

dom, and the milling industry of England, which has heretofore been conspicuous for its slow-going conservative qualities, seems at last to have awakened to the fact that "flour is manufactured of a highly superior quality by other nations," which is finding its way there "in quantities that threaten to exercise a depressing influence" upon their business.

It was generally conceded that the idea of the "brown bread" school, that flour was more nutritious when it contained a portion of the bran, was erroneous, for while the bran might have, in some cases, a beneficial effect medicinally as a laxative, it lessened the nutritive power of flour in the exact proportion in which it was present. How, then, to make the best flour—how best to "divide the flour portions of the wheat berry as completely and distinctly as possible from the offal"—is the question which the English millers find foreign competition now forces them to give more attention to. The different methods of milling were compared, and various arguments urged as to their relative merits, but the principal question seemed to be as to the advisability of substituting milling by rollers made of chilled cast iron, for the old way of grinding by millstones, either wholly or partially. Many other points were discussed, but the principal interest of the meeting centered around this one question. Diagrams were shown upon the wall of the hall where the meeting was held illustrating the roller mill, which squeezes flat the kernels of wheat, from which the flour bursts out, without spoiling the bran, while it was claimed that heavy millstones operated more by friction than by pressure, tearing, rubbing, and fretting the grain, giving, even with the greatest care, a large mixture of bran dust with the flour, and so fine that it could never afterward be thoroughly separated from it. Notwithstanding there were many millers present who had large amounts of money invested in the making of flour by the old millstone process, and there was an evident reluctance to acknowledge the great superiority of the flour milled by rollers, numerous specimens of each of which were presented for examination, the general sentiment seemed to be in favor of the adoption of the new process, although there were many who manifested a disposition to oppose it step by step, and who will only give way as the better brands of flour, with the smallest proportion of bran and woody substance, drive out the inferior grades.

The thorough cleaning of the wheat before milling was also put forward as a most important essential in the making of the highest grade of flour, and for this purpose the American Brush machine was highly spoken of. One speaker said that the American theory was that a light cleaning was sufficient, which he thought was not correct, "as it is by no means a light treatment which the wheat is subjected to in passing between the stones in the operation of grinding." Therefore, he argued, "as much of the outside of the wheat as can be proved by examination of the bran is at present ground off by millstones should, if possible, be removed while it can be kept by itself," and one of the wants of the future in the milling business was a machine which would make the outside of the wheat, before passing through the stones, resemble the outside of the bran as it now comes from the stones. This, it was claimed, would prevent a good deal of bran dust from becoming a part of the flour, and tend to the making of that perfect article when all the flour might be put into one sack and the offal into another, or "the complete separation of every particle of flour from every particle of the other constituents of the wheat."

The American International Exhibition of Milling Machinery and Mill Products, to be held at Cincinnati, in June next, in connection with the annual fair of that city, was referred to at length by several of the speakers, and the hope was expressed that there would be general participation, especially as arrangements had been made whereby machinery might be entered for exhibition without any payment of duties.

#### A NEW GOVERNMENT BUREAU PROPOSED.

A bill to create a Department of Manufactures, Mechanics, and Mines has been introduced in the House of Representatives. The duty prescribed for the new bureau is to collect information concerning the manufacturing, mechanical, and mining industries of the country; to secure information as to the condition of the producing classes, especially as to their wages and cost of living as compared with the value of their productions, and to investigate the moral, social, educational, and sanitary condition of mechanics and laborers, and as to the causes that may operate injudiciously upon these conditions; to collect statistics of the leading manufactures of the several States, the amount of capital invested, value of raw material used, wages paid, value of produce, and number of persons employed; also, to secure information as to the location of the mineral lands, the number of persons employed, and quantities of minerals produced. The department is to be under a commissioner of manufactures, mechanics, and mines, to be appointed by the President for four years, upon a salary of \$4,000, with a chief clerk, upon a salary of \$3,500 per annum, and as many clerks as may be necessary, at salaries in no case exceeding \$1,500 per annum.

Wisely planned and administered such a department might be of great benefit to the industries of the country, and would furnish a proper complement to the Departments of Education and Agriculture, also assuming them to be wisely administered. In a country like ours, education, agriculture, manufactures, and mining involve interests of

infinitely greater importance than those which fall under the jurisdiction of the Army and Navy Departments. And, though it is no part of the business of the government to interfere in either of these great lines of individual effort—and such interference should not be tolerated—it is still possible for a central bureau to be of great service in collecting and disseminating exact information with respect to their condition and needs.

