

this last operation the fat becomes snow-white. The steam must be turned off as soon as the slightest trace of vapor of a disagreeable odor is thrown off. The fat may then be directly used or left to cool.

As has already been stated, the steam must be turned off or the fire removed as soon as a trace of disagreeable vapors becomes visible, whether the temperature be 150 deg. C. or 170 deg. C., for if this is not done the fat will again turn dark.

Freshly rendered, sweet fat (not acid or rancid) is most readily bleached, and may be heated quite high. Still the fat used should not be too fresh, or one will take the risk of saponifying the 300 lb. without leaving any to bleach.

Tallow which has been treated in this way, when used in toilet soaps, gives them a white color and agreeable odor. It is also adapted for candle-making, as it becomes exceedingly hard.

PASTE FOR PAPER HANGING.—Beat up four pounds of good white wheaten flour in cold water—enough to form a stiff batter—sifting the flour first, and beat it well to take out all the lumps. Then add about two ounces of well-powdered alum. Have a quantity of boiling water ready at hand, take it boiling from the fire and pour it gently and quickly over the batter, stirring it rapidly at the same time; and when it is observed to swell and lose the white color of the flour, it is ready for use.

The quantities here indicated should make about three-fourths of a pail of solid paste. It is recommended not to use it while hot, as when cool it adheres better and goes further. A little cold water poured over the top of the mass will prevent the formation of a skin from the drying out of the paste. When about to use, a small additional quantity of cold water should be added, so that the paste will spread easily and quickly under the brush. In warm weather this paste must be used quickly, as it cannot be kept for many days without fermenting and souring, when it becomes thin, watery and useless. If it be desired to avoid this, the addition of a few drops of carbolic acid to the mass when it is prepared will enable it to be kept almost indefinitely.

DAIRY INDUSTRY OF CANADA.—The dairy industry of the Dominion of Canada is an indication of the remarkable development of the country in recent years. In 1866 the export of butter was 10,448,789 pounds, valued at 2,000,000 dollars; and of cheese, 8,700 quintals, valued at 123,000 dollars, making a total of 2,217,764 dollars. In 1883 the total value of both exports was 8,187,000 dollars, of which 1,705,817 dollars went to the account of butter, and 6,451,870 dollars to that of cheese. It is also remarked that whereas in 1871 there were in the Dominion 353 cheese factories, there are now more than double that number.

MANUFACTURED MANURES.—During the past ten years the production of manufactured manures has become one of the great industries of the United States, the commercial fertilizer-manufactured during the last census year amounting in value to \$19,921,400. South Carolina is the chief source of mineral phosphates in the States. In 1880 the total number of establishments for manufacturing commercial manures was 270, and the total product 727,453 tons. South Carolina ranked tenth in the number of establishments, fifth in the product by tons, and fifth in the value of the products, being in advance of all the other Southern States, with the exception of Maryland. In 1880 there were seven fertilizer-manufacturing establishments in the State, which turned out 64,794 tons of fertilizers, of the value of \$1,537,236.

PROGRESS OF MANITOBA.—The annual report of the Department of Public Works, presented to the Manitoba Legislature, states that notwithstanding many drawbacks incidental to the opening up of a new country, such as the want of roads, bridges, schools, churches, railways, &c., a steady stream of immigration has poured into the Canadian North-West, the immigrants being for the most part of the best possible description, people of a well-to-do class from Great Britain and from Northern Europe, as well as from the other provinces of the Dominion. The people spreading themselves over the fertile prairies of Manitoba have manifested a pluck, energy, and intelligence which give the strongest idea that in the near future Manitoba will be placed in the front rank in the Dominion, holding her own for commercial enterprise and prosperity, as well as for social and educational privileges. It is also stated that a large number of bridges have been built during the past year; that many miles of drainage have been constructed, and a large quantity of grading and road-making completed. It is further stated that the total assessment of the 65 municipalities in the Province reaches a total of \$98,800,000.

