

The San Francisco Earthquake and Fire

Public Health Aspects

WILLIAM W. STILES, M.D., M.P.H., Berkeley

THIS YEAR is the golden anniversary of the San Francisco earthquake and fire. As we reflect on the medical and health problems of a cataclysm of fifty years ago, we should pay tribute to our valiant predecessors in the profession whose heroic efforts undoubtedly saved hundreds of lives then, and during this intervening half-century have saved thousands more from the curse of violence and disease. At the same time, we must pause to consider the present-day threats to our health and the many challenging medical problems that would face us in another disaster.

Accounts of some of the medical and health problems resulting from the San Francisco earthquake are well described in the official reports of the boards of health of the city and state for that year. Quoting the latter: "There were 709 deaths known to have resulted directly or indirectly from earthquake and fire, distributed as follows: San Francisco, 463; Santa Clara, 141; Sonoma, 72; Alameda, 12; and other counties 21. The deaths in Santa Clara County were mainly at Agnews State Hospital, and in Sonoma County mainly in the city of Santa Rosa. Most of the deaths in Alameda County and other counties occurred among refugees from San Francisco suffering from fright or exposure."

There were many other deaths from diseases, which, at least in part, may be attributed to the chaos. For example, during the two weeks following the quake there were 547 known fatalities from typhoid fever in San Francisco. There was probably an even greater number because reporting was far from complete. One may surmise that this infection was on the rampage, for 250,000 of the 400,000 residents of the city were rendered homeless. Quoting again: "The squares, public parks and vacant lots were packed with the stricken multitude, and without sanitary conveniences of any kind. Sick and well were confusedly packed together; water supply cut off; sewers broken and no protection from the elements, which were unusually severe for this time

of the year. . . . Uppermost in the mind of the Board [of Health] was the question of the water supply. . . . The Department [of Health] was in a dilemma. . . . Our means for the examination of water, milk and foodstuffs were totally destroyed, and a like condition existed in nearly every other available public or private laboratory, and analytical work seemed out of the question." Great effort was made to render the water and milk supplies safe . . . "yet the number of [typhoid] cases daily increased. A review of the ground revealed that some other factor was responsible for the continued spread of the disease. Inspection showed that the large public relief kitchens located in the camps were unscreened and open to the dirt, dust and invasion from flies; myriads of the latter were found in every portion of and upon everything in these kitchens. In many instances latrines were not far distant, and these were likewise uncovered and unscreened. Investigation and inquiry proved that many refugees were careless in the disposal of excreta, throwing it on adjacent surface soil. This became an added menace, as quite a number of the cases were of the ambulatory type. From one such patient, whose tent was in Garfield Square, were traced twelve cases.

"A serious difficulty confronted the city at this time in that the Sanitary Reduction Works, where all garbage had previously been incinerated, was a total wreck. For a period of ten days the city's garbage was taken to the burned district, and an effort made to incinerate it; this, however, proved unsuccessful, and finally arrangements were completed for its disposal at sea by means of barges. An average of seven hundred loads were removed daily. Considering the destruction of the system of the disposal of garbage, the entire population cooking in the streets, these streets filled with debris of all kinds, teams and wagons difficult to hire, a stupendous task was undertaken and accomplished in meeting and successfully coping with the above conditions.

"For the first twelve days after the earthquake and fire there were 509 dead animals removed from various parts of the city, including the burned area. These were incinerated. During the succeeding months to date, over seven hundred dead horses have been disposed of in like manner.

Address given at a symposium jointly sponsored by the San Francisco and California State Offices of Civil Defense on April 18, 1956, "California's Next Earthquake and Civil Defense and Disaster Operations."

Submitted April 23, 1956.

"On April 18 there were sixty-five cases of variola in the Isolation Hospital, and seven or eight patients quarantined in private houses. The number of cases of diphtheria, scarlet fever and measles were comparatively small. The typhoid fever cases numbered seven, apparently a very low record and due to the fact that reports of this disease are seldom received from the profession. As already stated, a rigid inspection was inaugurated at the outset to locate and place under control the developed cases, and every effort exhausted to track and keep under observation, the contacts. With people quartered in every available park, lot or street, and hundreds crowded in basements, stables and like places, the task was tremendous. Personal responsibility and thought of self were submerged, no doubt due to the terrors they had faced or the losses sustained. Another source of menace was a class of misguided people who have no faith in the doctrine of Aesculapius, but treat their sick after the manner of dogma. Illustrative of this is the case of a refugee living on Page Street, who was by chance found in the street suffering with variola, and in the advanced stage of desquamation. At this time he was engaged in peddling doughnuts in the various camps. He was quarantined in his residence, but too late, for not only did every one of the fifteen inmates, all of the same cult, fall victim to this disease, but forty other cases are directly traceable to him."

In retrospect, one may conclude that conditions following the earthquake and fire were as primitive as the military battlefields of those days. Then the army lost ten times as many soldiers from disease as from battle injury. If the same ratio existed in San Francisco following the earthquake and fire there must have been about 5,000 deaths from disease in addition to the 463 killed outright.

