

thousandth of an inch in diameter, then as they approach the surface and assume the scaly form their diameter increases to about one six-hundredth of an inch. In many animals and fish the scales are very large, still they are only a modified form of the epidermal scales in human beings. In the cuticle no nerves or blood vessels penetrate; it is nourished by the transudation of the serum of the blood through the vessels of the true skin and is devoid of sensibility, thus serving to blunt the sensibility of the true skin underneath. The cutis or true skin consists of two kinds of tissue composed of white and yellow fibers, the former being more dense and resisting and are always allocated wherever resistance to injury is most required, such as in the palms of the hand and soles of the feet. The yellow fibres are a very elastic tissue, and they are interlaced to form minute lozenge-shaped interstices which are principally filled up with the white fibres. The yellow elastic fibres exist in greater abundance at the flexures of the joints, the lips, etc., where elasticity of skin is most necessary. The uppermost surface of the true skin is very uneven, and is elevated in a vast number of papillae, which are about one one-hundredth

of an inch in length and one two-hundredth-and-fiftieth of an inch in diameter. Minute as these papillae are, each possesses a ramification of nerve fibres which are the essential agents in the sense of touch.— They are developed in greatest number along the tips of the fingers and the tips of the man. The number of these papillae is prodigious; a square inch of the palm of the hand contains about 5,000. On the tongue, where the 'cutis' is extremely thin, they are larger than in other parts of the body. The sense of touch is very delicate in some persons, and it may be developed by constant practice. The blind can read by sense of touch, through the fingers acting on raised letters; and in one case a blind girl, who had her fingers injured, learned to read by applying her lips to the letters.

With respect to the functions of secretion by the skin, it will be observed in looking at the furrows which cross one another

on the hand, that there is a little orifice in the centre of each; these orifices are perspiratory ducts, and the glands by which the perspiration is secreted are seated at the under surface of the true skin, each imbedded in a cavity. The materials for secretion are furnished by a minute capillary network of blood-vessels arising from arterial trunks which bring the blood to the gland to be purified, and they terminate in venous trunks which carry off the blood when the purifying process has been performed. These glands remove from the blood materials that are no longer required in the body. Their size in the palm of the hand range from one one-hundredth to one two-hundredth of an inch in diameter; but in the arm-pits, where they form a very thick layer, they are about one-sixtieth of an inch and they form little membranous tubes about one-quarter of an inch in length and one-seventeen-hundredth of an inch in diameter. About 3,500 of these little ducts exist in a square inch of the skin of the palm of the hand, and the whole number of them in a man's body, of ordinary size, if laid in a line, would make a string twenty-eight miles in length. This glandular system is a beautiful contrivance for regulating the internal temperature of

the body, for the perspiration poured out through the pores carries off the heat of the body as fast as it is generated by the chemical processes going on within the system.— It is exceedingly important that these glands should be kept open and in effective action. The burning heat of the skin is a marked sign of some diseases when the perspiration is arrested. The proper action of these glands maintain the temperature of the body constantly at 98° Fah., even under the most violent exercise. And for the same reason a degree of heat can be endured with impunity in dry air (which absorbs perspiration as in a vacuum) that would be perfectly unbearable in a warm moist atmosphere. M. Chabert, called the 'Fire-king,' who died a few years since at Hoboken, N. J., frequently entered an oven heated from 400° to 500° or within a few degrees of the temperature at which lead melts, and he would remain therein until a beefsteak was cooked. Had the oven been filled with steam of 212° he would have perished in a few seconds. About one pint of liquid evaporates through the pores of a man's body every twenty-four hours, and this contains about an ounce of solid matter in solution, besides a large amount of carbonic acid gas. We can thus

THE BEAVER FAMILY.

Beaver. is the English name for the genus of rodent or gnawing animals termed in Zoology 'Castor.' It has two incisor, or cutting teeth and eight molars in each jaw, making twenty in all. The beaver is distinguished from all others of that order by a broad, horizontally flattened tail which is nearly oval and covered with scales.

There are five toes on each of the feet, but those of the hinder ones only are webbed, the webs extending beyond the roots of the nails. The second toe of these last is furnished with a double nail, or rather with two, one like those of the other toes, and another beneath it, situated obliquely with a sharp edge directed downwards. There is also a less perfect double nail on the inner toe of the hind foot.

