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PRISMATIC SANDSTONE FROM MISSOURI.[1]

ON the right bank of the St. Francois River, in S. 31; T. 33, N.; R. 6 E., about 200 yards south-west of the St. Louis Granite Company's quarry, near Knob Lick, in Madison County, Mo., is a little sandstone ridge, trending north-west and south-east, nearly 200 yards long, 10 yards wide, and not more than 8 to 10 feet high above the nearly level ground on either side. The country rock here is the Cambrian sandstone, which overlies the granite, as is beautifully illustrated at the quarry near by. This little ridge is interesting on account of the peculiar form of the sandstone composing it. In places where the soil has been somewhat worn away, instead of revealing flat layers of sandstone, as can be found near by in any direction, the surface is covered with fragments of sandstone of a prismatic form, resembling in shape the basaltic columns so well known in different parts of the world. In size the prisms range from about three-fourths of an inch to one and a half inches in diameter, and from three to eight inches in length. They are not uniform in geometrical outline, some having four sides, some five, and a few six. Quite often two and occasionally three prisms adhere together, side by side, but generally so loosely that they can easily be broken apart. In such cases the boundary between them is usually a single plane, but sometimes two new planes are exposed by the breaking, forming a re entrant angle on one prism. Fig. 1 fairly represents a combination of two of these prisms.

The nature of the rock was studied quite carefully, both macroscopically and microscopically, and it was found to be nothing but an ordinary, somewhat irregularly indurated, fine-grained sandstone. The grains of quartz are water-worn, as is usual. The induration is produced by the interstitial spaces being more or less filled with silica, but the thin sections examined showed no instance of secondary growth of the quartz crystals.

[1] Published by consent of the State Geologist of the Geological Survey of Missouri. Read before the Iowa Academy of Sciences, Des Moines, Dec. 30, 1891.

The existence of the ridge is probably due to the induration of the sandstone. Why this limited area should be thus indurated, and the surrounding country should not be, there seemed to be no obtainable evidence. However, this of itself is of little importance. But the prismatic form of the sandstone is much more interesting. The specimens gathered were on or near the surface, and were not seen *in situ;* but from their great abundance it must be argued that they extend downwards for a considerable distance. It was first thought that possibly a dike rock had once existed here, which had assumed the prismatic character, and that in some way by surface decay it had left moulds into which the sand had been carried. But a careful examination revealed no indication whatever of there ever having been a dike here, although they are quite common in the surrounding country. The granite close by is older[2] than the sandstone, and could not therefore have played any part in the matter by metamorphosing the sandstone in any way.

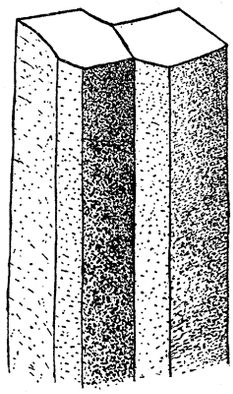

FIG. 1.

If any of the readers of *Science* know of any other occurrence similar to this, or can suggest any cause likely to have produced this peculiar formation, it is hoped they will give the information through the columns of *Science.*

ERASMUS HAWORTH.

Oskaloosa, Iowa.

[2] See Bull. No. 5, Mo. Geol. Surv., p. 13, et seq.

ORTHOGRAPHY OF GEOGRAPHICAL NAMES.

IN 1885 the Council of the Royal Geographical Society, impressed with the necessity of endeavoring to reduce the confusion existing in British maps with regard to the spelling of geographical names, in consequence of the variety of systems of orthography used by travellers and others to represent the sound of native place-names in different parts of the world, formally adopted the general principle which had been long used by many, and the recognition of which had been steadily gaining ground, viz., that in writing geographical native names vowels should have their Italian significance and consonants that which they have in the English language. This broad principle required elucidation in its details, and a system based upon it was consequently drawn up with the intention of representing the principal syllabic sounds.

It will be evident to all who consider the subject that to ensure a fairly correct pronunciation of geographical names by an English-speaking person an arbitrary system of orthography is a necessity. It is hardly too much to say that in the English language every possible combination of letters has more than one possible pronunciation. A strange

word or name even in our own language is frequently mispronounced, — how much more with words of languages utterly unknown to the reader. The same necessity does not arise in most continental languages. In them a definite combination of letters indicates a definite sound, and each nation consequently has spelt foreign words in accordance with the orthographic rules of its own language. It was therefore not anticipated that foreign nations would effect any change in the form of orthography used in their maps, and the needs of the English-speaking communities were alone considered.

The object aimed at was to provide a system which would be simple enough for any educated person to master with the minimum of trouble, and which at the same time would afford an approximation to the sound of a place name such as a native might recognize. No attempt was made to represent the numberless delicate inflections of sound and tone which belong to every language, often to different dialects of the same language. For it was felt not only that such a task would be impossible, but that an attempt to provide for such niceties would defeat the object.

