NEW AGRICULTURAL INVENTIONS.

Mr. George L. Gifford, of San Antonio, Texas, has invented an improvement in gang plows, in which a number of plows are connected with a single beam, and placed so that parallel furrows are thrown up. The plows may be adjusted to any desired angle.

An improved grain drill, for drilling wheat and other grain, has been patented by Mr. Perry E. Browning, of Browningsville, Ky. It may be used upon inclined or uneven ground, distributing the seed uniformly under all circumstances.

Mr. Albert H. Mason, of Niles, O., has devised an improved hay elevator, which may be suspended from the top of the barn, and is so arranged that it will lift the hay from the wagon and deposit it in the mow for distribution.

A wagon body, which may be readily converted into a rack, has been patented by Mr. Levi Tolcott, of Minetto, N. Y. The matter of arranging the parts so as to form either a wagon body or wagon rack is very simple.

An improved device for removing and collecting bugs from vines has been patented by Messrs. George W. Wood and Charles H. Smith, of Faribault, Minn. It consists in an apparatus mounted on wheels, and having wings for gathering the tops of the plants and shaking the bugs into a receptacle from which they cannot escape.

THE DETROIT RIVER TUNNEL AND BRIDGE.

The beginning of the railway tunnel under the Detroit River, below Detroit, was formally celebrated April 23. It was originally intended to prosecute the work by the cofferdam process, but the plan was disapproved by the Canada authorities because of the threatened obstruction to navigation. It is now proposed to construct the tunnel by boring, though the results of the initial operations were not encouraging. The rock, a soft limestone, was found to be so broken by fissures and so full of water as to raise a doubt as to the possibility of completing the work by boring. A fair trial will be made, however, and the hope is that the plan first proposed will be consented to in case of failure by boring. When completed the tunnel will greatly facilitate the business of the Canada and Southern Railroad, and will control the southwest traffic.

The bridge project is designed to connect the Great Western and Grand Trunk Railways of Canada with the Northern Michigan and Michigan Central Railways at Detroit by crossing the river a short distance above Windsor, where Belle Isle divides the stream into two channels.

The bridge will extend from Hamptramck, on the Michigan shore, to Belle Isle, and will have a draw of 300 feet; and from the island it will extend to Walkerville, on the Canadian shore, a distance of 2,500 feet. In the latter distance there will be three drawbridges, of 300 feet each, leaving, excepting a pier in the center, 600 feet for navigation. It is claimed by the promoters of the bridge that two sets of boats can pass at one time within each of the 300 feet draws. The bridge will be 14 feet above water level. The draws can be swung within four minutes. The bridge will command a view two miles distant on either side, and the current will not be remarkably rapid. It is said that the bridge will be an open one.

THE PATENTEES' PROTECTIVE ASSOCIATION.

During the congressional contest over the proposed alteration of the patent laws last winter, the SCIENTIFIC AMERICAN received from inventors throughout the country not a few communications suggesting and urging a union of inventors and patentees for the better protection and advancement of their rights and interests. The opinion of the paper was freely expressed that a quicker and surer method of protecting patent interests would be through immediate individual action, by which the sentiment of the people could be brought to bear on their representatives in Congress. Fortunately the threatened subversion of the patent system was defeated in the House, mainly, we believe, in consequence of just such personal efforts for the enlightenment of Congress as we had urged.

The desire for union among patentees, however, seems not to have been fruitless. At a meeting in Louisville, Ky., in February, an organization of patentees was begun, and the following preamble was adopted:

"*Whereas*, The unparalleled progress which, in a single century, has raised the American people from a dependent colony to the foremost rank among nations, is largely due to the genius of her inventors, stimulated by liberal patent laws:

"*Therefore*, We do hereby organize under the title of the 'Patentees' Protective Association,' to protect the interests of inventors, and all others interested, under the patent laws of the United States, and to guard the public against imposition, that no discredit may rest upon our national patent system."

The Hon. Eugene Undwood was elected president; and the secretary, Mr. H. Burkhardt, writes us that the design is to form, eventually, a national association of inventors and patentees. The office of the association is at No. 30 Third St., Louisville, Ky.

THE School of Art Needlework, which was opened in Boston last October, has been remarkably successful. It has had one hundred and eighty-four paying pupils and forty-five free pupils, and their work, for originality and artistic feeling, is said to be wonderful.

Patent Office Report for 1878.

