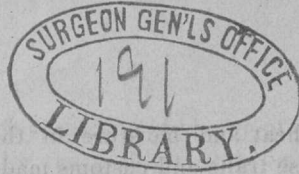


HOMAN (Geo.)



ON SOME POINTS IN REGARD TO OUT-  
BREAKS OF ASIATIC CHOLERA.

BY

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Inasmuch as a more or less well defined feeling seems to now exist among the people in some parts at least of the Mississippi valley, that a visitation of Asiatic cholera may be expected here at no distant day and, further, as this feeling seems to be based on the common belief in the reappearance of cholera in North America at intervals of about seventeen years it may not be out of place to sketch in bare outline and give sharp prominence to some of the facts and truths in relation to this disease that have most fully commended themselves to the sober, unbiassed and practical judgment of those generally deemed best qualified to pass upon the matter in question. This may be done now with a degree of fitness as the subjects of the nature, origin etc. of this disease were touched upon when the question of the cholera epidemic of 1873 in this country was broached in this society several weeks ago. And whatever may be here said is not put forth with the least hope of adding any new facts to the almost limitless literature of cholera, but, mainly from the standpoint of preventive or state medicine, to refresh the minds of members present and, at the outset, to enter a protest against a tendency too common among medical men to search the clouds and visit the moon in seeking the causes of infectious diseases when in all probability they exist under our very noses, in local unwholesome conditions that should in reason silence the voice of vague and fruitless speculation as to how diseases originate and spread, until critical and painstaking search and work have uncovered and eradicated every possible source of danger to individual and public health.

From the best evidence it may be safely said that the place of origin of cholera was the delta of the Gauges where, under tro-

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pie heat and moisture in the midst of a teeming population whose traits and customs made them ripe for disease, its specific principle reached a maturity and energy that have more than once enabled this mortal agent to reach the antipodes of its nativity, where its seeds have borne fruit with fatal effect, here in the very centre of the Mississippi valley. And it would seem in view of many facts that the seeds of disease may be spoken of with as much fitness of language as are those of vegetable or animal life, as there is much likeness as regards the conditions necessary to germination or quickening and growth; for, even in its chosen home, cholera springs and ripens to epidemic fullness only under the favoring powerful agencies of heat and wet and proper soil, joined with other helpful though minor influences. As the delta of the Ganges and the Bengal coast doubtless witnessed the beginnings of this disease, so the lower plain of that stream is its domestic nursery and favored dwelling place, an area containing the largest and densest population under tropical influences that the inhabited world can show, in numbers amounting to upwards of 200 millions, a majority of whom live in villages and cities and who are prone to practices of domestic uncleanness, that are by the best accounts alike disgusting and notorious. The Ganges is the drainway of this enormous population and its defilement with the organic, diseased and excretal wastes of human life has been continuous through uncounted centuries, and its output from the spreading, sluggish waters at the delta, represents the aggregate foulness of burden and deposit needed for the beginnings and propagation of a swift and virulent infection. It has been said that the cleansing of India would require that it be swept by fire, ploughed by glaciers and sunk beneath the waters of the ocean; but even if this be part exaggeration it is still reasonable to believe that in the customs and homes of its people is to be found the explanation of the existence of a plague that has found victims in nearly every quarter of the habitable earth. And these habits or customs are so closely inwoven with superstitions, beliefs and traditions of religion, race and country, that it is asserted that to attempt to enforce upon the inhabitants any change in this respect would provoke an insurrection and conflict compared with which the Sepoy rebellion would be insignificant.

Born of mankind thus situated and fitted to be borne by him from place to place with conspiring efficient and unusually deter-

