dicial to the spirit of self-reliance and personal effort that distinguishes this age and forms so large an element of its progress; and when Mechanics' and similar Institutes can derive revenues from enterprises that contribute to public amusement and instruction, they are in the safest and healthiest condition. The exhibitors in this instance are assisting the Institute and serving the public better by lending their articles of interest and beauty, than by gifts of money."

Selected Articles.

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(From the *Maine Farmer.*)

No. 6.—Crystallography Continued.

Peculiar circumstances are necessary to form large crystals. In great cavities in the earth, where soluble substance is perfectly quiet, very large crystals will be found. At Zinken in Germany, a cavity was opened from which five hundred tons of crystals of quartz were obtained, the largest of which weighed eight hundred pounds. Crystals of felspar have been found in this State weighing well nigh one hundred pounds. A crystal of beryl was found in Acworth, N. H., a few years since, that weighed five tons. These crystals are found in a coarse granite, which appeared to have been formed from sedimentary matter settling down beneath the waters of the ocean containing the peculiar elements necessary to form these crystals. Crystals of the same substance assume a different shape from peculiar circumstances under which they are formed. A solution of salt water will form a cube, but if a little boracic acid be added to the solution, the crystals will have their angles all truncated. Hence, the crystals from any particular locality of minerals will have a peculiar character by which they will be recognized. We recently saw some crystals of quartz from Colorado. They had a peculiar shape, that of having one crystal formed upon another, at different times. We have seen crystals of calcite from the town of Freeport in this State, which were six sided prisms. On the summit of each crystal there was an enlargement like the head of a nail of a flattened crystal. This variety is called from its peculiar appearance, nail-headed spar.

Sometimes crystals assume a curved surface. Ice is sometimes so formed in a loose clay soil in autumn. Crystals of gypsum are so formed in the Mammoth Cave in Kentucky, sometimes forming very beautiful shapes. The surface of the diamond is frequently convex instead of a plane surface.

All metals assume a crystalline form. Iron, the most abundant metal, though submitted to the operations of the workman, are, nevertheless, crystalline. Iron owes its toughness to a fibrous crystalline form, while a granular form of crystallization renders it brittle. When the smith hardens a piece of steel, he only changes the crystalline structure.

A weak form of crystallization sometimes takes place in clay and sand united, so as to assume a circular or globular shape. The forms are frequently seen in clay beds in this State. Sometimes rocks assume a columnar form, as the basalt in the Giant's Causeway, and in the trap rocks in Maine. The stratification of rocks is due to the same cause. They break up into joints, forming blocks, columns and sheets. Thus we see that crystallization plays an important part in the structure of our globe. Without it all would be confusion. We could not distinguish common salt from the most virulent poison.

No. 7.—The Ox Tribe.

Perhaps no tribe of animals is more important to man than that of the ox, whether we regard him as an article of food, his hide for leather or for the labor which he is capable of performing for man, They have been found in some form or other as natives in every continent except South America and Australia.

The ox is found in a fossil state in the more recent geological formations. Three or four species have been discovered in North America in this condition. Two species are now known to naturalists on this continent. The Buffalo and the Musk ox. The buffalo formerly ranged over the whole of the North American Continent, but since the settlement of the country by Europeans, it has been confined to the base of the Rocky Mountain System, and in a few years in all probability will become extinct, unless protected by special legislation. The musk ox lives on the northern shores of our continent. It is said that but a single specimen is preserved in Europe and none in the cabinets of this country. This is rather singular.

It appears that both the horse and the ox were more abundant on the American continent in a former geological period than at present, as the fossil remains of at, least, two species of the horse have been discovered in both North and South America. When America was first discovered, no species of the horse was known, but when introduced from Europe it increased with the greatest rapidity, so that now it is exceedingly abundant in the southwest part of this continent and in South America, where they run wild in immense herds.

The fossil remains of the buffalo abound at the Big Bone Lick in Kentucky along with the remains of the mastodon. They evidently resort to that spot in search of salt. In all these remains, as well as that of the buffalo, the horns turn downward, and are not so long as those of the European species. One extinct species appears to have been larger than the buffalo. It is probable that they had qualities inferior to those of the European ox and not fitted for the wants of man, and so gave way to a higher development. The musk ox is remarkable for having a long fleece with which to protect himself in the cold climate west of Hudson's Bay.

Among the more prominent of the ox tribe was the Urus which existed in Europe. Cæsar describes him as being but little inferior in size to the elephant. It is said to have existed in Switzerland as late as the sixteenth century when it became extinct. The Auroch, or European Bison appears to have been abundant in Europe, but it is now extinct except in the forests of Lithuania where they are protected by the Emperor of Russia.

The origin of the present race of the domestic ox is not known. They have assumed different