

A PECULIAR RUPTURE.

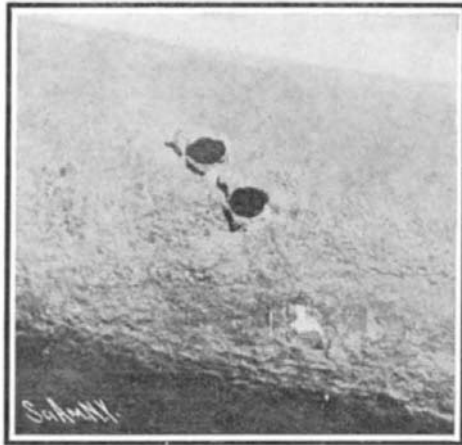
BY W. D. GRAVES.

The accompanying photograph is of a short section of a flue taken from an old boiler, and shows two small holes which appear to have been made by some pressure from the inside of the flue, i. e., a pressure from the direction opposite to that of the normal steam pressure.

Though the direction of the rupture is more distinctly apparent in this place than in any other, it is only one of several similar holes in the same set of flues. The boiler was used in connection with a 2-horse-power engine, under a pressure of 60 to 80 pounds, and this set of flues had been in only a year. The photograph is of a part near the center of one of the latter.

The only explanation of the peculiar rupture which seems applicable is that it must have occurred from the inward pressure of the air when the boiler had cooled sufficiently to form a vacuum. The appearance would indicate that the scale had served to help withstand the steam pressure, while against that from the outside it offered little or no resistance.

The circumstances support this theory as to the cause, in that the boiler was last fired on a very cold evening, cooled off rather more quickly than usual, and was found, the next morning, to leak freely.



A PECULIAR RUPTURE.

A MANTEL MADE OF CIGAR BOXES.

The accompanying illustration is manifestly a picture of a carved mantel. It is more than that, however. It is made of cigar boxes, two thousand in number, and nothing but cigar boxes. The man who presumably smoked the cigars contained in the boxes (or at least obtained the cigar boxes of other smokers) carved all the ornamentation with a penknife during his leisure time. That is why three years were consumed in the operation.

A CURIOUS ACCIDENT TO A GRAIN ELEVATOR.

BY W. F. MINERS.

One of the most peculiar accidents which might befall a modern grain-handling plant occurred at Fort William, Ont., recently when the gigantic elevator of the Ogilvie Milling Company slid from its foundation into the Kaministikwia River in much the same manner as a vessel leaves her ways on being launched.

The structure, which cost \$250,000, was of the tubular steel type, 60 feet wide, about 100 feet long, and 180 feet high, built on a concrete foundation, which was supported by 65-foot piling driven through clay to solid rock. The elevator had a storage capacity of 500,000 bushels, and contained about 400,000. It was built but two years ago, and was one of the most modern grain-handling plants on the continent, it being electrically operated throughout, induction motors supplying the motive power.

It is generally believed that defective concrete work was the cause of the accident. The cement foundation was 16 feet high and only 16 inches in thickness, which it is now claimed was not sufficient to withstand the enormous weight. The foundation gave way at one corner, and the whole wall immediately went to pieces, letting the building slide 30 feet into the river. The structure at the time the accompanying picture was taken stood in 20 feet of water at an angle of 25 deg. It was a total loss, as the tanks were twisted and pulled completely out of shape. Holes were tapped in the sides of the tanks, and the wheat run off through these openings into scows in the river below, from which it was transferred to boats, about 50 per cent of the grain being lost.

Scott's Discoveries in the Antarctic.

Great Britain may well be satisfied with the information collected in the Antarctic by Capt. R. F. Scott and his gallant companions. The full results of the scientific observations are not yet worked out, and in many cases for a complete appreciation of their bearing they must be compared and correlated with those of the other Antarctic expeditions, but many highly suggestive points have already been revealed. And what did Capt. Scott find after his memorable struggle up the glacier through the mountains? An enormous plateau at an elevation of about 9,000 feet, nearly level, smooth, and featureless, over which he traveled directly inland for over 200 miles, seeing no sign at his furthest point of any termination or alteration in character. So far as could be seen from other journeys, glacial discharge from this great upland is very small, and practically it appears to be dead. Its accretion by fresh snow-fall is insignificant, while

on all sides along the flanks of the coastal mountains there are signs of diminution in the mass of ice. The great ice-barrier east of Ross Island tells the same tale. This magnificent feature presents to the

sea a face of perpendicular ice-cliffs varying from 60 feet to 240 feet in height, and 450 sea miles long. Sir J. Ross mapped its position in 1841, and Capt. Scott finds that it has retreated on an average fifteen miles,



AN OVERMANTEL MADE FROM 2,000 CIGAR BOXES.

