

POLYTECHNIC ASSOCIATION OF THE AMERICAN INSTITUTE.

The Association held its regular weekly meeting at its room at the Cooper Institute, on Thursday evening Oct. 20, 1864, the President, D. S. Tillman, Esq., in the chair.

STEAM PLOWING.

Mr. Thayer exhibited a model of a rotary steam spader attached to the rear of a locomotive steam engine. The spades are broad blades of thin cast steel set spirally on a cylinder, and cut the soil in slices, carrying it back below the cylinder and dropping it, bottom side up, in the rear.

Mr. Lee:—I have always believed in the practicability of steam plowing, and in common with other Americans my preference at first was for the locomotive system. In England, after taking out scores of patents and expending very large sums of money, the locomotive system has been abandoned; but the system of rope traction is a practical success. It is an established industry as a means of making money. Men of enterprise buy or build their machines, and go round from farm to farm to plow the fields.

The President:—How many plows do they work in a gang?

Mr. Lee:—From three to six. One man can guide a six-plow machine, while a larger one would require two men, and this has limited the machines to the present time to six plows.

Mr. Schuyler:—How much do they get an acre for plowing?

Mr. Lee:—Some fields have been plowed for 5 shillings English—equal to \$1 25 of our money. But the usual charge is from 15 to 21 shillings—\$4 to \$5. They plow generally a good deal deeper than is done by horses, frequently twelve inches instead of eight, and a better crop is obtained. It is stated that the increase in the crop will average 8½ bushels of wheat to the acre.

Mr. Fisher:—What is the cost of a machine?

Mr. Lee:—From £650 to £1,500. The engine is placed on one side of the field, and the plow is drawn across by a wire rope. In some cases two engines are used—one on each side of the field; in others one engine is employed, with an anchor to hold the pulley on the opposite side of the field. Of course it takes one man at the engine and another at the anchor, besides the one who guides the plows. In plowing over a hill a pulley is placed on the summit, and a boy is stationed to move it as the work progresses.

NEW ALLOY FOR IRON.

Professor Fleury read a paper on a new alloy of copper, zinc and tin to be mixed with iron, recently patented by Mr. Arnold. It was stated that 5 to 10 per cent. of the mixture added to cast-iron increased the tensile strength of the iron several thousand pounds to the square inch, as proved by tests at the West Point Foundry.

The President:—There can be nothing new in this except possibly the proportions.

PETROLEUM BARREL.

A sample of Robinson's barrel for petroleum was exhibited. The plan of making the wood of this barrel impervious to petroleum is to soak the inside with soapsuds, and the outside in boiled linseed oil containing drying materials.

Dr. Dwinelle said that an ordinary barrel filled with naphtha would be completely emptied in two months by the passage of the subtle fluid through the pores of the wood, and that the escape of petroleum from the casks on their way from the wells to this city amounts to 10 per cent., while with this prepared cask there is no loss whatever.

The President then announced that the Association would proceed to the discussion of the regular subject of the evening—

FURS AND THEIR PREPARATION.

Dr. Parmelee:—In the prepared state the skins are called fur; but without preparation they go by the common name of peltry.

In Russia, Poland, East Prussia, Hungary, Bohemia and Saxony lamb skins constitute an essential part of the dress of thousands among the lower classes, and the skins of various other animals may be considered as articles of absolute necessity.

So early as the sixth century the skins of sable formed an article of fashionable attire at Rome, and

were brought from the confines of the Arctic Ocean, at great cost, to supply the demand of that wealthy capital.

The traders of Italy brought a considerable supply of fur to England in the time of George III. So much so that this monarch prohibited their use except among the wealthy classes.

The Canadian fur trade was commenced by the French, soon after their settlement on the St. Lawrence. The company formed in London, and called the Hudson's Bay Company, was chartered by Charles II., in 1670. This prosperous company founded many establishments, and carried on its trade for more than a century, when it met with a powerful competitor in the form of a new company composed of wealthy and influential British settlers in Canada. This second company was called the North-West Company, and its chief establishment was at Montreal, though trading upward of 4,000 miles further to the northwest. After long duration the two companies united into one, under the name of the Hudson's Bay Fur Company.

The Indian trade of the great lakes, upper Mississippi, etc., was enjoyed by the North American Fur Company, having its chief establishment at New York. Important as is the trade of these companies, yet the most costly and highly-esteemed furs are furnished by the trade carried on by Russia. The ermine is one of these, a fur which is produced in many countries, but only in perfection in Russia, Sweden and Norway.

The colder the climate the finer and warmer is the fur of animals. The finest furs are therefore brought from the colder regions.

The effect of cold on the Hudson's Bay lemming was made the subject of an experiment during Ross's voyage. The little creature was kept in a warm cabin during several months. It retained its summer fur. It was then exposed on deck, at night, to a temperature of 30° below zero. After one night's exposure, the fur on the cheeks, and a patch on each shoulder, had become perfectly white. On the second day those patches had extended, and the posterior part of the body and flanks had turned to a dirty white. During the next four days the changes continued, and at the end of a week the animal was entirely white. On examining the skin it was found that all the white parts of the fur were longer than the unchanged portion, and that ends of the fur only were white so long as they exceeded in length the dark-colored fur. By removing these white tips with a pair of scissors the original dark summer dress appeared.

