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AFRICAN DIAMONDS—AN INVENTION WANTED.

Mr. J. L. Babe, of 3217 Sansom street, Philadelphia, Pa., has lately returned from the diamond regions of South Africa, and during a recent call at our office gave us a variety of interesting particulars concerning the localities and methods of searching for the precious gems. More than thirty thousand persons are now engaged in this novel business, and thousands of diamonds are constantly being found, many of large size and great value. Mr. Babe brought with him several hundreds of the diamonds, one of which, a fine large one, is valued at not less than \$120,000. In its natural state, the African diamond is smooth and polished, and when set without cutting is quite ornamental; but its beauty is, of course, greatly enhanced by cutting in the usual manner.

The new diamond fields of Africa are at the present moment the focus of attraction for adventurers from all parts of the world. From this country and Europe the intending diamond searcher steers for Cape Town, a large and flourishing British colony at the extreme southern point of Africa, the Cape of Good Hope. Here, by steamer, he coasts up the eastern shore of the continent for 500 miles, over the waters of the Indian ocean, to the British city of Port Natal; thence on foot, or in ox carts, overland north westerly, through African wilds for some 400 miles, to the Vaal river. This locality is almost midway between the Atlantic and Indian oceans, where the Vaal river empties into the Orange river, and the latter into the Atlantic ocean. This is the present South African diamond region.

The diamonds are found in a certain species of cement-like earth, whitish in color, which, under the blow of a wooden mallet, is readily reduced to powder. This earth is of peculiar formation, and its constituents have not yet been fully determined. It occurs in pockets, of considerable depth and of about an acre in superficial area, which pockets are scattered about, at little distances apart, over the region we allude to. The pockets are filled in by slaty rocks, which rise to or nearly to the surface of the ground. The indications are that these cavities or pockets in the rocks have been filled by the oozing up from below of this cement. The diamonds are found in the cement, which is mined by picks and crow bars, and the following is the general operation:

The pockets are staked off into "claims," a claim consisting of a plot of ground thirty feet square, and for which the operator pays the proprietor from two hundred to eight hundred dollars. The mining is carried down vertically as far as paying earth is found, a narrow wall being left standing between each claim. Some of the pits have now reached a depth of 70 feet. The mining is chiefly done by the native blacks, the earth being raised in buckets to the surface, and carried to a sorting table. Here the cement is pulverized by hand, by means of wooden mallets, care being taken not to strike so hard as to injure the diamond. The pulverized cement is then spread out upon a table in a thin layer, and the anxious eyes of the searcher carefully scan the particles. Good eyes are in demand. Fortunate is he who after days of hard work finds at last one or two of the bright little stones to reward his labors.

The work of crushing and separating is, as we have stated, all done by hand. An invention is greatly needed by which the crushing, at least, may be done by mechanism. Mr. Babe thinks that a machine turned by a couple of men, or by mule power, would be the best. It must have a crushing power sufficient to break up chunks of the earth, and pulverize them to particles of not less than one thirty-second of an inch in size. It must also effect the crushing without injury to the diamonds contained in the cement. The natural adhesiveness of the cement is rather more than that of common

dried mortar. Here is a problem for the ingenious to work out.

Another problem is to construct a diamond separating machine that shall be reliable and require no water. The present diamond fields are dry diggings, the river diggings having been exhausted.

It is said that these diggings were accidentally discovered by the observance of some protruding diamonds in the plastered walls of a small farmhouse, the cement having been used in making the mortar. This building still stands, says Mr. Babe, an object of veneration and interest to all diamond hunters.

SMALL POX—ITS PREVENTION—THE TREATMENT OF PATIENTS WITH REFERENCE TO THE PROTECTION OF THE PUBLIC.

We shall take as a basis for our remarks upon this subject the following well established facts:

First, since small pox has been known to mankind, there has not been one instance where, introduced into the borders of any country, it has been thereafter wholly annihilated.

