

laboring force is employed upon the work of carting, from which it will be seen that the cost is very great. Of course, only a part of the expense of carting should be charged to removal of the street sweepings, for garbage, ashes, paper, and refuse must also be carted away; at the same time, the expense of moving 690 loads to the dumps and afterward carrying the same on scows to sea and dumping amounts to a great deal. The average cost for disposing of the sweepings and refuse in 1896 was 17.9 cents per cubic yard from deck scows, and on the dumping scows the cost was slightly less. The capacity of a modern self-propelled automatic dumping boat like the Delehanty boat "Cinderella" is 500 cubic yards. With the advent of the horseless carriage a considerable portion of the sum spent in sweeping, carting, and dumping dust and mud from the streets would be saved. This is a general proposition, which at the present time cannot be reduced to figures, but it is very safe to say that several hundred thousand dollars per year will be saved on street sweeping if 50 per cent of our vehicles were actuated by motors.

The question of health must be also considered. In summer, the dry dust rises in clouds and attacks the delicate membranes of the nasal passages and throat, producing irritation and coughing. Mud consists, of course, in sweepings which are made into a sirupy mass with the aid of water, and if the dry dust is bad, the mud is infinitely worse. When the streets are practically relieved from so-called "dust," it will be a boon to every housewife. Costly draperies and curtains are damaged each year by the dust from the street, and often windows are closed on this account when they should be opened to properly air and ventilate the house. With the advent of streets which are clean and which can be kept clean with a minimum of expense, it is probable it will tend to greater neatness on the part of the community at large, for it is a true fact that cleanliness breeds cleanliness.

FIBER PLANTS FROM OUR NEW POSSESSIONS.

Commercially there are thirty or forty species of fiber plants found throughout the world, but botanically there are over one thousand species the fiber of which can be made more or less useful in the arts and industries. Each country has its special fiber plants, which it tries hard to use as successfully as those imported from other lands, and there are plenty of instances where governments and private individuals have spent fortunes in trying to bolster up artificially an agricultural industry of fiber production that should never have been encouraged. The rage for finding new fibrous plants in this country that would supplant in the industrial world those that have been used since the world began has had its day, and the more sensible view is now being accepted of obtaining the fiber from the country where it can best be raised. A good many of the best fiber plants have been introduced in this country, and their culture is being pursued with more or less success; but, after all, our manufacturers depend mainly upon other countries for their supply of raw material.

In view of the territorial changes produced by the war, the fiber industry is of peculiar interest to the farming and manufacturing world. The islands affected by the war are all noted for the fiber plants raised on them; and taken together—that is, Porto Rico, Cuba, and the Philippines—they produce a large bulk of the best plants, except cotton, used in a commercial and manufacturing way for their fiber. Manila hemp has long been familiar wherever civilization exists; sisal hemp comes from Cuba, in times of peace, as largely as from Yucatan or the Bahamas; Cuba bast is essential to the millinery trade of the world; and Sunn hemp and cebu hemp are but trade varieties that come from the same islands.

The Philippines, in particular, are rich in fiber plants, with possibilities for development and expansion scarcely conceivable. Throughout the archipelago, it is estimated, all the fiber used in the manufacturing world could be produced at a cost that would annihilate similar industries anywhere else in the East. This is not entirely true, however, for neither cotton nor flax could ever find a foothold in the Philippines to compete with the United States. Our cotton is already seeking Eastern markets in ever increasing proportions, and great prospects are anticipated for this trade. But in turn we must secure our hemp and jute, and other fiber material, from the lands where they best grow.

There are over thirty species of fiber plants that can be raised in this country, but most of them are unimportant in the commercial world, and most of the others thrive only very indifferently in the United States. Should we, however, extend our colonial possessions so that in time they included Cuba and the Philippine Islands, as well as Porto Rico, we would be the greatest fiber producing country on the globe. We would hold the key to the world's supply of raw material for textile manufacturing, as well as for many other products. Under the intelligent and judicious management of American capital and brains, these fiber products could easily be doubled in quantity

and value. The world would soon be richer in raw material for one of the largest branches of the manufacturing industry.

At present the leading vegetable fiber that is imported into the United States, according to statistics of 1897, is sisal grass. Most of this sisal grass comes to us from Cuba, Yucatan, and the Bahamas. Attempts have been made to introduce its culture in Florida, and with some success; but its superior growth in its native islands, and their close proximity to the United States, will forever preclude it from becoming an important industry here.

Next to sisal grass comes Manila hemp in commercial importance. The imports of this amount to nearly \$4,000,000 annually. This hemp has also been experimented with in this country, and in other lands, but the world's trade will always look for its main supply to the islands of the East, where it flourishes as naturally as cotton does in our Southern States. It can be produced and shipped to this country cheaper than our farmers can raise it at home. Cebu hemp comes from the Philippine Islands also, and is merely a trade variety that has its useful purpose in the manufactures.

Jute and "jute butts" stand third on the list of imported fiber plants. Jute comes from a variety of countries. Originally India controlled the trade in jute, but the West Indies and Cuba have entered the market in competition with her, and they are lusty rivals that cannot be ignored. The possibilities of Cuba in this line are only partly appreciated, for rebellions and wars have so long agitated the island that little experiment has been made in anything outside of sugar and tobacco growing. An appreciative era now dawning upon the island may prove many things only dreamed vaguely of heretofore. The value of "jute butts" imported into this country runs considerably over a million dollars. In all between nineteen and twenty million dollars' worth of vegetable fibers are imported into the United States each year in the raw condition. Manufactured into articles of use, several times as many millions would hardly represent the full value. Flax manufactures alone represent some years \$12,000,000 in imports, and other fibrous goods mount well up into the millions.

