

study of these and kindred relics we have been able to build up a more or less connected history.

The richest stores upon which we have been able to draw are preserved on the borders of the Swiss lakes, and for twenty years have yielded materials of the greatest interest.

It appears that in Switzerland, and, indeed, in other places, the prehistoric people lived in wooden dwellings, erected on platforms, supported by piles driven into the bed of a lake at a short distance from the shore. Similar lake-dwellings are still in use in the East Indies. Many of the ancient villages were destroyed by fire, and to these calamities we are indebted for our knowledge, for the household goods sank to the bottom and were preserved by the growing peat, even the charred fragments being still recognisable.

The first point of interest is the comparative rarity of human bones belonging to the Bronze Age. This holds good for the whole of Europe, and is explained by the custom of burning the dead. That cremation was in vogue among the Bronze folk is rendered certain by the discovery of the preserved calcined bones in tumuli belonging to the period. Skeletons of this age are not entirely missing, and it appears that the race was composed of tall individuals, with broad skulls and small hands. The latter fact being attested by the small size of the handles of the tools.

The Neolithic people, on the other hand, did not practise cremation, but buried their dead in a contracted posture, which may have been due to the position in which they died, some races to this day sleeping in a crouching attitude. This posture of the dead distinguishes Neolithic interments from those of the Iron Age, it being the custom at that time to bury the dead in an extended position.

The stature of the Neoliths was less than that of their successors, averaging about 5 ft. 5 in. They belonged to the long-headed varieties of the human race.

Very careful studies have been made of the skeletons of these early people, and it is abundantly clear that two distinct races existed. The Bronze folk agree in all respects with the well-known Celtic type, and we may infer that the people were fair, blue-eyed, and yellow-haired.

The Neolithic race, on the other hand, agree in all respects with that singular race to which the name of *Melanchroï*, or dark Kelts, has been given by Professor Huxley. These people are known to us historically and at the present time under various tribal designations. The Basques of South-western France and North-eastern Spain, and the Berbers and Kabyles of Northern Africa belong to this race; as did also the Guanches, or former inhabitants of the Canary Isles, of whose gentle demeanour and simple habits the Spaniards, who exterminated them, tell such touching stories.

This race was distinguished by their swarthy complexion, dark eyes, and long, black hair. They formerly spread all over Europe and Northern Asia, and seem to have come from Asia, forming part of the great Turanian people.

These dark Kelts, possessing no knowledge of metals, appear to have been invaded and conquered by the stronger, better-equipped, fair Kelts, before whom many fled to the mountain fastnesses of the land, where their descendants may still be recognised in the short, dark-eyed, black-haired, oval-faced people of Wales and parts of Ireland.

The conquest was one of fusion, and not of extermination, as their relics testify; and Cæsar and Tacitus each relate that Britain was occupied both by fair and dark people.

In our next paper we will examine into the habits of these early races, and the attempts that have been made to fix a chronology.—*English Mechanic*.

TRANSMITTING POWER BY SHAFTING.

In order to transmit the motion and power of a shaft, fitted in bearings, to one or more shafts occupying any desired and changeable position, Mr. Wilhelm Ritter, of Altona, Germany, proposes over one of the ends of a motive power shaft to place a box of a right-angle shaped bracket, and a conical wheel fastened to the outer end of this shaft. The other angle of the bracket is likewise formed as a box, the outer part of the boring being enlarged for the reception of a cylindrical prolongation of a similar bracket, and is furnished with a set screw to secure the second bracket, which can be turned within the enlarged boring of the first one in any desired position of a circle. A short axle passes through the box of the second bracket, the corresponding projection and the box of the first bracket, and each end of this short axle is furnished with a conical wheel fastened to it, and

one of these wheels is in gear with the before-described wheel of the motive-power shaft, while the other conical wheel is in gear with a similar wheel fastened to the end of a shaft that revolves in the boring of the other box of the second right-angle bracket. By means of this gearing the shaft of the second bracket is put in motion, and the axis of this shaft can be turned into any position within the plane of a circle, after loosening the before-mentioned set screw, and turning the second bracket in the boring of the first one. After having brought the shaft of the second bracket in the desired direction, the position of the two brackets to each other is secured by means of the set screw. By means of two further pair of conical wheels, two more angle brackets of similar construction and connection, and another short axle, the transmission can be continued upon a third shaft, and the movableness of this third shaft will be greatly increased. The transmission of motion and power can in such manner be continued as far as necessary to other shafts, and the end of the last shaft may be constructed for the reception of a tool, or a pulley may be placed upon this shaft for driving a tool or implement. The conical wheels can be furnished with protecting covers.

AN INDELIBLE WRITING AND CANCELLING INK.

Improvements in writing and cancelling inks have been patented in this country recently by Messrs. H. and W. S. Richmond, of New York city. Intended mainly to supply indelible cancelling inks, well adapted for marking postage and other stamps, they can, by suitable dilution, be used for legal, commercial, and other writings, in which permanency of the ink is of importance. The inks consist of the following ingredients, namely:—Eosine, aniline black, aniline blue, cupric chloride, sodium chlorate, ammonium chloride (sal-ammoniac), glycerine, lampblack, water, and oil. These substances are taken in the following proportions:—Eosine, one part; aniline black, four parts; aniline blue, two parts; cupric chloride, one part; ammonium chloride, three parts; sodium chlorate, two parts; and of the remaining ingredients a sufficient quantity to bring the ink to the proper consistency for the use for which it is intended. The ingredients are thoroughly incorporated by grinding or stirring, when the composition is ready for use. The ink described is absolutely indelible. Stamps cancelled therewith are effectually destroyed, and the fraudulent alteration of matter written therewith is impossible. The rationale of the operation of the ink is as follows:—Besides having as an ingredient aniline black, it embodies also the substances necessary to produce that colour—to wit, an aniline, an oxidising agent, and a cupric salt. The re-action of these substances is, however, retarded by the oil, which also forms a part of the ink. As a consequence the aniline black, which is a product of the reaction of the ingredients of the ink, is partly formed within the body of the stamp paper.

In preparing the composition for ordinary writing ink, the oil and lampblack are preferably omitted, a small portion of gum arabic being added in their stead, the latter subserving the same end as the oil. To prevent moulding a small proportion of some antiseptic agent, such as salicylic acid, may also be added. The inventors are aware that it is not new to employ aniline black, or its homologues, in inks, and therefore do not claim it, their invention consisting essentially in such a compound as contains the ingredients for forming aniline black, and for retarding the reaction sufficiently to defer its completion until after the ink shall have been applied to the paper or surface upon which it is to be used.

A writer to the *English Mechanic* gives the following instructions for making concrete:

"Having made a good many experiments in concrete, I found that I best succeeded by observing the following rules:—1st. To use stones neither too large nor too fine, but an average mixture. 2nd. That they should be free from sand or earth, angular stones to be preferred to round, so if a stone-crusher can be used so much the better. 3rd. Mix no sand with cement, and use the best articles. 4th. I built a wall, seven inches thick, with seven parts of "beach shingle" and one of cement, and find it very strong. 5th. Avoid using more than enough water to moisten stones and cement, after they have been stirred over previously so that each stone is covered; if too much water, the cement settles at the bottom of each new coat, making the work look streaky. Never make more up at a time than needed. Use weights for stones, cement, and water, rather than measures. Age confers strength on concrete. Let each layer get well set before shifting shield or planks for a fresh course."