The incisor teeth of the beaver are broad, flattened, and protected anteriorly by a coat of very hard orange-coloured enamel, the rest of the teeth being of a comparatively soft substance, whereby a cutting chisel-like edge is obtained; and indeed no edge tool with all its combination of hard and soft metal could answer the purpose better. In fact the beaver's incisor teeth are fashioned

'The ravages of the beaver, say they, are very apparent. In one place the timber was entirely prostrated for a space of three acres in front of the river and one in depth, and great part of it removed, although the trees were in large quantities, and some of them as thick as the body of a man.

Dr. Richardson thus describes this part of their operations; 'When the beaver cuts down a tree it gnaws it all round, cutting it, however, somewhat higher on the one side than on the other by which the direction of its fall is determined. The stump is conical and of such a height as a beaver sitting on his hind quarters could make. The largest tree I observed cut down by them, was about the thickness of a man's thigh (that is six or seven inches in diameter); but Mr. Graham says that he has seen them cut a tree which was ten inches in diameter.'

In the Canadian Illustrated News of June 27, Vol. II. No. 7, the reader will find an account of the formation of beaver-meadows, and other interesting information about this creature, in the long article descriptive of rafting timber on the Ottawa.

The beaver is the armorial sign and industrial representative of Canada.

It is 'Castor Fiber' of Linnaeus; 'Castor

Americanus' of Cuvier; 'Anmisk' of the Cree Indians; and 'Tsoutage' of the Hurons. Wonderful tales of its sagacity and even social polity have been told. We could fill several pages with reading matter about the beaver, the trappers and the fur trade at once delightful and instructive, but can only hope to have some early opportunity of returning to the subject.