minable agencies, the fatal and wide spreading tendency of cholera is heightened and promoted by the multiple and complex pilgrimages, fairs, feasts and festivals, both religious and commercial, that continually take place in India among its Hindoo and Mohammedan peoples. This ebb and flow of population reaches from one end of the land to the other and often results in the massing, in one place of not myriads only but millions of human beings, as has been witnessed at the twelfth year festivals at Hurdwar and Juggernaut at either end of the valley of the Ganges. At such multitudinous gatherings of wayworn devotees, assembled at the opening of the rainy season with every attendant circumstance of privation, infirmity, filth and actual disease, is planted and grown the pestilence that has again and again ravaged continental Europe and the western world. And beyond all dispute from the cholera outbreak at the Hurdwar festival in 1867, the poison of which was carried thither from the southern districts where it is always present, came the seeds of the epidemic of 1873, in the United States. When the festival broke up in April the dispersing pilgrims carried active infection into almost every part of Asia; it was forwarded to Arabia via Bombay by the throng of Mohammedan pilgrims pressing on to the shrine at Mecca, and after renewing its violence there was thence promptly distributed to Eastern Europe, finding fit lodging place and congenial soil in the foul cities and amidst the filthy peasantry of Turkey and Russia. Moving steadily westward it traversed the Austrian and German States and was present in Holland, Belgium, and Great Britain early in the seventies. Several branching offshoots from European centres of infection reached this country, one brushing the North Atlantic coast, and another sending the disease up the Mississippi valley through culpable laxness of quarantine measures at New Orleans. The facts regarding its successive progress up the valley as far north as Iowa, by means of common carriers, are well known, although in respect of panic and mortality this outbreak was overshadowed by the visitation of 1866. It is of interest, however, to note that distinct implantings of the disease occurred one each in Ohio, Minnesota and Dakota from direct importations through New York of the poison by means of infected baggage of emigrant bands who were ticketed through from villages in Holland, Sweden and Russia where cholera was prevailing at the time of their departure; but by intelligent, energetic action the dis-



ease was uprooted in its infancy, the great majority of victims being among the immigrants themselves.

It is safe to say that it is within the power of man to control the cause or causes of this disease to its prevention provided always governments and peoples deem this end worth the effort, and are willing to expend in such attempts a tithe of the fore thought and time and means devoted, for instance, to warlike purposes; and make the same intelligent provision to forestall ripening pestilence as is shown in meeting maturing financial obligations.

While there are some things not fully known about cholera there is no mystery at all as to how it is spread, and the conditions most favorable to its existence. Such a curse cannot come without cause and a country that puts a proper value on the principles of preventive medicine, intelligently applied, is a country fortified against foreign pestilence; and in the face of an epidemic it presents something reassuring, trustworthy and real as compared with the terrors, uncertainties and disasters that attend the best efforts of curative medicine under similar circumstances. For cleanliness of house and city and nation will, as surely render sterile the soil needed for the rooting and growth of cholera as properly performed vaccination and revaccination will protect against small pox. The healthful condition of the European portion of Calcutta, a city situated in the very heart of the home of cholera, shows what may be done in mitigation, if not prevention, of this disease by the application of radical measures to public health ends. In order that the best results be secured commerce, both marine and inland, must consent to forego at times some slight immediate gain for the sake of the vastly greater future benefits to follow temporary restraints in interest of general good health; and it follows that a watchful state of preparedness, both municipal and national, should ever be maintained that exotic disease, if it be smuggled in, shall gain no sure lodgment.

As the questions may naturally arise here as to when and how often renewed visits of cholera to America may occur it may be worth while to see what foundation there is for the before mentioned popular belief in periodic seventeen year intervals, although this is more apparent than real, and that it is not invariable is shown with much meaning by the shortness of the period between the distinct epidemics here in 1866 and 1873. An

explanation of the previous apparently established periodicity of cholera may perhaps be found in the facts that the outbreaks felt by Europe and America have usually had their starting point in Arabia,—Jeddah, the Red sea port of Mecca, having always been particularly active in its exportation by way of Suez to the Mediterranean coasts. The disease of course is first carried from India by pilgrimages to Mecca which occur at varying times of the year owing to the fact that the Mohammedan calendar recognises only the lunar month and year in determining the dates of religious festivals held in the holy city. A particularly important religious ceremony occurs every twelve or fifteen years which is attended by multitudes of the faithful, and the cyclical date of which falls soon after the enormous gatherings in India, and at the season of the year most favorable to the development of disease. The befoulment of earth, air and water in the valley in which Mecca is situated, and where the pilgrims encamp, is spoken of as being something astonishing and that cannot be readily described. Here the transplanted disease springs to most vigorous growth and is thence distributed to Europe.

The facts that the number of pilgrims is yearly growing less and that, through Western influence, greater attention is being paid throughout the Orient to cleanliness and disinfection, taken in connection with the further fact that new, quick and direct routes to India by rail are now being opened up, destroys the value of conclusions drawn from circumstances that have, in the past, probably governed or strongly influenced the spread of cholera; and it is now easily possible for the infection to be delivered direct from India to west European and American ports without any intermediate fostering in Arabia, Syria, Turkey or Russia.