There is a serious risk, however, that the new bureau might be anything but beneficial. In the hands of an incompetent commissioner it might simply pile up antiquated, inaccurate, and useless statistics, as has been done to a wearisome extent by the Commissioners of Education and Agriculture, especially the former, or it might fall into worse hands and be wholly prostituted to partisan ends. Besides the educational, moral, social, and sanitary condition of mechanics and laborers is no more in need of official investigation than the corresponding condition of merchants, lawyers, clergymen, politicians, or any other portions of the community. The ill success of the late Labor Committee, in its efforts to gather information with regard to the industrial affairs of the country, illustrates only too clearly the probable value of the information which the proposed department would collect when administered for partisan purposes.

On the other hand, it is quite conceivable that the new bureau might be, in each and all of the several fields of inquiry prescribed for it, as successful as the Massachusetts Labor Bureau has been in investigating the industrial interests of that State. In such case its benefits would be incalculable.

#### THE PREVENTION OF FIRES.

There is nothing which can be said under this head which does not receive the close attention of all officers of fire insurance companies. They have the most direct and powerful motives to impel them to obtain and publish every scrap of information which will in any way tend to make fires less frequent, and will lessen their destructiveness when they do occur. The fire insurance companies now control such a vast amount of capital, and have such an army of experts in their employ, that there is very little which is presented in their line that does not meet with the most exhaustive examination, and the rates charged on risks are varied according to their judgment as formed on many and widely different grounds. The mutual system of insurance, started among the cotton goods manufacturers of the Eastern States in 1835, first gave the great impetus to this method of particular discrimination, as, where every one insured was thereby made to a proportionate extent his own insurer, and correspondingly interested in the safety of all other property in the same company, there was every motive to see that all possible provision should be made against loss by fire, and each risk should be closely valued.

Among the subjects which have particularly engaged the attention of the mutual companies, and in regard to which all the other companies quickly followed their example, were the building, arrangement, and location of buildings to be used for factory purposes. A leading president of a mutual insurance company in Boston the other day remarked that every one now knew in what a model factory consisted, so far as the question of insurance was concerned; the floor beams must be far apart, instead of close together, and covered with three inch plank for flooring; where the beams were let into the wall they must be rounded on the top corner and the bricks laid on loose, so that in case of fire they would drop out without pulling the wall down; the roof must be nearly flat, and everything else in the general plan after such a calculation as would give the firemen ready access, in case of fire, to every part of the structure. In addition to this, such parts of the work as are supposed to be especially dangerous are often placed in separate buildings; the picker room in cotton factories is generally so provided for, and water pipes are so disposed as to make it comparatively easy to flood such apartments at an instant's notice. In tanneries and leather factories the bark grinding is generally done at a distance from where the drying lofts are, as well as from where the stocks of bark are stored, and so, with every industry, care is taken, as far as possible, to isolate those parts of the business in which fire would most readily happen, or where it would be most destructive if it did occur.

Another matter which has attracted considerable attention from the insurance companies has been the various kinds of hose in use for fire engines. Until a comparatively recent date nothing was considered quite as good as leather hose; but it may now be safely said, that while there is annually a great increase in the total amount of fire-hose used in the country, there is no increase in the amount of such hose manufactured from leather. With good care leather hose will probably outwear any other variety, but it requires a vast amount of attention, and some little amount of experience for a proper understanding of how it should be treated, while that made of rubber, or linen, or cotton, rubber lined, involves no such labor. Many varieties of the latter, also, will withstand a much higher pressure before bursting than leather can be successfully subjected to. At a trial which was made in December last, before some inspectors of a mutual fire insurance company, it was found that one sample of 6-ply cotton rubber-lined hose, weighing twenty ounces to the foot, withstood a pressure of over 1,100 pounds to the square inch, while similar hose weighing eight to twelve ounces to the foot withstood a pressure of from 300 to 500 pounds to the inch. The fact, however, that the officers of

insurance companies, who are in a comparatively independent position, as related to the different manufacturers of hose, are taking the initiative in such trials, and have a strong interest in seeing that the best and most reliable article is everywhere employed, proves a great stimulus to the manufacturers, and has provoked a rivalry which cannot fail to be of benefit to the public generally.