Summary of the business transactions of the United States Patent Office for the calendar year ending December 31, 1878, as shown by the annual report of the Commissioner of Patents to Congress:

APPLICATIONS RECEIVED, PATENTS ALLOWED, ETC.

Applications for patents, including designs	20,260
Applications for reissues of patents	638
Patents issued, including designs	12,935
Patents reissued	508
Caveats filed	2,755
Patents expired during the year, exclusive of designs	2,617
Patents withheld for non-payment of final fee	832
Applications for registration of trade marks	1,577
Trade marks registered	1,455
Applications for registration of labels	700
Labels registered	492

Number of patents issued to the several States and Territories, with the ratio of population to each patent granted; also the number of patents issued to subjects or citizens of foreign governments:

STATES AND TERRITORIES.	Patents and Designs.	One to every
Alabama	39	25,563
Arizona Territory	2	4,829
Arkansas	45	10,776
California	320	1,750
Colorado	35	1,138
Connecticut	529	1,015
Dakota Territory	5	2,836
Delaware	39	3,209
District of Columbia	146	908
Florida	3	65,582
Georgia	105	1,127
Idaho Territory	2	7,499
Illinois	998	2,547
Indiana	345	4,842
Iowa	325	3,676
Kansas	63	5,784
Kentucky	145	9,110
Louisiana	76	9,564
Maine	140	4,477
Maryland	183	4,267
Massachusetts	1,199	1,216
Michigan	390	3,036
Minnesota	129	3,408
Mississippi	38	21,787
Missouri	315	5,499
Montana Territory	3	3,865
Nebraska	50	2,459
Nevada	36	1,180
New Hampshire	92	3,459
New Jersey	490	1,870
New Mexico Territory	3	30,624
New York	2,599	1,68 5
North Carolina	53	20,214
Ohio	1,070	2,490
Oregon	35	2,568
Pennsylvania	1,296	2,718
Rhode Island	190	1,143
South Carolina	28	25,200
Tennessee	98	12,842
Texas	130	6,219
Utah Territory	7	12,398
Vermont	109	3,032
Virginia	113	10,842
Washington Territory	13	1,842
West Virginia	58	7,620
Wisconsin	251	4,218
Wyoming Territory	8	1,138
United States Army	4	....
United States Navy	1	.....
Total	12,354	.....

Of the patents, including designs, there were granted to the—

Citizens of the United States	12,354
Subjects of Great Britain, including Canada	336
" of France	60
" of Germany	98
" of other foreign governments	87
Total	12,935

Germany's Subterranean Telegraph System.

The system of subterranean telegraph wires designed by the Postmaster General of the German Empire will be completed, according to present arrangements, in a year and a half. Two lines will then traverse the empire diagonally; the one running from northeast to southwest, from Königsberg to Strasbourg, the other from northwest to southeast, from Hamburg to Ratibor, a town in the extreme south of Silesia. These two main lines will cross one another in Berlin. In the west of the empire a subterranean telegraph will run in a curve from Strasbourg through Cologne to Hamburg; in the east another line will connect Königsberg with Ratibor; and finally, a cable will traverse southern Germany, running generally east and west, though apparently the exact route for this last telegraph has not yet been definitely decided upon. When the proposed system is completed, therefore, all the fortresses and commercial towns of any importance in Germany will be connected with one another by subterranean wires. The cable first laid down, that from Berlin to Halle, has been subjected to the severest scientific tests, and the results have been most satisfactory. A great advantage of the subterranean system is that it avoids all interruptions by storms.

The Telelectroscope.

We have recently on one or two occasions alluded to the telelectroscope invented by M. Senlecq, of Ardres. We now have before us some very ingenious and curious applications of selenium, in which its peculiar property of changing its electrical conductivity when exposed to light varying in intensity is utilized. The several devices are the invention of Mr. George R. Carey, of Boston, Mass. Perhaps the most curious of these instruments is the selenium camera obscura, which is capable of transmitting telegraphically an image of any object and making a permanent impression of it at a distant point. In this case a person may sit before the camera in New York while his photograph is made in Boston. Mr. Carey employs two methods of accomplishing the object, one being something like M Senlecq's, and the other totally different. We hope to present to our readers before long the details of these interesting instruments.

DISINFECTION.

The State Board of Health of Massachusetts have lately given to the public the following useful information on the above subject:

Recent experiments made under the direction of the International Cholera Commission have shown that the ordinary methods of disinfection are inefficient, and in practice they have often failed to arrest the spread of infectious diseases.