Only cigar boxes were used, and all the carving was done by hand with a penknife during the leisure moments of a workingman's time. The work was completed in three years.

varying much in different parts. Should this rate of retreat continue the whole of this ice mass, as far as Capt. Scott saw it, will have vanished in 1,000 years. As the motion of the ice mass is about fifteen miles

to the north in the same time, icebergs covering collectively an area of 450 miles by 30 have been discharged from it in sixty years. Capt. Scott traveled over it nearly due south to a point 300 miles from its face, and then saw no sign of its end. It is bordered on its western side by a mountainous coast line, rising in places 15,000 feet. He found the ice practically flat and wholly unfissured, except at the side, where its northerly motion, found to be about 130 feet in the month, caused shearing and vast crevasses. All that is known of its eastern edge is that it is bordered, where it meets the sea, by land from 2,000 feet to 3,000 feet high, suspected by Ross and verified by Capt. Scott. This may be an island, or more probably the eastern side of the great fiord or bay now filled by the barrier. Capt. Scott is of opinion that this great ice sheet is afloat throughout. It is unexpected, but everything points to it. From soundings obtained along the face it undoubtedly has about 600 feet of water under it. It is difficult to believe that this enormous weight of ice, 450 miles by at least 360, and perhaps very much more, with no fall to help it along by gravity, can have behind it a sufficient force in true land glaciers to overcome the stupendous friction and put it in motion if it be resting on the bottom. It is sufficiently astonishing that there is force enough even to overcome the cohesion at the side, which must be very great. The flat nature of the bottom of the Ross Sea and the analogies of many geographical details in other parts of the world make it most probable that the water under the whole barrier is deep. A point on which no comment has been made is the difference in the appearance of the slopes of Mount Terror. Capt. Scott found the bare land showing over large areas, but during the two summers of Ross's visit it was wholly snow-clad. Sir Joseph Hooker, the sole survivor of Ross's expedition, when questioned had no doubt on the subject, and produced many sketches in support. This may be due to temporary causes, but all the information collected by the expedition points without doubt to steadily diminishing glaciation in recent times. We have, therefore, this interesting fact, that both in Arctic and Antarctic regions, as indeed all over the world, ice conditions are simultaneously ameliorating, and theories of alternate northern and southern maximum glaciations seem so far disproved. But this does not mean that climatic conditions in the Antarctic are now less severe—probably the contrary. It has been pointed out by many that land glaciation may arise from varied primary causes, but one obvious necessity is that the snowfall should exceed melting and evaporation. It need not be heavy; but if it is it may produce glaciation under somewhat unexpected conditions. This would entail a vapor-laden air more or less continuously impinging upon the land at a temperature which will enable it when cooled, either by passing over chilled land or when raised to higher regions by the interposition of mountains, to give up its moisture freely. This condition is not fulfilled when the air as it arrives from the sea is already at a very low temperature. The shores of the whole of western southern Patagonia, deeply indented with long and deep fiords, indicate, according to all received views of the origin of such formations, that the land was formerly higher, while signs of glaciation are everywhere present.

A Needed Machine.

An illustration of the difficulty of making a practical machine in which the government is vitally interested is the postage-stamp sticking machine. According to Machinery there is no practical machine for sticking postage stamps on letters, although the demand for such a machine is considerable. The difficulty of the problem lies in the fact that postage stamps come in sheets gummed and perforated. A stamp sticking machine should, of course, have the stamps printed in strips which should not be perforated but should be slightly notched on each side at the junctions of adjacent stamps. With the stamps prepared in this manner the problem of a successful sticking machine becomes a comparatively simple one, but where the invention is restricted to the use of stamps in the present form the difficulties are so great as to make the scheme in all probability impractical. To get the government officials to print stamps in strips and supply them rolled, ready for use in such a machine, would require great political and business influence and pressure and is something that would certainly cause a very great scandal on account of appearing to favor a patented device which must necessarily be a monopoly.



A GRAIN ELEVATOR WHICH GLIDED INTO A RIVER AFTER ITS FOUNDATION FAILED.