Since 1890 the Department of Agriculture has been engaged in making experiments with fiber plants in various parts of this country, and farmers have been encouraged to grow certain fiber plants for manufacturing purposes. Nearly all of the commercial fiber plants have been tested by the Department experts, and some of them have been recommended for general culture. This movement, started seven or eight years ago, has not exactly proved all that the inaugurators of it anticipated. Ramie has been raised to some extent in Florida; sisal hemp from Yucatan has been established in a limited way in parts of the same State, and a little impetus has been given to the rejuvenation of flax culture—one of the oldest agricultural products in this country. Great efforts have also been made to utilize some of the plants that grow naturally here for fiber manufacturing. Thus the palmetto fiber and vegetable hair of the Spanish moss growing on the trees of the Southern States have found some use that makes the product of fair value. Several of the leading varieties of palms in Florida have been cultivated for the fiber in their stalks and leaves, and the palmettoes have been utilized for making brushes and brooms. Jute culture has been extended so that we produce annually a fair crop. Yet this weed is natural to this country, and some varieties are the finest and best grown in the world.

It is possible to double the annual production of fiber plants in the United States, and thus increase the manufactures; but the history of many of our agricultural products hardly warrants one in predicting that we can raise successfully most of the fiber plants needed in this land. The flax industry was at one time an important industry in New England; but it has steadily declined for half a century now, because farmers could put their land to more profitable use in raising other crops. No amount of push and energy has ever been able to renew this industry, although spasmodic efforts have frequently been attempted. There was plenty of land in the world where flax thrived better than in the United States, and it could be cultivated cheaper there than in this country.

Likewise the hemp industry in the South has been declining ever since 1870. It flourished and expanded in the early sixties, and just prior to the rebellion it was an important industry, promising in time to rank second only to cotton. But sisal and manila hemp appeared in the market, and the Southern hemp could not compete with them. Our hemp lost its position in the manufacturing world, and sisal and manila were soon used in its place. No amount of study and experiment could rejuvenate the decadent industry.

While there are undoubtedly many native fiber plants growing in this country that will be found useful in many industries, it will be impossible to make them compete with the low-priced fibers that come from many of the tropical and semi-tropical islands. Nor shall we ever be able to introduce these foreign plants

into this country so that their culture will prove successful enough to supply us with the raw material for all of our manufactures. The world will still look to the Philippines, the West Indies, Cuba, Central America, and China and India for the fiber plants that supply material for cheap clothing, bagging, rope, and similar products.

In the islands that have been acquired from Spain, however, we have the soil and climate to produce all the fiber plants that are lacking in this country. Their resources in this respect are so great that they could soon supply the world with all the raw material used for cheap textile goods, cordage, nets, and kindred necessities. In Porto Rico alone we could raise successfully a dozen of the leading fiber plants, while in Cuba and the Philippines there are many peculiar only to those islands. In the future development of these countries, if under American tutelage, the fiber industry will easily be one of the leading industries.

G. E. WALSH.

TESTING OF CHILDREN'S STRENGTH.

A scientific investigation of the physical strength of the Chicago school children is to be undertaken by the Board of Education of that city, and the results which they obtain will be used as a standard for the treatment of pupils as to their capacity for mental endurance and physical exercise. It is thought that the results would be very important and serve to revolutionize the methods which are now in vogue. The theory of the test is to determine what is known as the "fatigue period" of a child, or that period of its life at which its energies are at the lowest ebb and, therefore, the time when its school work should not be pressed. The scheme will be put in operation at one of the largest elementary schools, in which at least one thousand children are taught. The pupils will be weighed and measured and will be examined, for the purpose of determining their physical condition. A test will then be made of the strength and endurance powers of the muscles of the child. This will be done by the special psychological instrument called the "ergograph," adapted for the purpose.

PULLMAN.

The dream of the late George M. Pullman of establishing a model industrial town will soon become a thing of the past, as the model town of Pullman, Ill., will soon lose its peculiar identity and will become a free community, and the anomaly of a city within a city is now at an end. The Pullman Palace Car Company has accepted the decision of the Supreme Court of Illinois, sustaining the contention of the Attorney-General, and the terms of the decree are now being prepared. This decree will divorce the great corporation from everything save the business of building cars. The churches, schools, hotels, arcade, market house, public library, and some 2,000 brick residences will have to be sold to the highest bidder, and the brick works will pass from the control of the company and the streets themselves will now be controlled by the authorities of the city of Chicago. Preference will be given to employes in purchasing the homes which they now occupy.

GREAT ACTIVITY IN THE STEEL TRADE.

The steel mills of the United States are now doing an enormous business. The Illinois Steel Company has sold its entire output of steel rails for the year. This amounts to not less than 650,000 tons. A maker of agricultural implements recently purchased 10,000 tons of bar iron in one week, and all branches of the iron and steel trade seem to feel the general prosperity of the country.

GREAT STEEL AND WIRE COMBINATION.

It is announced by the officials of the American Steel and Wire Company that the principal steel and wire interests of the United States are to be consolidated into a new corporation to be known as the American Steel Wire Company. The new company will be capitalized for \$90,000,000. The consolidation will include a large number of the principal wire manufacturers of the United States.

WHEN a train is rounding a curve, the ordinary locomotive headlight points off into the surrounding country, and is useless. A mechanical engineer of a Western railway devised an attachment by means of which the light is maintained in line with the track. The light is mounted on a turnable which is rotated through the proper angle by a cable passing around pulleys and leading to the two piston rods of a small double-acting air cylinder. The motion of the piston is regulated by a valve in the cab, the air pressure being taken from the air brake system. The headlight turns on inclines so arranged that when the headlight travels up the incline it will have bearings on the two quarters on which it travels. The object of this is to return the headlight to its normal position automatically when the air is released. The device has been practically tested.