And here may be appropriately introduced a series of brief propositions formulated in obedience to the joint resolution of Congress approved March 25th 1874, and embodied in the report on the cholera epidemic of 1873 in this country, made in accordance with that resolution under direction of Surgeon-General Barnes by the late Dr. Woodworth of the Marine Hospital service, the late Dr. Woodward of the army, Surgeons Billings and Mc. Clellan of the army, and Dr. J. C. Peters of New York. These propositions relate to the prevention of cholera and are as follows :

I. Malignant cholera is caused by the access of a specific organic poison to the alimentary canal; which poison is developed spontaneously only in certain parts of India, (Hindustan.)

II. This poison is contained primarily, so far as the world outside of Hindostan is concerned, in the vomit, stools and urine of a person already infected with the disease.

III. To set up anew the action of the poison a certain period of incubation with the presence of alkaline moisture is required, which period is completed within one to three days; a temperature favoring decomposition and moisture or fluid of decided alkaline reaction hastening the process, the reverse retarding.

IV. Favorable conditions for the growth of the poison are found (1) in ordinary potable water, containing nitrogenous organic impurities, alkaline carbonates, etc; (2) in decomposing animal and vegetable matter possessing an alkaline reaction; (3) in the alkaline contents of the intestinal portion of the alimentary canal.

V. The period of morbid activity of the poison—which lasts, under favorable conditions, about three days for a given crop—is characterized by the presence of bacteria, which appear at the end of the period of incubation and disappear at the end of the period of morbid activity. That is to say, a cholera-ejection, or material containing such, is harmless both before the appearance and after the disappearance of bacteria, but is actively poisonous during their presence.

VI. The morbid properties of the poison may be preserved *in posse* for an indefinite period in cholera-ejections dried during the period of incubation, or of infection matter dried during the period of activity.

VII. The dried particles of cholera poison may be carried (in clothing, bedding, etc.) to any distance; and when liberated may find their way direct to the alimentary canal through the medium of the air—by entering the mouth and nose and being swallowed with the saliva—or, less directly, through the medium of water or food in which they have lodged.

VIII. The poison is destroyed naturally either by the process of growth or by contact with acids; (1) those contained in water or soil; (2) acid gases in the atmosphere; (3) the acid secretion of the stomach.

IX. It may be destroyed artificially (1) by treating the cholera-ejections, or material containing them, with acids; (2) by such acid (gaseous) treatment of contaminated atmosphere; (3) by establishing an acid diathesis of the system in one who has received the poison.

These propositions embrace the conclusions drawn from an impartial and searching study and comparison of trustworthy data regarding cholera laboriously collected by the government in the nineteen states and territories invaded by it in 1873.

In view of the growing uncertainty, before referred to, in reference to time of its future movements, and the question being its exclusion from this country, it is plain that a seaboard quarantine of exacting purification of persons and things, and in every suspected case one of detention and observation, will thwart the energies of foreign infection securely packed and preserved though it may be in the hereditary filth brought over in the baggage and household effects of immigrant colonies or individuals. But it is not impossible that the disease, at times of onset and wide prevalence, may force the seaboard line of defence, and hence follows the need for means of interior protection. And the fact that several places within or near this valley have become extensive depots and distributing points for immigrants emphasises the necessity for a stable, controlling health authority beyond that which cities and states can afford. To foster and actively support such efficient governmental agency would seem the plain duty of every physician; and it is encouraging to believe that with the help of not doctors only, but of every intelligent person, the day may soon be brought to pass when it shall be impossible for this most preventible disease, striking hands with panic fear, to girdle the earth with dread and death to suffering man.



In view of the foregoing, a preliminary report is submitted  
relative to the results of the analytical work, and the  
conclusion is reached that the material is a mixture of  
potassium and sodium chlorides, and that the  
quantity of sodium chloride is approximately 10% of the  
total weight. The analytical work was carried out in  
accordance with the methods described in the report, and  
the results are given in the tables attached hereto.  
It is noted that the analytical work was carried out  
under the supervision of the undersigned, and that the  
results are given in the tables attached hereto.  
The analytical work was carried out in accordance with  
the methods described in the report, and the results  
are given in the tables attached hereto.  
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