Second, the utmost that has been accomplished toward extinguishing the disease has been to render communities proof against its becoming epidemic.

Third, this has been accomplished through the two agencies of vaccination and the isolation of those who have contracted the disease.

Fourth, that the disease, once contracted, will run its course till, by its self limited character, the patient either dies or recovers.

It has been claimed that vaccination, repeated at intervals of about seven years, is an absolute preventive of small pox, even of the lighter form of the complaint called varioloid. This we do not believe, since we have known at least one case of fatal result from small pox where repeated attempts at prevention had failed, the patient being apparently unable to contract the vaccine disease. But admitting that vaccination may sometimes fail, when persistently attempted, the cases in which it fails are so rare that they are not worth mentioning as an argument against the value of revaccination. The fact remains that, probably, not one out of a million persons, who intelligently practice revaccination, will ever have small pox. Clearly, then, if revaccination was universally practiced, this one means might be considered as ample protection to the public.

But we have proof, in the almost epidemic character this disease has assumed, that vaccination is neglected by a large portion of our population. It is, therefore, thought necessary to supplement its protective effect upon the public by the isolation of those so unfortunate as to contract small pox, and laws are enacted empowering health boards and officers to remove—forcibly if need be—these sufferers from home and friends, to indiscriminately thrust them into pest houses, where those accustomed to kind care and pleasant homes must feel the depressing influences of foul air, filth, the sight and smell of all that is loathsome, and receive only the cold care of paid nurses, whose gratification is scarcely concealed at the death of a patient and the consequent lessening of their burdens. Now, on the principle that whatever is necessary to protect society is justifiable, and on no other, this course may be justified. The patient who has lead a cleanly life, who has tried to protect himself and society from small pox by vaccination, yet still has taken the disease, must feel that such treatment is a social crime. He reasons: "I have done my duty to the public, have taken every possible precaution. Those who have not done their duty now stand in fear of me, and shut me in this lazar house. It is they who are the criminals, not I. Is it right to punish one innocent for the protection of many guilty? No." There can be but one answer to such a question.

How can we avoid such injustice then? At present the law has no power to discriminate, because there are no adequate means for making discrimination. People are born, move about where they like, live where they please, sometimes change their names, and finally die unknown to and untraced by any public authority. They are earnestly requested to conform to sanitary laws, but rarely compelled to do so. When they have conformed, they have nothing to certify that they have done it. No record is kept either of compliance or non-compliance. An imperfect scar received in any way may be taken for the vaccine cicatrix, and a person may claim to be protected by vaccine disease who never had it. Others who are protected may be thought to have neglected it, and so there is no means whatever, in any locality, of determining its degree of immunity from small pox.

The State Board of Health of Massachusetts, in their late able report, lament that the law of that State does not empower them to isolate small pox patients, and ask that this disability may be removed, leaving it to the judgment of health officers whether such isolation is necessary to public protection or not. We do not quarrel with isolation in and of itself. We believe in it. Small pox patients should be isolated. Their houses should be closed to visitors and warning signals placed upon them; but in the large majority of cases, occurring among those residing out of tenement houses, this is enough. We do not think isolation in pest houses would ever be needed were vaccination compelled by law, and a proper system of registration adopted. Nevertheless, as aid to the easy enforcement of such a law, we would make every patient who cannot show certificates of vaccination, performed once in seven years, liable to isolation in a pest house, and only these, with the exception of those living in houses containing more than one family, hotels, barracks, etc. Such of these latter as can show the proper certificates and can provide for private isolation by procuring a proper tenement

where their cases can be treated like those occurring in private families, should be allowed to do so.

A great deal of hardship might thus be prevented, while in our opinion the total risk to the public, and the death rate among cases which occur, would be greatly lessened.

We should, moreover, be correcting an injustice and relieving the responsibility of physicians, who are frequently mulcted by fines for non-compliance with the imperative law of Health Boards which requires the reporting of every case coming to the physician's knowledge.

A REMARKABLE TELEGRAPHIC IMPROVEMENT.