Without doubt, the fate of untold others would have been similar had it not been for the heroic efforts of the medical profession:

"The day following the commencement of the fire, a thorough organization for the protection of health was formed. Col. George H. Torney, Deputy Surgeon-General and a thorough sanitarian and organizer, represented the U. S. Army; Drs. James W. Ward (president), Simon, Harrison, Hassler, and Ragan, the City Health Commission; Drs. Martin Regensburger and N. K. Foster, the State Board of Health; and Dr. Sawtelle, the U. S. Public Health and Marine Hospital Service.

"Dr. Ward, as president of the City Health Commission, was given full power to control sanitary measures, and the control could not have been put into abler or more willing hands. Long before the fire was out, headquarters were established in Golden Gate Park, hospitals started, the city districted and each put under a responsible chief, the

camp were patrolled and inspected, toilets were established, and plans formulated for concentration in a single camp. As rapidly as possible a house-to-house inspection was made, all garbage cleaned up, people removed from unhealthful localities to those better adapted to their needs, and instructions issued about how to protect the healthfulness of the individual and camp. Cleanliness was insisted on and an earnest effort made to prevent the pollution of the soil."

We might take a moment to review the health record of San Francisco today as compared to 50 years ago. During this interval, the population of the city has doubled (785,000 as of July 1, 1954). The life expectancy at birth has increased from 50 to 67 years. Meanwhile, the crude death rate per thousand per annum has fallen from 17.0 to 11.6. Deaths from typhoid, diphtheria and smallpox have been reduced to zero. The death rate from tuberculosis has been reduced to about one-tenth of what it was. Even the death rates from the ordinary forms of violence have been curbed appreciably: Accidents, 100 to 61.1; suicides, 35 to 25.4; homicides, 15 to 4.8.

These and many other evidences of a healthier and longer-lived population are due to the great technical advances which have been made in the medical and health sciences since 1906. Then carbolic acid, introduced by Lister, was used for almost every antiseptic need. Now there are hundreds of effective disinfectants that have specialized uses. The chlorination of water, just being recognized at the turn of the century, today is accepted as an essential for the control of typhoid and other water-borne diseases. The campaign for "no spitting in public places" that was begun in those early days has been paying dividends ever since by reducing tuberculosis and other infectious diseases. In 1902 Landsteiner observed blood types or groups; ten years later several other scientists found the anti-coagulants. These discoveries made transfusions possible and laid the foundations for the extensive use of blood, plasma, blood derivatives and substitutes in present-day surgical and medical emergencies. The active immunization against tetanus, which is common practice now, depended upon the discovery of toxoid by Ramon in 1923. The sulfonamides and antibiotics, which are so effective against a wide variety of infectious diseases, date from 1937. These and hundreds of other discoveries would seem to give us the technical "know-how" to meet almost any medical emergency today.

Nevertheless, we must pause and ask ourselves if we are really prepared for another disaster like that of April 18, 1906. One hesitates to answer conclusively. Our hospitals are just beginning to develop adequate disaster plans, and few have put them to

any sort of test. Coordinated efforts of medical and health agencies are still in the formulative stage. Education and training for the care of mass casualties is just beginning to perfuse the curricula of professional schools. There are still many ancillary medical workers who have received no formal instruction in first aid at all. We must confess that we are not as well prepared as we should be to meet these great natural disasters, much less to meet the catastrophic disasters of war.

No doubt, our failure to develop complete and effective organizational programs is the result of human frailties which we have not been able to alter materially during the last half century. There is still a pressing need to improve our intraprofessional and interprofessional relationships, and a need to replace petty jealousies and selfish interests with friendly cooperation and understanding. There will always be a need for the same kind of stuff that characterized some of the heroes of those trying bygone days. An editorial in the *California State Board of Health Bulletin* of April 1906, had this to say about one of them: "Dr. Ragan, Health Officer of San Francisco, claims to have made a great scientific discovery. It is nothing less than a 'sleeping sickness serum.' He warrants that one dose properly administered will remove all disposition to sleep and keep the patient at work for twenty hours a

day. He says that the long hours of faithful work performed by the San Francisco Health Commission were due to its use. They certainly did the work, but we have an idea that the doctor's serum consists of a deep interest in the health of the people. At any rate, Doctor, the *Bulletin* is at your disposal to inform the world of the truth, and if you succeed in inoculating every health officer with the same energy and success as were shown in San Francisco you will gain the gratitude of the people of the state."

Let us here and now rededicate ourselves to the remaining tasks. Thus, as we commemorate one grim golden anniversary in this Golden State of ours, may we also make the most of these peaceful "normal times" which are our golden opportunity to prepare for any eventuality.

University of California School of Public Health, Berkeley 4.

REFERENCES

Annual Report of the Department of Public Health, San Francisco, California, for the fiscal year, July 1, 1906 to June 30, 1907.

California State Board of Health, Monthly Bulletin, April, 1906, pp. 81-88.

Hassler, W. C.: Resume of Work of Sanitation Performed by the San Francisco Board of Health, from April 18, 1906, to date (August, 1906), *Calif. State J. Med.*, 4:242-246, Sept. 1906.