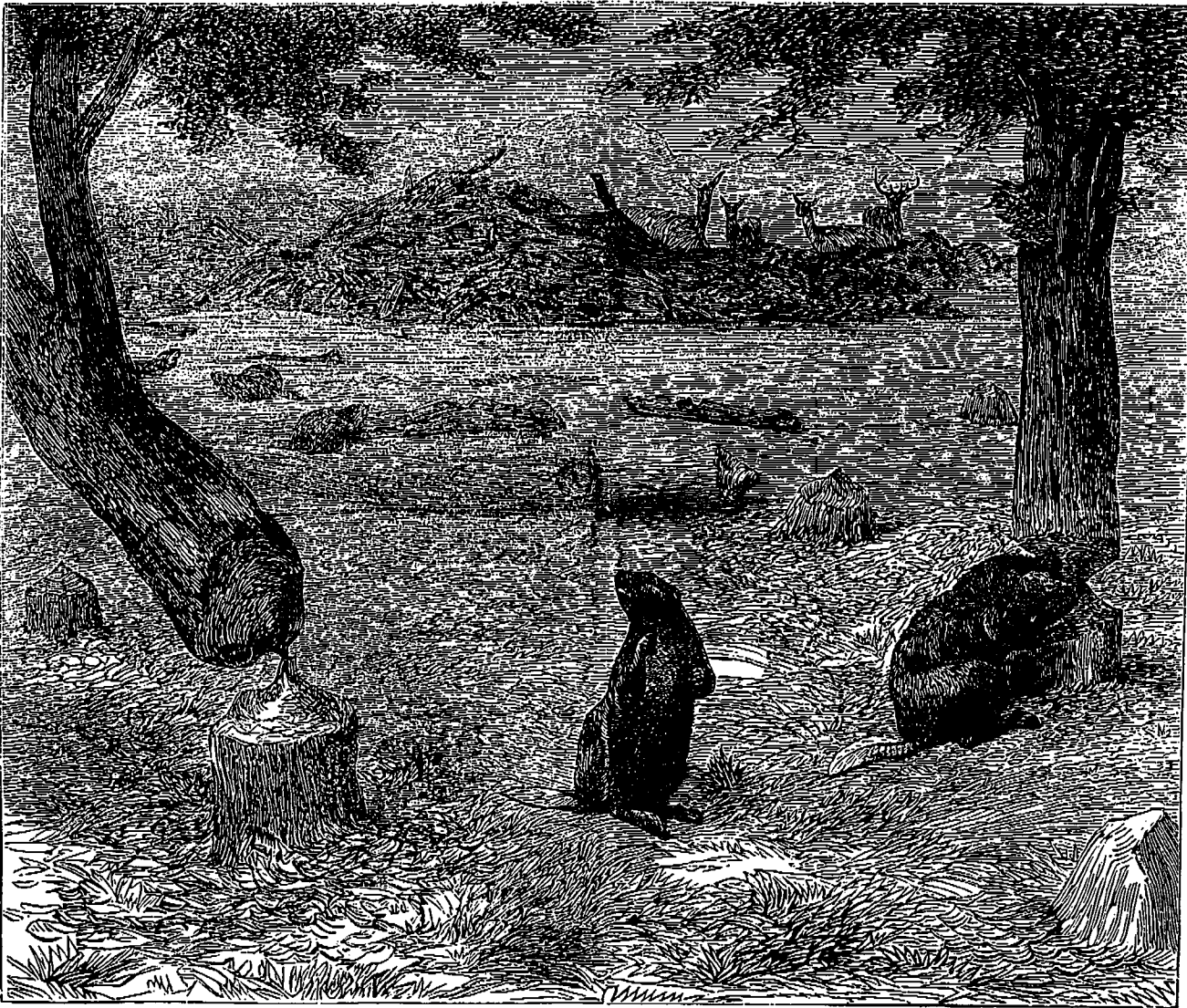
THINGS WORTH REMEMBERING.—

1. If you hitch horses to a worm fence, always select an inside corner, because it is stronger, and because your horses will almost always tangle their halters in the projecting rails of an outside corner.

2. There, as well as elsewhere if you tie with a loop knot, do not consider your horses tied unless the end of the halter is put through the loop.

3. Never rest a scoop shovel against a fanning mill.

4. Do not prop a barn door open with a pitchfork, for a gust of wind may break both



SCENERY OF CANADA. BEAVERS CUTTING DOWN TREES TO CONSTRUCT A DAM.

SKETCHED AND ENGRAVED FOR THE CANADIAN ILLUSTRATED NEWS.

form an estimate of the importance of keeping these ducts in perfect order by means of frequent bathing.

In connection with the hairs on his body there are sebaceous glands which furnish an oily substance to nourish the hairs. The ducts of these glands open generally into the hair-pits situated in the subcutaneous areolar tissue. These are frequently inhabited by a peculiar little parasite, especially in persons whose skin is torpid in its action. These glands lubricate the skin and serve to maintain its elasticity. Hair may be regarded as a kind of modified cuticle. Around the hair follicles and glands there are microscopical muscular fibres which act involuntarily; and fear and anger stimulate them to contraction and make the hair stand erect. In the Book of Job it is said: 'Then a spirit passed before my face; the hair of my flesh stood up.' These same muscular fibres extend everywhere throughout the skin, and when they contract by cold it assumes that appearance, called 'goose skin.' The skin, although so simple in appearance, affords a beautiful illustration of the infinite skill and wisdom of the great Creator, not only in its wonderful structure, but with respect to all its varied functions.

much upon the same principle as that followed by the tool-maker, who forms a cutting instrument by a skillful adaptation of hard and soft materials until he produces a good edge.

But the natural instrument has one great advantage over the artificial tool; for the former is so organized that so fast as it is worn away by use, a reproduction and protrusion from the base takes place, and thus the two pair of chisel teeth working opposite to each other are always kept in good repair, with their edges at the proper cutting angle. When injury or disease destroys one of these incisors, its antagonist meeting with no check to resist the protrusion from behind, is pushed forward into a monstrous elongation.

So hard is the enamel, and so good a cutting instrument is the incisor tooth of the beaver that when fixed in a wooden handle, it was, according to Dr. Richardson, used by the Northern Indians to cut bone, and fashion their horn-tipped spears, until it was superseded by the introduction of iron; then the beaver tooth, was supplanted by the English file.

The power of these natural tools is well described by Lewis and Clarke who saw their effects on the banks of the Missouri.

door and fork.

5. Plan your garden so that it may be cultivated by a horse. Much labor may be thereby saved, and the culture will be more thorough.

6. When plowing in warm weather you desire to rest your team, stop on an eminence, if such there is, and always with your horses' heads to the breeze. Five minutes in a favorable position, is better than ten in an unfavorable one.

7. Industry, carefulness and skill are the elements of success. More happiness is found associated with active habits than ever was, or ever will be found in connection with indolence.

8. A variety of farm products fills up the season, occupies the time of permanent help to advantage, and on the principle of 'having two strings to one's bow,' and of 'not having too many eggs in one basket,' is more sure.

9. Label all packages of seed or medicine. A lady last spring offered me a package of what she said was choice lettuce seed; when I reached home I found that it contained melon seed.

10. One of the greatest and most common defects in road repairing is a failure to even the surface.