The fur of the ermine ranks first in value; and the older animals furnish the best. These little animals are caught in snares and traps, or by shooting with blunt arrows. The skins are sold in lots of 43, called "the timber."

Next in value are Russian sables. The length of the animal is from 18 to 20 inches. The darkest in color are considered the most valuable. The produce of Russia in these skins is about 25,000 annually.

A great quantity of mink skins are sold to the inexperienced as real Russian sables.

There is also an inferior sable called Kolinski or Tartao sable procured from Russia. This fur when dyed is sold among inferior sable.

Next to the sable in rarity and cost comes the fur of the silver fox, which is a native of the country below the falls of the Columbian River, in Washington and Oregon Territories.

The softest and most delicate fur is that of a little animal called the chinchilla, about the size of a small squirrel, which inhabits Peru and the northern parts of Chili.

The sea otter has a very fine, close, soft fur; jet black in winter, with a silken gloss. That of the young animal is a beautiful brown.

The Persian lamb-skins have a soft, compact and elastic wool, which is formed naturally into elegant curls or waves. When killed immediately after birth, or taken from the mother, they are still more beautiful and expensive. These skins have been considerably used in Europe, but not yet in this country. A few have been very recently imported. The most prized of these skins are the fine black.

The sloth has a beautiful fur of a high luster.

Mr. Lusac, of this city, an elderly and intelligent merchant in furs, informs us that the Germans excel

all others in dressing and manufacturing furs, in a general regard. But furs, he adds, are put up in New York which are not excelled by any in Europe.

The Chinese possess arts connected with the dyeing of furs, as well as in the preparation of skins, which would command a large price if they could be transferred to European or American artizans.

The dyeing of furs may be considered the most difficult part of their preparation. It requires the most careful and skillful manipulation. Mr. Aphold, of London, England, has gained much repute for his skill in dyeing brown, which is a difficult shade to attain.

Otter fur has been dyed in New York better than in Europe. Muskrat is dyed to imitate mink; also to imitate the German fitch. Opossum is likewise thus dyed. Sable fur is frequently dyed to improve its shade.

The furs of the gray fox and of the wolf are difficult to dye.

An objection to the fur of the Norwegian and Lapland dog is a peculiar odor that always attends it.

The skins of hares and rabbits are used, in common with beaver and many other skins, for felting purposes. And this branch of the manufacture of furs is a very interesting one.

The introduction of silk plush for hats, as substitute for beaver, has brought about some curious changes in the fur market; for example, in 1827, 1828 and 1829 mink skins were worth in New York from 37 cents to 40 cents each. Now these skins are worth from \$8 to \$9. Muskrat skins were then worth 50 cents each and are now worth about the same.

The first process in dressing furs for use belongs to the hunter, who, on capturing the animal, strips off the skin and hangs it up to dry in the open air without fire. If it is well dried, and carefully packed, it reaches its destination, however distant, in good condition; but, if any moisture be left, or, if it be packed with others imperfectly dried, so that the slightest putrefaction takes place, then it is unfit for use, so far as the furrier is concerned. A minute examination of the skin is, therefore, his first business. The next step is to cleanse them from greasiness. This is accomplished by the use of water, bran, alum and salt. A kind of oil which is found in the fur itself is not wholly removed by the first treatment, so that it is necessary to afterwards wash it with a solution of soda and soap. Finally, the skin is well washed in clean water and dried; the previous treatment having converted the skin into a kind of leather.

The cutting up of the skins requires much judgment to avoid waste. The refuse cuttings if not cut to waste are available for making articles of the less costly description. And it has been remarked that many a lady on having her furs fresh lined under her own superintendance has viewed with surprise approaching to dismay the elaborate patchwork which the skins present on their inner side.

Skins to be used in felting undergo a longer treatment. And by means of ingenious machines the fur and hair is not only separated from the skin, but the hairs are separated from the fur; and even the fur itself is assorted into quantities of like specific gravity.

The use of fur in an economical and sanitary point of view is a subject on which there would probably be a great diversity of opinion. It is remarkable that in some countries the custom regarding clothing differs materially from ours. We dress warmer when we go out than when we sit in the house; the Turks, who seldom have fires in their apartments, use warmer clothing than when they go out, considering the exercise of moving about as a source of warmth. The Chinese are said to practice the same custom.

The President:—The pioneers of the fur trade in this country were John Jacob Astor and Peter Smith. On retiring from the business Smith invested large sums in the wild lands of this State, which he bought at the sales for taxes, while Astor invested in New York City lots. The result was that Smith became the largest landholder in the country and Astor the richest man. Peter Smith was the father of Gerrit Smith.

The subject of furs was continued for the next evening.

THE gunpowder explosion at Erith, England, on the 1st of October, was heard ninety-four miles,