

## Overcoming an Industrial Waste

Substantial Returns from Electrical Precipitation of Dust from Stacks

The dust discharged from the stacks of iron furnaces, cement mills and other industrial plants, represents a waste of valuable material and frequently constitutes a nuisance. Not only is it detrimental to public health, but it is often injurious to plant life, increases the cost of cleaning and disfigures buildings. The loss of material represented by this dust, and the nuisance caused by its discharge into the atmosphere, may be eliminated by electrical precipitation.

The fumes, while passing through a system of vertical pipes, are brought into contact with conductors carrying electricity at high voltage. The minute particles become charged with static electricity and adhere to the walls of the pipes. The material can then be removed at intervals by rapping the pipes and collecting the dust in hoppers at the bottom.

Electrical precipitation processes are now being used successfully in lead and copper smelters to reduce metal losses from the stacks and to eliminate the smoke nuisance; in cement plants to collect potash and cement dust; in acid plants to recover acid fumes; and in rock crushers to suppress the dust nuisance. The process is also being applied to iron blast furnaces to eliminate the ore dust and to recover potash values; to gas plants for removing the dust, tar and lamp black from the gases; to locomotive roundhouses and power plants, situated in centres of population, to remove the soot and cinders from the smoke; and to industrial processes producing fine powders as in the manufacture of lamp black, zinc oxide, desiccated foods, etc.

To appreciate the efficiency of the process, one needs only to stand where he can watch the stacks leading from the treaters while some one opens and closes the treating circuit. When the current is off, the familiar clouds of smoke pour out; when the current is on, the smoke vanishes and only a fine vapour can be seen. Final proof of the effectiveness of the operation is provided by the car-loads of precipitated dust taken out of the collecting bins.

Financially the operation seems most attractive. A copper-smelting company installed an electrical precipitation equipment at a cost of \$113,900. The operating expenses (power, labour, supplies, etc.) were \$14,600 a year. The value of the copper dust collected (at 12 cents a pound) was \$180,018 a year. Thus, this installation paid for itself in less than a year and, thereafter, was operated at a large profit.

Again, a cement plant equipment cost \$180,000 to install and \$10,395 a year in operating expenses. Though the material recovered is worth much less than copper

dust, its value per annum at present prices is \$74,325, of which about one-third is cement dust at \$1.00 a ton and two-thirds is potash at 70 cents a unit. This also represents a highly satisfactory profit.

These examples are of large plants. However, smaller plants may be installed at approximately proportional cost with practically proportional recoveries since the efficiency is not dependent upon the size of the plant, but more particularly upon the operation of it.—L. G. Dennis.

## Electric Bake-Ovens

Conservation of Fuel and Ease of Operation Suggest Their Use

While electricity cannot take the place of coal for general heating purposes, certain industries offer a promising field for the more extended use of hydro-electric energy. One of these is in bake-shops, where the current can be used during the night, thus furnishing a valuable off-peak load. In many parts of Canada there are special low rates for electric energy used after 6 p.m. and bakers should enquire respecting; this cheap rate as, in most cases, it is cheaper than other fuels. Where there are no such rates, bakers could doubtless obtain them by calling attention to the fact that, as they operate during the night, they use the energy when others do not require it. In Europe, the present abnormally high price of coal has led to the introduction of many electric ovens in countries such as Switzerland, Norway and Sweden, which are well supplied with water-power. In Canada, also, their use is being extended. Even where electric ovens do not effect an actual reduction in the cost of fuel, they are frequently preferable to other types, owing to their other important advantages. The principal advantages are great cleanliness and convenience in working, the elimination of the cost of delivering coal and carting away ashes, reduction in labour costs, elimination of expenses for chimney building, the small space occupied, etc. In the case of confectionery shops, which are generally situated in the best parts of the town, ground space is a very expensive item. Quite apart from the elimination of the chimney, electric ovens occupy but little room. An electric oven with capacity for 240 loaves takes up only 35 square feet, whereas an ordinary baker's oven of the same capacity requires 125 square feet. This is an important factor in hotels that make their own bread and pastry.

Another advantage of electric bake ovens is in temperature regulation. The top and bottom heat can be separately switched on or off, or adjusted as to intensity. In this way, special kinds of pastry may be more easily baked. Electric ovens are also very hygienic; there is no smoke or soot, and, as very little heat escapes, the bakers are not inconvenienced by high temperature. The switching off of the current at night may also be done automatically.