WHALE MEAT FOR HUMAN FOOD.—Some experiments have been made in Norway relative to its use. It is reported that at a recent dinner given to a number of persons interested in the question, it was proved that the article may be prepared for the table in numerous ways, and that various parts exhibited a great want of resemblance, some tasting like turtle, some like beef, and others being as tender and delicate as chickens.

NEW USE FOR PAPER.—AN ingenious individual has discovered a new use for paper, being nothing less than its employment for what he terms a "paper-pad shirt front." According to his plan the bosom of the shirt will consist of several layers, which can be pulled off as desired, each layer on being removed exposing to view a snow-white surface, on the principle of the ordinary blotting-pad. Ingenious as this thrifty-minded inventor undoubtedly is, he has been quite outdone by another, who has devised a method of printing in instalments on the back of each layer a sensational tale of absorbing interest. This, it is calculated, will have the effect of materially increasing the demand for the paper-pad shirt, as so irresistible will be the influence of the story in the direction of continuous perusal, that, instead of removing a layer each day, as contemplated by the first inventor, the wearer will find himself unable to bear the suspense involved by delay in following the course of events in the exciting fiction, and will strip off the layers in quick succession.

A NEW INVENTION.—Dr. George Hand-Smith, well known in the scientific world as a patient student of analytical chemistry, seems to have hit upon a new method of painting upon stone, or rather in stone. His discovery has, doubtless, a future. The free exhibition in Piccadilly Hall, to which amateurs and scientific students are admitted simply on presenting their cards, tells its own tale. After years of patient experiment, Dr. Hand-Smith has got a line of colour to travel down into stone or ivory unaltered, and without spreading beneath the surface. It took him three years to get the colour "keen"—then the rest seemed to follow speedily. The colour at a certain stage "becomes alive;" its molecules seize on the stone molecules and eat their way down without swerving. Any stone can now be painted to almost any depth. On removing the surface the picture remains indelible as the colour reaches, and it is absolutely indestructible. Specimens of Mr. Poynter's work in this new stone-colour art, Miss Bitterworth's decorative scrolls, and others are on view, as well as numerous pieces of marble treated to various depths. The colour is a metal oxide, forming part of the stone, and is, therefore, not oxidisable or perishable. The stone thus treated becomes translucent like alabaster, and some very beautiful ruby, emerald, and sapphire-looking slabs are shown against the light, looking like the finest stained glass. From an artistic, decorative, and architectural point of view alike, the invention seems to us to be of very great importance, and it has won the admiration of Mr. Norman Lockyer and other men of science.

THE HUDSON'S BAY ROUTE.—A report on the opening and closing of navigation at York Factory on the west coast of Hudson's Bay, with observations extending from 1823 to 1880, has been communicated by Mr. W. Woods to the Hudson's Bay Company. The latest recorded date of open water in spring is June 1, the earliest closing of navigation November 3. The earliest recorded date of opening was May 4, the latest date of closing December 9. There is, therefore, some six months of open water on the average in the bay itself, but the communication between the bay and the Atlantic can only take place through Hudson's Straits, and this passage is only clear in July, August, and September, with probably a part of October. Further information on this head is much needed, and it is satisfactory to learn that Hudson's Bay is shortly to be properly surveyed, for the question of its navigability is a most important one to the settlers of Manitoba and the Saskatchewan, since they can ship their exports for Europe by this shorter route, instead of by the Red River and the St. Lawrence.

A DISEASED coffee leaf from Natal has been transmitted to Kew by Prof. Macowan, Director of the Botanic Garden, Capé Town. It has been examined by Mr. H. Marshall Ward, lately employed by the Government in the investigation of the coffee disease in Ceylon, and he finds it attacked with a typical form of the fungus *Hemileia vastatrix*, to which the well-known leaf-disease of that colony is due. This is the farthest westward extension of the disease at present. Eastward it has long maintained a position in Fiji.