited in size, it is found necessary to tether the cattle, whereby they lose much of that exercise and freedom which would tend to larger growth. They are also, by this means, too frequently exposed to excessive heat or cold, being without the possibility of choosing then necessary shelter. Notwithstanding these drawbacks, it is really remarkable how well the animals have always thriven. So great is the demand for this breed that, on an average, seven hundred cows and heifers, with about a dozen bulls, are annually exported.

We give herewith portraits of two fine specimens of this breed, from the pencil of Mr. Harrison Weir, a renowned painter of animal life, for which engraving we are indebted to *The Field*.

THE PROCEEDINGS OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

We continue below our brief abstracts of the papers read before this body at its recent meeting at Belfast, Ireland.

DEEP SEA CURRENTS.

Under this heading, Dr. Carpenter refutes the common idea that the Gulf Stream exercises an effect upon the climate of the British Isles. That current, he thinks, has nothing to do with the warmth of the winters. The bottom of the Atlantic is covered to a vast depth with icy cold water, caused by the melting of the polar snows. This cold water has a tendency to surge up on certain portions of the North American coast. A slow warm current travels up the western shores of Europe and Africa.

DAYS A MONTH LONG.

Professor Purser believes that the moon, in revolving around the earth and drawing the tides behind her, cause the latter to act as a brake on the revolution of the globe, and he considers that it may be mathematically shown that this action is slowly but surely checking the earth's speed of rotation, so that the days and nights are gradually lengthening. In a thousand million years or so, they may become each a month long.

CAN WE MAKE DIAMONDS?

Mr. W. Symons makes ferric ether by mingling a solution of zinc chloride in alcohol and ether with *liquor ferri perchlor. fort.* (B. P.). In this ferric ether, oils, bisulphide of carbon, and other non-conducting liquids may be brought under the influence of weak galvanic currents for many days. In many experiments, bisulphide of carbon was decomposed, resulting in a substance resembling spermaceti. The question is asked whether pure carbon might not be crystallized out by some similar process.

MOLECULAR CHANGES OF MAGNETIZATION.

Professor Barrett finds that, just before an iron wire passes to a red heat, a momentary contraction occurs, and subsequently the expansion proceeds regularly. A momentary

what can be perceived by one sense at one instant, while the higher orders can comprise in one act of thought a series of successions in time. The highest animal can comprise in one act of thought an entire class of co-existents or successions, so far as to combine with a particular fact the common element of co-existence or succession belonging to the class.

NEW THEORIES OF VOLCANOES AND EARTHQUAKES.

Dr. Vaughan endeavors to show that the terrestrial crust, if reposing on lava of a declining temperature, would receive accessions of buoyant solid material, chiefly on such points as extend deep into the fiery menstruum, and that the consequent growth of internal mountains would be interrupted only by the occasional movements of this light mat-

elongation happens if the wire is first raised to a white and then cooled to a dull red heat. If in the dark, at this moment the wire becomes invisible and ceases to glow, although the sources of heat continue unchanged; it glows again with a bright red heat. The same phenomenon takes place in nitrogen and carbonic acid. The greater the tension of the wire, the more marked is the elongation and contraction, and a very audible click, such as would be emitted by an iron bar when magnetized, is emitted by the wire.

UNDERGROUND TEMPERATURES.

This subject is treated in a report by Professor Everett, in which it is pointed out that the average result thus far is that the temperature increases at the rate of 1° Fah. in every 50 or 60 feet in depth. A very valuable set of observations has been received from a mine, 1,900 feet deep, in Prague, Bohemia. The depths and corresponding temperatures are as follows:

Feet.	Deg. Fah.	Feet.	Deg. Fah.
68	47.9	1,290	58.3
209	48.8	1,414	59.4
621	50.7	1,652	61.2
939	57.8	1,900	61.4

INDIAN AND CHINESE TEA.

Of these two productions, Professor Hodges considers that analysis shows the former to be the superior. He also finds that with Indian tea fully 68 per cent of the mineral matter and 58 per cent of the nitrogen is removed in the infusion.

SPECTRA WITH THE OXYHYDROGEN FLAME.

Mr. P. Braham obtains good results by using a vertical oxyhydrogen jet and introducing the salt of a metal rolled up in thin paper. The length of time that the spectra lasts depends upon the length of paper used.

UTILIZATION OF SEWAGE.

The chief point of interest in Professor Corfield's report is that, during the year ending March last, at a sewage farm, 37.7 per cent of the nitrogen brought to the farm in the sewage was recovered in the crop, the amounts during previous years having been 26.0 and 41.76 per cent. The differences were chiefly due to the fact that very different quantities of the crops were left standing at the end of each year.

POWER OF THOUGHT IN VERTEBRATES.

Dr. James Byrne considers that the difference between the mental action of the lower order of vertebrate animals and that of the higher orders consists essentially in the fact that the lower orders can comprise in one act of thought only

ter to positions much higher than those at which they were first deposited. To the collision of such masses against the weaker parts of the earth's crust, earthquakes are ascribed. Volcanoes are explained by quantities of silicious rock rising and eroding channels. The same spots of the earth's crust, being thus exposed to repeated inroads of intensely heated matter, would be reduced in thickness by the frequent fusion, and would present a weaker barrier to subterranean violence.

THE SCIENCE OF EDUCATION.

This was a paper replete with sound common sense, and received with marked attention, since it came from Mrs. Grey. It concludes with a plea for more experienced teachers, and an appeal for system in the art of imparting instruction. What is wanted is that teachers, like practical navigators, shall be furnished with the principles of a science they have not had to discover for themselves, and with charts to guide their general course, leaving to their individual acumen the adaptations required by special circumstances.

The meeting of the Association closed with a brief valedictory from Professor Tyndall, after which Sir John Hawkshaw was chosen President for 1875, and the place of meeting for that year fixed at Bristol.

A MODEL CITY.—A curious piece of mechanism has been produced by an Amsterdam jeweler, called the "Great Mechanical City," and is twenty feet long by fifteen feet wide. There are houses, castles, churches, and stores in it, just as they appear in almost any European city. People walk and ride about. Horses and wagons and railway cars pass through the streets. Boats pass up and down the river, while some are loading and others unloading at the docks. Mills are in motion. A fountain plays in the public park, and a band of music fills the air with melody. There are also forts with soldiers parading about them, blacksmith shops with artisans at work in them, and pleasure gardens with people dancing in them.

M. GIFFARD, of injector fame, has invented a method of fitting railway carriages which eliminates oscillation. The carriage is suspended by powerful springs at each end; and at the trials recently made in the presence of some members of the French Association for the Advancement of Science, the carriage was found to be so steady that reading and writing could be easily carried on. It will shortly be exhibited to the English public.