film increases with the temperature. A novel illustration of metallic skins was furnished by Professor Guthrie, who exhibited a steel chain to which he had given a beautiful bluish-black protective coating by simply dipping it in melted nitrate of potash or common nitre. The process was discovered accidentally, and as the bloom improves the appearance of the metal, it will probably be applied to utensils of iron and fancy articles.—*Engineering.*

THE PANAMA CANAL.—WORK DONE.

The president of the American Branch of the (De Lesseps) Panama Canal Company has issued a statement of the condition of the work. Notwithstanding the obstacles encountered in the luxuriant vegetation and the thick forests, there has been opened and recorded transversely to the axis of the canal over 200 kilometers of paths, and also a passage from 20 to 30 meters has been made from one end of the Isthmus to the other, according to the proposed lines of the Canal Commission. For meteorological studies, to which especial attention has been given, four stations have been established—at Colon, Gamboa, La Boca del Rio Grende, and Naos Island. Geological surveys have been made and are now in progress. It has been ascertained that between Colon and Lion Hill the canal will not encounter any rocks. At the present time two steam sounding apparatus are being put up similar to those at Colon. At this station the samples brought up by the spoons have given an exact structure of the soil. It is shown to be a succession of layers of clay, representing the degradations of a greenish pyroxenic rock, which through its gradual degradations and decomposition has produced this formation. At other places the ground, bored to a depth of 25 meters, has revealed nearly every way, instead of successive formations methodically arranged, a chain of derived rocks growing softer and softer. The thickness of the mellow soil is quite remarkable, and, in a word, the soundings have given results beyond expectation on the whole line of the canal.

Work on the canal has been commenced. The company now have 200 cars, 12 locomotives, 2 pontons, 2 steam cranes, 18 flatboats, 2 dredges with change pieces, ribbon saws, rails, etc., a part of which is already at Colon and the remainder is on the way. The storehouses at Colon cover an area of 1,400 meters, and are full. Five barges and two steamboats are plying upon the Chagres River. Another steamboat at Panama is used for hydrographic surveys of the bay.

SUCCESSFUL MOVING OF A LARGE HOTEL.

At a recent meeting of the Engineers' Club, of Philadelphia, the Secretary read a detailed description of the moving of the Hotel Pelham, at Tremont and Boylston streets, Boston, for the purpose of widening Tremont street. This hotel is built of freestone and brick, 96 and 69 feet frontage. The Boylston street wall is supported on eight granite columns 12 feet high, 3 and 4 feet square. There is a basement and seven stories above the sidewalk. Height above tramways on which it was moved, 96 feet. Weight, 5,000 tons, exclusive of furniture, which was not disturbed during removal, as also were not the occupants of the stores on the first floor and some of the rooms, the various pipe connections being kept up with flexible tubes. Careful experiments with models showed that if the lower part of the building was firmly braced, there was no danger of shifting in the parts above. The general arrangements consisted of heavy and substantial stone and brick foundations for iron rails and rollers, and the building was forced to its new position by fifty-six screws, 2 inches diameter, half inch pitch, operated by hand against timbers arranged to uniformly distribute the pressure against the building. Much care and ingenuity were displayed in the details of the arrangements and work. Two months and twenty days were occupied in preparation. The moving itself was begun on August 21, and finished on August 25, but the actual time of moving was but 13 hours and 40 minutes. The greatest speed was two inches in four minutes. The hotel moved about one-eighth of an inch at each quarter turn of the screws. The whole distance moved was 13 feet 10 inches. Four thousand three hundred and fifty one days' labor was required for the work. The whole cost was about $30,000. This is the largest building that has ever been removed, although larger have been raised, which latter is a much simpler and less risky operation. The complete success of this undertaking is shown by the fact that cracks which existed in the walls prior to removal were not changed by the operation. Paper was pasted over them before commencing, that any change might be seen.

Trade Industries.

PETIT PAIN.

The millers of France are in a state bordering on panic, and may now be supposed to have little reason to boast over the farmers whose corn they have so long ground with such ease and certain profits to themselves. The reasons for this desperation which has overtaken them are not be understood properly without an intimate acquaintance with the whole art of grinding, but they may be briefly explained by saying that in this department of national industry, as in several others, the French are behind the age. For some centuries the flour produced by them was justly celebrated throughout Western Europe for its purity and whiteness; and even now visitors to Paris are often agreeably surprised at the color and attractive appearance of the *petit pain* which makes its appearance at the early morning meal. But all the credit for this delicacy is now admitted to be due to the baker, and not to the man who supplies the elementary materials for baking. By a careful study of the question, and a comparison of the French flour with that of other countries, the sad conclusion has been arrived at that Gallic millers are beaten in the race, not only by the Austrians, but also by the Swiss. For the last three years these two nations have boldly disputed the palm with their Western rivals, and have at last succeeded in convincing the cosmopolitan market of their superiority. The export of flour from France is diminishing, and it is no longer possible to doubt that industry has received a serious blow. A French engineer has lately broached this uncomfortable theory in a paper read before a trade assemblage, and has suggested the reason already given for the growing unpopularity of French-ground flour. The consideration is one of some importance, not only for the millers but for the country. Two hundred million francs are supposed now to be invested in the industry, and it would require a hundred thousand to renovate the machinery. On the other hand, it is calculated that 150,000,000 *frs.* a year are lost by sticking to the old utensils, which are now superseded in more progressive parts of the world.—*British Confectioner.*

WHEAT HARVEST ABROAD.

The London correspondent of *Bradstreet's* says, under date of September 8th:

The high percentage of yield accredited the British wheat crop by the Vienna international corn market recently would tend to render the exhibit of very little value, if as wide of the mark throughout as in our case. The fact is they were formed before the three week's rain—at the most critical season of the year. Within the past seven days a considerable amount of grain has been got in, and from all I hear I very much doubt whether our wheat harvest can be placed much above 75 per cent. of an average, while barley may range from 100 to 105 per cent., and oats from 70 to 75. With regard to the French harvest, the information at command would indicate that 85 per cent. is full low; but, nevertheless, it seems certain that these two countries are open to absorb as much foreign wheat as they have in the past twelve months. That in the case of England has been as follows:

	—Twelve months ending August 31st.—		
	1879, cwts.	1880, cwts.	1881, cwts.
Wheat	51,725,435	59,815,691	55,990,769
Wheat flour	9,124,388	10,431,726	12,242,571
Barley	9,994,624	12,382,665	10,624,616
Oats	12,133,645	15,622,912	10,879,916
Indian Corn	38,621,787	31,870,896	37,777,160

This country will probably require not far short of the equivalent of 120,000,000 bushels of wheat during the next twelve months. France, it seems probable, will require about 90,000,000 bushels, and Germany must also be an importer, although that country will for the most part be supplied from Austria. For all practical purposes it is the requirements of France and England which American shippers will be asked to satisfy in the coming twelve months, the rest of Europe apparently being well able to support itself.

In the departments of France the destruction of hurtful and dangerous animals is encouraged by money awards. Last year, in Seine-et-Marne, there were killed as many as 3,598 vipers, paid for at the rate of 25 centimes per viper, the total amount being 899f. 50c. The great bulk of these vipers were killed in the arrondissement of Fontainebleau.