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NEW YORK, SATURDAY, SEPTEMBER 24, 1898.

OUR NEW POSSESSIONS AS A FIELD FOR ENGINEERS.

We have been asked to state our opinion as to the possibilities of our newly acquired possessions as a field of employment for engineers, both civil and mechanical. There is in our midst a large and rapidly increasing body of young men, graduates from technical schools and colleges, with more or less practical experience in the shop or in the field, who think they see in Cuba, Porto Rico, the Hawaiian Islands, and the Philippines an immediate field of employment of a more remunerative kind, and with opportunities for more rapid promotion, than are possible at home. The expectation is based upon the conviction that our possession or control of these islands will be followed by an immediate and extensive development of their natural resources, in the course of which the services of the civil and mechanical engineer will be in active demand.

The enterprise and ambition which are likely to send many professional men to these new fields are highly commendable; but we fear that those who hasten there at once are doomed to much disappointment. While the next decade is certain to see a wonderful change in much of our newly acquired territory, the development will occur in the latter rather than in the former half of it. We must remember that the Spanish possessions, at least, have been under the control of one of the most conservative races in the world, and that the people of the islands are wedded to old ideas, to customs and habits that crystallized far back in medieval times. Before a period of building up there will have to be a period of pulling down and clearing away, and the process, at least in the earlier stages, will necessarily be slow.

In the reforming and development of the islands the two extremes of modern civilization will meet, for two types of character and temperament more opposite than the Spanish and American it would be difficult to find. The one is conservative, romantic, and wedded to tradition, the other is elastic, practical, and supremely utilitarian; and while it is true that the inhabitants of these islands are not of pure Spanish blood, centuries of Spanish rule and customs have stamped their impress deeply upon the native islanders. For these reasons it is unreasonable to expect that the invasion of these possessions by the railroad, the electric light, the telephone, and the trolley will be as rapid as it was in our Western States, where there was an American population to welcome and assist these prime movers of an up-to-date civilization.

At the same time it must be borne in mind that the operations of the engineer, especially in the civil branches of the profession, presuppose the employment of capital on a vast scale; and capital is always shy of investment in countries where the government is in a disturbed condition. Before any large sums are invested in the construction of railways and highways, in the improvement or provision of water supply, and the general sanitation and reconstruction of cities, the government of the islands must be placed on a satisfactory basis and prove itself to be in a thoroughly stable condition.

When this has been accomplished and the people have adjusted themselves to the new conditions and begun to realize the increased value of property and sanctity of personal rights which have come to them by virtue of the change of government, we may look for an era of material development such as the world has rarely witnessed. The location and construction of a railroad system in Cuba alone will call for the services of a very considerable force of engineers, and the rebuilding of sugar mills, the installing of electric light and power plants, the development of mines and other material resources of the island will present many excellent openings for young men in electrical and mechanical engineering.

For the present, however, we would advise those who are contemplating a trip to one or other of our possessions to stay at home and watch the course of events, meanwhile keeping in touch, as far as possible, with such companies as may be formed for the exploitation of the West Indian and South Pacific possessions.

FORETHOUGHT IN THE NAVY DEPARTMENT.

In our admiration of the dashing exploits of the navy on the high seas we are liable to lose sight of the excellent work that was done during the war by those officials and assistants whose duties were none the less valuable, arduous, or efficiently performed, because they were carried out at a desk or over a draughting-board. In no branch of the naval service was more faithful work done, or harder work, than in the Bureau of Construction, which had charge of the overhauling of the ships of the regular navy and the conversion of the auxiliary vessels from merchantmen and yachts to cruisers and dispatch and patrol boats, or in the Bureau of Ordnance, which had to see that hundreds of vessels carrying guns of various sizes, and scattered over the waters of two hemispheres, were kept fully supplied with ammunition.

There has recently come to our knowledge a striking instance of the forethought and forehandedness displayed in keeping supplies well up to the front during the operations in Cuban waters, which is worthy of special mention. During the operations off Santiago, certain parts of the mechanism of a turret gun on one of our battleships showed signs of failure, and a dispatch was sent to Washington reporting the circumstance and asking that duplicate parts be sent. Allowing for the time necessary for securing or making these parts and shipping them to Santiago, the captain of the ship expected to receive them in about thirty days. As a matter of fact, they were received in nine days after the requisition was made. This expedition was due to the fact that the ordnance officer at New York had anticipated such occurrences by shipping to Key West and keeping in store a reserve of such parts of our guns as were most liable to failure; and six days after the failure occurred, word reached the battleship that the duplicate parts had left Key West.

In respect of the supply of ammunition (a most vital consideration in these days of rapid-fire guns), it is greatly to the credit of the department that the ships, including those under Admiral Dewey, in the far East, were always fully supplied, while the vessels of Sampson's squadron came back to New York with their magazines completely filled.

DANGERS ATTENDING SO-CALLED FOOD PRESERVATIVES.

Of late have sprung into existence a number of preparations, claiming to be safe and efficient food preservatives. They have been hawked from house to house, especially in rural districts, and on the strength of representations made by agents have found employment domestically in the canning of fruits and vegetables, and preservation of milk and milk products; fortunately, however, the representations made as to their efficiency in the preparing of meats have proved delusive, and thus in many instances led to their general abandonment as regards other domestic products. How far they have been, or are now, employed by factories engaged in wholesale production and marketing tinned products is a matter solely of conjecture, yet there are good reasons for surmising they are generally ignored, except, perhaps, in the preserving of the poorer and cheaper grades.