## Lightning Dangers of Early Spring

Inspect Lightning Rods to Ensure Proper Connections—Wire Fences to Protect Cattle

Though electric storms reach their highest frequency during the heat of summer, they often occur in the spring, and fire losses caused by lightning are by no means unknown in April and May.

Lightning rods have proved an almost absolute protection. Only in very rare instances have they been known to fail, and, even in these cases, the failure was probably due to defect in installation or to deterioration.

Examine your lightning rod installations for broken insulators, for bends in the cable which allow contact with the framework, or for corrosion where it enters the earth. The latter is an important point. The electricity is carried into the ground by means of the cable but, if it corrodes, and the ground connection is thereby broken, a fire is very liable to result. See to it that the cable is sound and is deep enough in the ground to always be in damp earth.

When building wire fences it is advisable to use ground wires about every five rods. Lightning is attracted by wire fencing and as, during a storm, animals will congregate near fences, many of them are killed by contact with the wire. These ground wires may be of about No. 9 gauge wire, given one turn around each strand of the fence and carried into the earth beside the fencepost.

## Canadian Dairying Makes New Record

Western Provinces Rapidly Increasing their Production of Milk and Butter

Canada's dairy products yielded approximately \$250,000,000 in 1919. Of this amount, about \$85,000,000 was received for exports. These figures easily constitute a record for the Canadian dairy industry. In 1910, the total value was estimated at \$100,000,000 and the exports amounted to nearly \$24,000,000. Although the production of most dairy products made a fairly constant increase during the period of the war, the phenomenal record of 1919 must be attributed in large measure to market conditions. In common with other food products, the prices of milk, butter and cheese rose rapidly owing to a world shortage. Then, too, the more rapid growth of urban centres as compared with the rural population has enlarged the home market, without a corresponding increase in production. Further, the shortage of labour on farms throughout the war restricted increased production materially, and the comparatively rapid expansion of the condensed and powdered milk trade adversely affected the cheese industry adversely. Each of these factors tended to increase prices. Thus, in 1918, the average price paid for cheese by the Dairy

Produce Commission was 23 cents, f.o.b. steamship, at Montreal. Although similar statistics are not available for 1919, it is probable that the price exceeded 27 cents. Butter prices also established new records, the average price for all grades of creamery, delivered at Montreal, was 53½ cents in 1919. While the production of cheese probably showed a slight decline, the past year can be credited with a record production of butter and condensed and powdered milk.

Western Canada, especially the Prairie Provinces, is rapidly increasing its production of milk and butter. At present, Ontario and Quebec easily lead the other provinces, but with a more general realization of the need for conserving soil fertility on the prairies, dairying will progress prodigiously.

Modern, co-operative dairying is less than fifty years old. Already it has played an outstanding part in giving such countries as Denmark and New Zealand economic independence. It has been proved beyond peradventure that no other branch of farming surpasses it in maintaining and improving soil fertility. However it would be unreasonable to expect that prices can long continue at the present high levels. On the other hand, labour conditions should steadily improve and advances will be made in labour saving devices. It seems reasonably certain that dairying is destined to be an increasingly large economic factor in the future of Canada.—A. Donnell.

## EXHAUSTION OF SOUTHERN PINE

According to a bulletin just issued by the Spruce Production Corporation of the United States War Department, only four mills out of 2,043 southern pine mills have timber supplies (southern pine) which will last more than twenty years. More than 1,600 mills will have exhausted their supplies in five years or less, and more than 1,900 mills in ten years or less. Attention is drawn to the fact that this rapidly approaching depletion coupled with an expanding world market for timber, is bound to result in heavy demands upon the great timber areas of the Pacific coast and Canada. The present generation of timbermen in Canada will probably benefit as a result. This benefit may be extended to posterity if the short-sighted policy of the southern lumbermen is avoided.

## TOWN-PLANNING OFFICE AT LYONS, FRANCE.

The Congress of Housing, at a recent meeting in Lyons, decided to install in that city under the patronage of the municipality a permanent central office. This office will assemble documents, French and foreign, relative to housing and to construction. The work is to be undertaken under two forms: (1) Library, comprising books and papers, and (2) Permanent exhibition of plans, photographs, samples, patterns, etc.