The Western Union Telegraph Company has acquired the exclusive ownership of the patents of 1868 of Joseph B. Stearns, of Boston, Mass, for instruments by which telegraph messages are transmitted in opposite directions, by the use of a single wire. This improvement is one of the most important that has been made in connection with telegraphy since the introduction of Henry's inventions by Professor Morse.

Many of the Stearns instruments are now in use, and the Western Union Company is introducing them upon its lines as fast as they can be manufactured. The importance of the invention will be understood when we state that it practically doubles the transmitting capacity of every telegraph wire owned by the Company.

Let none of our readers suppose that the chimera of "sending two currents in opposite directions on the same wire" has been realized in this invention. Not that, but its practical equivalent is realized, to wit: Two messages are transmitted simultaneously in opposite directions by means of one wire while the electrical current is always moving in one circuit, in the usual manner. By ingenious arrangement of instruments at the two ends of a line, say between New York and Boston, the operator at New York is enabled to transmit a message to Boston while the operator in Boston is at the same instant transmitting a message to New York, one set of signals being transmitted by that portion of the current which passes over the wire, the other set of signals being transmitted by that portion of the current which returns through the earth. We shall, on a future occasion probably, illustrate and fully describe this marvel in telegraphy.

The actual money value, of this remarkable invention, the Western Union Telegraph Company is estimated, to-day at a quarter of a million of dollars; and each year, as business increases, its value must augment.

We ought to add that Mr. Stearns, the inventor, is one of the best of living electricians, and his discovery is the simple result of profound and exact study of the laws of electricity. As a man of genius, who has conferred lasting benefits upon his fellow men, Mr. Stearns is entitled to the highest respect.

EPIDEMICS OF DISEASE, DISASTER, AND CRIME.

It would almost seem that the old saw "It never rains but it pours" was meant specially to apply to the calamities of the human race, and that accidents and crimes are epidemic as well as disease. To a certain extent this is assuredly true. Diseases become epidemic when a particular combination of conditions favorable to their rapid spread are established in an infected district. So when the moral atmosphere becomes tainted, when judges and legislatures are bought up by rings, when gambling houses, rum shops, and brothels are numerous; when newsstands teem with corrupting literature, the conditions are established for an epidemic of crime. When legislatures are thus corrupt, and valuable franchises are granted to grasping corporations, permitting them to monopolize avenues of travel without any proper guarantees that the safety and convenience of the public will be considered, when inspectors can be tampered with and induced to report as safe what is unsafe, when in the haste to make money the people of young cities build block after block of inflammable materials, when tenant houses are put up in the most shabby manner and with shameless disregard to everything except the anticipated and exaggerated rents to be extorted from their unfortunate occupants, the conditions are well established for an epidemic of disaster.

The philosopher studying the conditions of epidemics can easily trace at least one fundamental condition common to them all, namely, moral infection. It is this corrupting influence that leads to neglect of duty on the part of officials who are paid to establish, so far as man can control them, the conditions of health. Thus we have streets and slums in our large cities reeking with filth, and foul with noxious fumes. Thus we see buildings little better than traps for human beings, erected under the very eye of those appointed by law to correct such evils. From moral laxity follows the judicial laxity that allows those justly accused of crime to escape conviction, and convicted felons to escape punishment. What wonder, then that in this era of social corruption the three epidemics have simultaneously come upon us?

The kerosene explosions, boiler explosions, explosions of fireworks, falling of buildings, disasters on railways, the burning of cities and vast tracts of most valuable timber, small pox raging in our midst and extending itself through out the land, the murders and the long list of minor crimes that have passed into the history of the last twelve months—what a terrible, soul-appalling list would they make, were we to blacken our pages with their enumeration!

But we see the signs of a healthful and hopeful reaction. The patience of a long suffering public is exhausted. There is an under current of public opinion setting in that will soon render it dangerous for criminals to practice their offences against society, or public servants to shirk their