

vacuum. The independent condenser is also used in connection with fire-pumps, mine-pumps, and water-works pumping-engines, as well as with vacuum pans and other evaporating apparatus. They are made by Henry R. Worthington of this city.

#### THE DEVELOPMENT OF THE POTTERY INDUSTRY OF THE UNITED STATES.

MR. WILLIAM C. DAY, in the recent issue of the "Report on the Mineral Resources of the United States," traces the history of the pottery industry, which has of late become of considerable importance.

The first pottery established in the United States was in New York City, in its earliest days, when under Dutch rule. It was situated near the North River, above the present Chambers Street, the locality being at that time well out of town, in the country. More than a century ago, perhaps, a small pottery was established in Trenton, N.J., by some Frenchmen. Here porcelain, similar to what is now known as French china, was made, and it is said that the goods were very creditable. This establishment existed for some years, but it attained no great importance. At Philadelphia there was a similar pottery venture, also making porcelain or china wares, which are well spoken of for quality. This enterprise was sustained for a number of years, but failed to reach a permanent existence.

There were other attempts to establish potteries in various parts of the country from time to time, and the only one which seems to have given the greatest concern to English manufacturers was one established in South Carolina. This was contemporary with the great Josiah Wedgwood, who has been called the father of the pottery industry in Great Britain, from the fact that he made great improvements in the quality of earthenware, which gave a very great impetus to the business in England. This South Carolina pottery proved quite alarming to Wedgwood, as he feared that it might become a dangerous competitor in supplying the earthenware markets of the colonies: he therefore petitioned Parliament that the manufacture of such goods be prohibited. He seemed to think, that, with the excellent materials found in South Carolina for making earthenware, the industry would become a successful one. His fear, however, proved groundless, as the unequal struggle was of short duration.

One or two pottery enterprises, inaugurated within the past forty years, making special articles of white crockery-ware rather than a general assortment, maintained their existence only, and cannot be termed successful.

The term "pottery industry," as understood at the present time, does not include the many little potteries scattered all over the United States; making stone-ware jugs, pie-plates, drain tile, yellow crockery, etc., and which employ from six to twenty men each. These little establishments made the cheapest and commonest class of pottery products, with which foreign competition was powerless. Owing to the very low-priced class of such wares, the expenses of their importation bore so large a proportion to their cost at the foreign potteries, that competition was out of the question. In fact, in many cases the crates in which the goods were packed, and the inland transportation charges, equalled the original cost of the goods themselves. The pottery industry, as now spoken of, had therefore practically no existence in the United States in 1861, the several hundreds of so-called potteries in this country which statistics show then existed being all of the class above referred to. The Morrill Tariff Bill, and the increase of duty from 24 to 35 per cent, and the subsequent increase to 40 per cent, did not act as inducements towards the establishment of any new enterprise. In 1863 the rapidly increasing premium on gold offered the necessary inducement, and several pottery enterprises were inaugurated. These manufactured at first the commonest class of crockery-ware for domestic uses; but as experience gave confidence, and the wares gradually found favor, better grades were made, until the standard of the china-ware used by the millions of American citizens, and manufactured in this country, is recognized as equal to that made anywhere. It is true that there are several potteries in the United States who make more or less of very fine art

pieces, which are forcing recognition on account of their superior excellence; but the stability of the pottery industry rests upon the fact that it supplies the wants of the people for fine and common crockery for domestic uses, of which we in this country manufacture about 60 per cent. The American potter does not claim to be the peer of his foreign competitor in art productions, but he does claim to equal any foreign manufacturer in the class of china which he produces for the American people. To-day the English potter is copying American shapes, designs, and styles of decorations. How different is this state of affairs from that which existed a few years ago, when the American potter depended upon foreign ideas for his shapes and designs! With the development of the manufacturing process, talent for designing shapes and patterns or styles of decoration has likewise progressed, until we have made our own American shapes and designs, which foreigners have been compelled to copy and adopt in order to find a market for their wares in the United States.

This country still takes about 40 per cent of the total crockery-ware exported by England. This is about the proportion that has been maintained for many years, thus showing that the American potter has increased his output in keeping with the increased consumption of the country.

In regard to the present prices of pottery, it may be said that the consumer can now obtain for two dollars and a half what in 1861 would have cost four dollars.

The pottery industry gives directly employment to about ten thousand people, to whom wages amounting annually to four million dollars are paid; this amount being nearly 50 per cent of the total value of the output of the potteries. In addition to these, there are many thousand more employed in the preparation of the materials for the potter's use, such as mining the clays, quartz, and felspar, and grinding and washing the materials. To these people nearly as much more in wages is paid; in fact, a careful estimate shows that 90 per cent of the cost of manufacturing pottery is paid for labor in one form or another.