The adoption by others of the system thus settled has been more general than the council ventured to hope. The charts and maps issued by the Admiralty and War Office have been, since 1885, compiled and extensively revised in accordance with it. The Foreign and Colonial Offices have accepted it, and the latter has communicated with the colonies requesting them to carry it out in respect to names of native origin. Even more important, however, than these adhesions is the recent action of the Government of the United States of America, which, after an exhaustive inquiry, has adopted a system in close conformity with that of the Royal Geographical Society, and has directed that the spelling of all names in their vast territories should, in cases where the orthography is at present doubtful, be settled authoritatively by a committee appointed for the purpose. The two great English-speaking nations are thus working in harmony. Contrary to expectation, but highly satisfactory, is the news that France and Germany have both formulated systems of orthography for foreign words, which in many details agree with the English system. The Council of the Royal Geographical Society, by printing the rules in "Hints to Travellers," and by other means, have endeavored to ensure that all travellers connected with the society should be made aware of them; but as it is possible that some bodies and persons interested in the question may still be in ignorance of their existence and general acceptance, they feel that the time has come again to publish them as widely as possible, and to take every means in their power to aid the progress of the reform. To this end, and with a view to still closer uniformity in geographical nomenclature in revisions of editions of published maps, a gigantic task requiring many years to carry out, the council have decided to take steps to commence tentatively indexes of a few regions, in which the place-names will be recorded in the accepted form.

The rules referred to are as follows: —

1. No change is made in the orthography of foreign names in countries which use Roman letters: thus Spanish, Portuguese, Dutch, etc., names will be spelt as by the respective nations.

2. Neither is change made in the spelling of such names in languages which are not written in Roman characters as have become by long usage familiar to English readers: thus Calcutta, Cutch, Celebes, Mecca, etc., will be retained in their present form.

3. The true sound of the word as locally pronounced will be taken as the basis of the spelling.

4. An approximation, however, to the sound is alone aimed at. A system which would attempt to represent the more delicate inflections of sound and accent would be so complicated as only to defeat itself. Those who desire a more accurate pronunciation of the written name must learn it on the spot by a study of local accent and peculiarities.

5. The broad features of the system are: (*a*) That vowels are pronounced as in Italian and consonants as in English. (*b*) Every letter is pronounced, and no redundant letters are introduced. When two vowels come together each one is sounded, though the result, when spoken quickly, is sometimes scarcely to be distinguished from a single sound, as in *ai*, *au*, *ei*. (*c*) One accent only is used, the acute, to denote the syllable on which stress is laid. This is very important, as the sounds of many names are entirely altered by the misplacement of this "stress."

6. Indian names are accepted as spelt in Hunter's "Gazetteer of India," 1881.

ELECTRICITY IN AGRICULTURE.[1]

FROM the time electricity became a science much research has been made to determine its effect, if any, upon plant growth. The earlier investigations gave, in many cases, contradictory results. Whether this was due to a lack of knowledge of the science on the part of the one performing the experiments, or some defect in the technical applications, we are not prepared to say; but this we do know, that such men as Jolabert, Nollet, Mainbray, and other eminent physicists affirmed that electricity favored the germination of seeds and accelerated the growth of plants, while on the other hand Ingenhouse, Sylvestre, and other savants denied the existence of this electric influence. The heated controversies and animated discussions attending the opposing theories stimulated more careful and thorough investigations, which established beyond a doubt that electricity had a beneficial effect on vegetation Sir Humphrey Davy, Humboldt, Wollaston, and Becquerel occupied themselves with the theoretical side of the question; but it was not till after 1845 that practical electro-culture was undertaken. Williamson suggested the use of gigantic electro-static machines, but the attempts were fruitless. The methods most generally adopted in experiments consisted of two metallic plates — one of copper and one of zinc — placed in the soil and connected by a wire. Sheppard employed the method in England in 1846, and Foster used the same in Scotland. In the year 1847 Hubeck in Germany surrounded a field with a network of wires. Sheppard's experiments showed that electricity increased the return from root crops, while grass perished near the electrodes, and plants developed without the use of electricity were inferior to those grown under its influence. Hubeck came to the conclusion that seeds germinated more rapidly and buckwheat gave larger returns; in all other cases the electric current produced no result. Professor Fife in England and Otto von Ende in Germany carried on experiments at the same time, but with negative results, and these scientists advised the complete abandonment of applying electricity to agriculture. After some years had elapsed Fichtner began a series of experiments in the same direction. He employed a battery, the two wires of which were placed in the soil parallel to each other. Between the wires were planted peas, grass, and barley, and in every case the crop showed an increase of from thirteen to twenty-seven per cent when compared with ordinary methods of cultivation.

Fischer of Waldheim, believing atmospheric electricity to aid much in the growth and development of plants, made the following tests:—

He placed metallic supports to the number of about sixty around each hectare (2.47 acres) of loam; these supports were provided

[1] Abstract of the January Bulletin of the Hatch Experiment Station, Amherst, Mass., written by Clarence D. Warner.