As it is impossible to experiment directly upon the unknown low organisms, which are thought to be the means of transporting the various infectious diseases, the effects of chlorine and sulphurous acid were studied upon known living organisms; the probabilities being thought to be in favor of the theory that complete disinfection should destroy at least all known forms of life, although it may be true that the tenacity of life of the infective matter of various diseases differs, just as the degree of cold necessary to put a stop to yellow fever is much less than that required to arrest the spread of cholera.

Chlorine and sulphur fumes, in sufficient quantity, were found to be efficient in killing insects, fungi, bacteria, and infusoria: the objections to chlorine in houses being that it is more costly, that its use is more difficult, and that it destroys metals, textile fabrics, and colors.

The burning of ten grammes of sulphur for each cubic meter of air space, tightly closed, was found not to kill bacteria, infusoria, or all insects; twenty grammes, however, were proved to be sufficient for that purpose. One volume of water, when saturated at 59° Fah., absorbs thirty-seven volumes of sulphurous acid—enough to kill all the low organisms found in putrid urine.

The following articles were found uninjured after several hours' exposure to an atmosphere in which twenty grammes of sulphur had been burned to every cubic meter of air space: A clock of steel and brass, rusty and clean nails, gold and silver money, a military epaulet, various colored silk articles, a colored rug, calico, down pillows, a gilt framed looking-glass, books, water in an uncorked bottle, flour, meat, salt, bread, apples, cinnamon, vanilla, cigars, wall paper, oil paintings, varnished articles, gas fixtures, water fixtures; a highly polished razor had a slightly cloudy appearance on its upper side, but that was easily rubbed off. The flour and meat were cooked and eaten, and the cigars were smoked, without any abnormal taste or smell being observed; in the bread not all of the observers noticed a slightly acid taste; the inside portion of the apples was unchanged, the skin was slightly sour; the water, after standing, had an acid reaction, but no decided taste or smell. Litmus paper placed between the leaves of books and under the carpet was turned bright red. Many of the articles exposed had a decided smell of sulphur at first, but that soon disappeared.

The experiments seemed to show that clothing, bedding, and other articles may be disinfected without being changed chemically or injured; and it should be added that practically this method has apparently accomplished perfect disinfection, as tested in Berlin.

If we may judge from these results, effective disinfection, by burning sulphur, requires eighteen ounces to each space of one thousand cubic feet. The sulphur should be broken in small pieces, burned over a vessel of water or sand, so as to avoid danger from fire, and, if the room is large, it should be put in separate vessels in different places. The room should be tightly closed for six hours and then aired; it is better that the room should be warm than cold. Of course, efficiently disinfected air is, during the process of disinfection, irrespirable. Most articles may be disinfected in this way, if hung up loosely in the fumigated chamber, although it would be an additional safeguard to expose anything thick, like a bed mattress, to prolonged heat at a temperature of about 240° Fah., and, indeed, heat must, with our present knowledge, be considered the best disinfectant. With this end in view, local boards of health are advised to procure furnaces and laundries, as is commonly done in other countries, to be used for the sole purpose of disinfecting articles which have been exposed to the infectious diseases, as recommended in the Ninth Annual Report of the State Board of Health, and described by Dr. A. H. Johnson, in an exhaustive paper on scarlet fever (pp. 255 *et seq.*), in that report. Of course, a much simpler disinfecting furnace than that described will answer every purpose. For ordinary use, in disinfecting houses, the sulphur process is the best.

A solution of chloride of zinc (one part of Burnett's disinfecting fluid to two hundred of water) very quickly kills bacteria which have been placed in it, and arrests putrefaction. Caustic lime serves equally as well (1 to 100), but leaves a sediment not always easy to remove. Carbolic acid in sufficient strength to be effective (1 to 100) is more expensive and of disagreeable odor.

It is needless to add that "disinfectants" used in sufficient quantities to destroy bad smells do not necessarily kill microscopic living organisms; and it is not supposed that they directly influence the so-called "germs" of the infectious diseases, unless concentrated to the extent which has been mentioned.

Finally, fresh, pure air acts as one of the best "disinfectants" by enormously diluting the infectious matter, and, under certain conditions, including time, must render it inert to all effect, even if not quickly destroying it, as many think is the case.

A COMPLIMENT to the Hancock Inspirator has just been awarded to it by the English Government ordering a number of the machines.