The decorating branch of this industry is one of its most interesting features, and one in which great advances have been made in late years. It gives employment of a light, interesting, and elevating character to many young people, both male and female. The growth of this branch has been wonderful, and has made the demand for beautiful decoration, both simple and elaborate, very general, and far more wide-spread throughout the country than ever before. Formerly beautiful decoration was to be found only in costly French and English wares, and the consumption was consequently limited to the wealthiest classes: now beautiful decorated wares are found in almost any household, where they have been obtained at prices which would have been considered impossible a few years ago, and which have reduced very greatly the cost for French and English decorated products, and to a very great extent have enabled American decorated ware to supersede the foreign.

#### HEALTH MATTERS.

YELLOW-FEVER. — Dr. George M. Sternberg, U.S.A., has been relieved from duty at Baltimore, and is, by direction of the President, in pursuance of the authority contained in the provisions of the Act of Congress approved March 3, 1887, "making appropriations for sundry civil expenses of the government," etc., relating to the methods of preventing the spread of epidemic diseases, to proceed to the Island of Cuba for the purpose named in the letter of the President addressed to the secretary of war, April 17, 1888, and upon completion of this duty to return to his proper station and submit his report to the President. Dr. Sternberg is at the present time at the Hoagland Laboratory, Brooklyn, of which he is general director, engaged in making his preparations for his proposed trip to Cuba to pursue his investigation in yellow-fever. He expects to leave for Havana during the latter part of March.

LEGAL REGULATION OF MEDICAL PRACTICE. — The laws of West Virginia require that every physician in that State must have a certificate from the State Board of Health to entitle him to prac-

tise. An irregular practitioner attempted to evade this legal requirement, and was prosecuted. The case, being decided adverse to him, was finally carried to the Supreme Court of the United States on the ground that the act was invalid. This court sustained the lower courts in the following opinion: "The power of the State to provide for the general welfare of its people authorizes it to prescribe all such regulations as may be necessary to secure the people against the consequences of ignorance and incapacity as well as deception and fraud. One means to secure this end is the method adopted by the State of West Virginia. If the means adopted are appropriate to the calling or profession, and obtainable by reasonable study and application, no objection to their validity can be raised."

CONTAGIOUSNESS OF CONSUMPTION. — Mr. MacMullen, in the *Australasian Medical Gazette*, calls attention to the danger to which healthy travellers are subjected by consumptives. To illustrate this danger, he narrates a case in which a healthy man, on the voyage from London to Australia, was placed in the same stateroom with a consumptive in search of health. Now that consumption is regarded as a communicable disease, there is no longer excuse for this commingling of well and sick in such confined quarters as a ship's stateroom. Steps should be taken by the owners of steamships and other vessels to separate those who are so unfortunate as to have consumption, from those that are healthy, to the degree, at least, that the unsuspecting traveller would not be required to breathe the air impoverished and possibly infected by an invalid suffering from pulmonary consumption.

DOCTORS ADVERTISING. — The Board of Health of Illinois a few months ago revoked the license of H. G. Wildman, a physician, the chief charge being that he had overstepped the ethics of the profession by advertising his success and skill in newspapers. Dr. Wildman then appealed the case to Gov. Oglesby, and he rendered his opinion a few days since, reversing the decision of the Board of Health, and claiming that a physician should not be debarred from practice because he advertises what he can do and has done. Dr. Wildman expends over forty thousand dollars yearly in advertising in papers all over the Union, and several of the Illinois papers went on his bond in the action.

PUBLIC MEDICAL LIBRARIES. — In the proceedings at the reception given to Dr. Oliver Wendell Holmes, says the *New York Medical Record*, on the occasion of his presenting his library to the Boston Medical Library Association, Dr. R. M. Hodges, president of the association, gave some facts regarding the public medical libraries of this country. "First," he said, "in point of time, is the library of the Pennsylvania Hospital, founded in 1760; second, that of the College of Physicians in Philadelphia, founded in 1788; third, the New York Hospital Library, in 1796, etc. Of course, the library of the surgeon-general's office has surpassed in size all these, having a large annual appropriation and a magnificent librarian. Next in rank comes the library of the College of Physicians; next, that of the Academy of Physicians; and our library comes fourth in rank. After that come the Medical Department of the Public Library of Boston, and the New York Hospital Library. In other words, although the youngest of these seven libraries, ours has already passed three of them. We have nearly twenty thousand volumes."