#### CHASTANT'S OBSERVATIONS ON YELLOW FEVER.

Dr. Alcée Chastant, of New Orleans, takes strong ground against the germ theory of the origin of yellow fever. All investigations to discover the manner of its introduction into the large cities of Europe and the United States have failed, he says, with all the experience so far had, to establish definitely the real origin of the disease. Unless the microscope shall ultimately prove the contrary his opinion is that while the conditions which produce yellow fever can be known, the essential nature of its direct cause will ever remain a mystery. From a study of its geographical limits and its more or less irregular irruptions he thinks that its outbreaks must be some combination of meteorological and telluric conditions especially favorable to the development of the disease, such as a high temperature with dampness, conjointly with certain emanations from the earth.

Touching the character of the disease, Dr. Chastant's long experience warrants, he thinks, the opinion that each epidemic of yellow fever is of its own peculiar and special type, varying according to the locality and the influences which have been instrumental in bringing it about. The immediate cause of the disease is the introduction into the human organism of a specific inorganic poison, which has never been chemically or microscopically demonstrated, a poison which develops under the influence of heat, moisture, and other favorable circumstances.

"Yellow fever is not imported, but is most certainly endemic. When, however, climatic and telluric conditions concur, and foreign cases are existing, it then spreads and becomes epidemic." Such epidemics cannot be prevented, but can be mitigated by general sanitary measures and precautions. He agrees with the late Dr. Warren Stone, in regarding the disease to be non-contagious, but taken from the atmosphere poisoned by telluric emanations. The germ theory he regards as not only unproved, but highly improbable. On several occasions Dr. Chastant swallowed the matter of black vomit and suffered no harm. Neither did Dr. Guyon, at Martinique, from similar experiments. Dr. Firth inoculated dogs with the fresh matter, and subjected himself to the same operation. He applied the fluid to the surface of a cut made on his arm, and secured it there for two days by means of sticking plaster, and repeated the experiment above twenty times in various parts of his body. He inserted the matter in his eyes, and swallowed a large quantity of black vomit, pure and dilute, and no injurious effects ensued. Cats, dogs, and fowls were fed with it without sensible effects, and the fumes obtained by evaporating black vomit did not harm those who inhaled them. Such heroic experiments may not disprove the germ theory, but they certainly tell very strongly against it.

Sporadic cases of yellow fever, Dr. Chastant holds to be produced by natural causes, arising exclusively from the *eremacausis* which takes place in the filth of gutters, as well as on the immediate surface of the earth in certain localities, and these cases do not extend beyond the sphere of these causes. Although these natural causes, whenever they exist, help to increase the yellow fever, yet its epidemic feature arises from a more general law of the soil, the effect of which is produced by a geological *repercussive action*. Sporadic cases may precede an epidemic, but he doubts if they can produce an epidemic, unless there is a concurrence of both causes.

#### An Unexpected Comet.

A dispatch has been received from Dr. Gould, formerly of the Dudley Observatory, Albany, N. Y., but now director of the Cordoba Observatory, South America, stating that a great comet is in the neighborhood of the sun, passing northward. No large comet has been expected this year, and no small one at this season, Winnecke's comet not being due until near the end of this year. Reports by mail are awaited with great interest. Should Dr. Gould's dispatch be confirmed, a new member must be admitted to our cometary system; and possibly the nations north of the equator may also be treated to a sight of it.

#### Railroad Crossings.

Mr. James Torrance, of Troy, N. Y., proposes the following method of abolishing the danger attending the present style of railway crossings. He would use for such crossings a rail of special form, rolled in one piece of the usual length, with a groove wide enough for the flange of the car wheel to run in; the groove to be wedge-shaped and widest at the top, with plain sides, so as not to catch the feet of men or animals. In this way he would get rid of the usual trap between the planking and the rails. Such a grooved rail could easily be kept clear of snow and ice; and the extra cost of rolling would be nothing, he thinks, compared with its advantage in doing away with the risk to life and limb attending the present style of crossings.

A JOINT resolution appropriating \$20,000 to enable the Commissioner of Fish and Fisheries to represent the United States at the International Fishery Exhibition to be held in Berlin next April, was adopted by the House of Representatives, February 4.