The least objectionable of these so-called preservatives owe what little virtue they may be possessed of either to salicylic or boracic acid, sodium salicylate or sodium biborate (borax); it is said that fluoric acid is sometimes employed, but no data or definite evidence is obtainable regarding such use of this agent.

As regards salicylic acid and salicylates, the dangers attending their employment have been thoroughly exploited in the past; further, the changes induced in the presence of fruit acids, whereby abnormal colors are developed, are in the majority of instances inhibitory. Boracic acid and borax, however, are in general use in some foreign countries for the preservation of products that are to be exported, but are forbidden by law as regards those intended for home consumption. These drugs, too, are popularly believed to be "harmless," which if true would simply mean they are inert, and of little or no utility. They are above all cheap and can be obtained anywhere.

Within a few months, several cases of severe and dangerous poisoning, as the result of the employment of boracic acid and borax, have been chronicled in the medical press, both of America and abroad. In one instance five of a family numbering seven souls all told were seized with severe and excruciating colic accompanied by nausea and vomiting, that prostrated the unfortunates for three and four days; the trouble was brought directly home to the milk employed as a beverage, and to which had been added a preservative powder consisting of almost pure boracic acid. Two members of the family escaped because the milk used by them was only what was required for a cup of tea. The same milk, fed to half a dozen fowls, killed all but one, and this was rendered so ill that it was dispatched. In another family, numbering nine individuals, six partook of milk which had been "kept sweet" by the aid of borax, and all were thereby made seriously ill. Several cases of dangerous—and one of fatal—poisoning of infants and children by borax, fed in milk, are on record. Probably many more have escaped notice, the malady being ascribed to "cholera infantum," "summer complaint," colic, etc.

That accidents are not more frequent from the careless and ignorant use of these drugs, aside from the reason just mentioned, is due to causes: First, the distress occasioned thereby closely resembles that which is apt to follow upon indiscretions of diet and improper exposure. Second, many adults are but slightly susceptible to the malign influence of the drugs when they are only taken into the stomach casually and occasionally in moderate and unrepeated doses. As regards milk, it is possible, as has been suggested, that the drugs induce certain chemical changes therein, producing a new toxic agent, or enhancing or intensifying the untoward effects of the boracic acid or its sodium salt; but this has never received careful investigation and study.

Borax and boracic acid have been employed in a variety of diseases, both as internal and topical medicaments, and of late years—the former especially—have been exploited as remedies for epilepsy, though now practically abandoned because of the unfortunate results that follow in their train.

A single large dose, as already intimated, induces derangements in the digestive apparatus that simulate colic and the results accruing to indiscretion in the use of foods; besides, the action is very much like that provoked by toxic doses of lead. When taken in divided doses, and persisted in for some time, a burning, colicky pain in the "pit" of the stomach is experienced, followed by intense nausea and vomiting; the mouth and throat are dry, and there is a remarkable dryness of the hair and skin, the former falling, the latter developing skin diseases resembling eczema, salt rheum, etc. Most unfortunate of all is a tendency on the part of both drugs to develop and foster kidney disease, or when such is already existent in simple and acute form, to transform it into one of chronic, malignant, and fatal character.

With this knowledge, it is evident too much circumspection cannot be employed as regards the use of so-called food preservatives, and that as a rule such should be regarded with the utmost suspicion, particularly if their exact contents or composition is unknown.

OBSTACLES TO SOUTH AMERICAN TRADE.

In the SCIENTIFIC AMERICAN for June 4, 1898, we published extracts from a letter from a correspondent in Chile who complains of the fact that while it is possible to send small sums by postal money orders from Chilean post offices to most of the countries of Europe, these facilities do not exist as far as the United States is concerned, and if it is desired to remit small sums to the United States, it is necessary either to buy drafts on England or New York. We are informed by the Postmaster-General of this country that the fault does not rest with the United States, for as far back as February 13, 1890, Postmaster-General Wanamaker and Senor Vasas, the Minister from Chile, signed a convention for the exchange of money orders with their respective countries; but, unfortunately, such convention required the approval of the legislative body of Chile, and our government has been wholly unable to ascertain what disposition has been made of it. It is assumed, however, that on account of local changes of government, etc., the matter was dropped. Subsequently, on October 6, 1896, the Director of the Posts of Chile addressed the Department upon this subject, requesting steps be taken to reopen the matter, and on November 28 the draft of a proposed convention was sent to him. No acknowledgment of its receipt was made, however, and on March, 1897, his attention was called to the delay, with a request for a response; but no reply has been received up to the present time, which all goes to show our Post Office authorities are fully alive to the importance of being able to remit small sums to and from foreign countries at a minimum of expense. Our government is also making every effort to provide improved postal facilities between this country and the South American Republics, and it is very certain it is no fault of our very efficient Post Office authorities that such conventions are not now in force. Our correspondent also referred to the lack of a parcels post agreement. There is more difficulty connected with this subject than with Post Office money orders, and when these difficulties have been overcome, there should be no delay in concluding a parcels post convention between the United States and Chile.

IN a work on the algal flora of the Hamburg waterworks, Herr O. Strohmeyer states that the green algæ —Cladophora, Spirogyra, Enteromorpha, Stichococcus, etc.—have a very powerful effect in purifying water by the destruction of bacteria through the agency of the oxygen which they exhale. Those algæ, on the other hand, which are inclosed in a mucilaginous sheath, especially diatoms, have a very prejudicial effect on drinking water, by stopping the filters through which it passes.