DANGER IN THE POSTAGE-STAMP. — The *Sanitary News* calls attention to the fact that a postage-stamp may in various ways convey contagion. One of the simplest and most plausible is that in which a postage-stamp, partially attached to a letter to pay return postage, is sent by a person infected with some disease to another person. The disease is transferred, in the first place, to the adhesive stamp through the saliva, and in being attached to the letter by the receiver the poison may be transmitted to him in turn through the saliva. Another cause may be the infection of the stamp with disease germs. The stamp, having been exposed in a room where a diseased person lies, may become slightly moistened, and thus retain the germ. That this is true can be proved very simply by a microscopical examination. We often see a person holding change for a moment in the mouth, probably not knowing that investigation has shown that disease germs can be carried by

money. If one could see through what hands the money has passed, he would hesitate before using such a third hand. Silver money is as bad as paper money; but, while many would hesitate to hold a dirty bank-note in their mouth, they think that a silver piece, because bright, is apparently clean.

SANITARY PLUMBING. — In speaking of the effects of sanitary plumbing, the *Sanitary News* says, "Dr. A. R. Carter, of the health department of Baltimore, has published some interesting statistics in regard to the effects of sanitary plumbing. He says that during a period of fifty-four years, from 1830 to 1883 inclusive, there were in that city 12,197 deaths from scarlet-fever, being an average of 226. In the last of those years there were 334 deaths. But the city council then passed an ordinance regulating plumbing, and in the years since, there has been a remarkable decrease in the mortality from scarlet-fever. In 1884 there were 104 deaths; in 1885, 67; in 1886, 32; and in 1887, 36; making a yearly average of 60, but with a plain tendency to decrease. The yearly average of deaths from diphtheria has in the same way diminished from 469 to 234." This kind of reasoning is, in our judgment, very fallacious. If the diminution of diphtheria in Baltimore is to be attributed solely to the improvement in plumbing, why did not the same result take place in New York and Brooklyn, where the improvement in plumbing has been most marked since 1882? In that year in New York there were 1,009 deaths from diphtheria; in 1884, 1,090; 1885, 1,325; 1886, 1,727; 1887, 2,167. In Brooklyn in 1883, 409 deaths occurred from this disease; in 1884, 385; 1885, 519; 1886, 782; and in 1888, 984. So far as scarlet-fever is concerned, the statistics of Brooklyn show no such marked difference in the various years as could be attributed to the plumbing. Thus in 1883 there were 505 deaths from this disease; in 1884, 218; 1885, 363; 1886, 340; and in 1888, 475. In New York there was a notable decline from 2,066 deaths in 1882, to 744 in 1883, which could not be attributed to improvements in plumbing. Since that time the number of deaths has not been as high, but the diminution cannot, we think, be traced to the better plumbing. We do not wish to be understood as disbelieving in the value to life and health of good plumbing, — on the contrary, we regard it as one of the most important factors in the preservation of health, — but we do not think it the only factor, and believe it to be a mistake to attribute the reduction of contagious disease in any small series of years to a single cause.

## ELECTRICAL NEWS.

### Hertz's Researches on Electric Oscillations.<sup>1</sup>

AFTER proving the existence of displacement currents in dielectrics, Hertz turned his attention to the propagation of waves in wires. To investigate this phenomenon, he used the apparatus shown in Fig. 9 (Fig. 11 in article). Here the primary circuit consisted of the two brass plates *AA'*, connected by a conducting wire in which was an air-space. The secondary used was either *B* or *C*, a rectangle and circle of wire respectively, the periods of which were equal to that of the primary circuit, — about .00000014 of a second. The conducting plate *P* was placed behind and close to *A*, and a wire was taken from it in the direction shown, passed through a window, and at a distance of 60 metres was buried in the ground. Now, when the induction-coil is working, and oscillations occur in the primary circuit, disturbances are caused in the circuit *Pmn*, because of the induction of *A* upon *P*; and the period of this disturbance is of course equal to that of the primary. If the wire *mn* were short, there would be danger of disturbances from reflected waves, but 60 metres was found to be a sufficient length to obviate this.

When electrical waves pass through the wire, we should find loops and nodes, as in any other form of oscillation. To test this, secondary circuits whose periods were approximately that of the primary were brought close to the wire, and were moved along it, the result being noticed at different distances. As the secondary passed along, points of maximum and minimum effect were observed at regular intervals. The results are interesting. In the first place, the distances of minimum effect were — 0.2 metres,

<sup>1</sup> Continued from No. 314.