Mobilization against Influenza

The high effectiveness of vaccination with formalin-inactivated influenza virus was demonstrated during the widespread epidemics of influenza A in 1943 and of influenza B in 1945, largely through the studies in military personnel conducted by the Commission on Influenza of the Armed Forces Epidemiological Board. In later years of low incidence the commission's repeated studies have provided confirmatory evidence that appropriately constituted vaccines are highly protective. It was established, however, with equal confidence that vaccine of the same composition was not effective in the 1947 epidemic caused by a virus variant which was termed "A-prime." Despite efforts to compound a vaccine which would contain components covering the range of antigenic variants, the Asian strains of 1957, isolated by Army laboratories in the Pacific, although belonging to type A, were promptly demonstrated by Hilleman, of the Walter Reed Army Institute of Research, to possess a dominant antigen different from those of recent years. The information was promptly transmitted to all agencies concerned with studies of influenza.

In historical perspective, one of the most striking features of the current epidemic of influenza is how typical it has been, to date, at least. Influenza is, however, a capricious disease, varying from mild and scattered flurries to the world-wide hurricane of 1918. Hence, recognition that an epidemic of influenza is launched on a global orbit always brings with it concern about its subsequent behavior. Because of its speed of travel, there may be little time to prepare.

In May there was a rapidly extending epidemic of high incidence and increased mortality in crowded areas of Asia, associated with a new variant of influenza virus. United States military units in those areas had also been affected. It was inevitable that the United States would be involved and, even though the disease was mild, high incidence could create serious functional dislocation. If severe, the nation's effectiveness might be seriously taxed.

The one proven method of protection against the oncoming wave was vaccination. Although biological manufacturers of influenza vaccine had had ten years of experience in producing relatively large amounts of varied formulae, getting a new strain into large-scale production requires time and major adjustments. If, as predicated, the disease was to become widely epidemic in the United States by early autumn, action was necessary. Virus was distributed immediately, then, to a number of research laboratories for study and appraisal of its unique characteristics and was also sent to the manufacturers for exploratory processing and preparation of experimental lots of vaccine. The world-wide network for influenza detection could follow the epidemic meanwhile for better documentation of its distribution and severity and for significant changes in its behavior.

Conferences of experts in influenza vaccine were called to consider potency requirements and time schedules. The Commission on Influenza, the Walter Reed Institute, and the Communicable Disease Center began
early in June actual studies of the potency of experimental lots of vaccine in human subjects. Information about the practicable potency of vaccine which could be produced in reasonable time and quantity was determined, and impetus to its production was given by purchase orders from the Armed Forces. The National Institutes of Health, in close collaboration with the manufacturers, took responsibility for assuring standard potency and safety of vaccine.

In the meantime, the Public Health Service exerted outstanding leadership toward mobilizing civilian health and medical resources for effective and efficient handling of a large epidemic. In this there was close collaboration with the American Medical Association, state and territorial health officers, the American Hospital Association, the military medical services, manufacturers of antibiotics, and other essential lay and professional groups. Among the questions which had to be considered were priorities in the use of limited supplies of vaccine and hospital beds, the conservation of the medical practitioners’ services, the care of the patient, the use of antibiotics, and the maintenance of community facilities and industrial production. In addition, funds were provided to support laboratories in the identification of epidemic prevalences, and further financial support was made available for desirable research upon problems presented by the epidemic.

Much attention has been given to providing current information on the status of the epidemic to the professions and to the public. The National Office of Vital Statistics provides weekly bulletins. Through the Communicable Disease Center a weekly Surveillance Report presents up-to-date details of spread, incidence, mortality, industrial absenteeism, and vaccine release. The preparation of this report is made possible by cooperation with the World Health Organization as well as with the numerous active agencies in this country. The Epidemic Surveillance Unit has sent its officers into epidemic areas for aid in investigations, and the Influenza Committee of the American Medical Association has taken steps to keep the profession informed as to urge effective community action.

A group from commissions of the Armed Forces Epidemiological Board conducted studies for a month in Chile during the winter season of August and September. The purpose was to learn in advance of its appearance in the United States more of the effect of the epidemic in an area usually exhibiting high mortality from respiratory disease. The observations of the group were important in that no unusual features were noted; pneumonic cases were seen to respond to treatment as in other years.

The Commission on Influenza has maintained in certain military establishments continued studies of vaccination against influenza. It was able to institute by the end of July carefully controlled investigations of the effectiveness of materials of different antigenic strength. In the early occurrence of epidemics at these posts, it has already demonstrated that the vaccine has a minimal effectiveness estimated to be from 45 percent (with early materials of low potency) to 75 percent (with later preparations of greater strength). Based on these and antigenic studies by various investigators, the decision was made to increase the potency from the earlier level to one that stimulates a response approximate to that of a person recovering from the disease.

It will be interesting to watch carefully the progress of this 1957 epidemic and the new information it will provide. It is already clear that the virus is not entirely new to our population but bears relationships to strains in circulation 30 or more years ago; so far this is reflected in the decreased incidence in older age groups. Speculators may place bets on two waves, three waves, or home permanents. But the evidence is against further marked change in severity of a virus which has already been passed so many times in susceptibles.

The entire development has been a remarkable demonstration of cooperation and coordination of research and application toward the meeting of an impending emergency. It could not have been possible earlier, or even now, were it not that major differences in scientific interests and theory have been amalgamated into a unified approach to an applied problem in national security.

THOMAS FRANCIS, JR.

School of Public Health, University of Michigan
Louis, Mo. (E. F. Swift, NWF, 232 Carroll St., NW, Washington 12.)


(R. H. Dott, AAPG, Box 979, Tulsa 1, Okla.)

20-22. Pulmonary Circulation Conf., Chicago, Ill. (Wright Adams, Chicago Heart Assoc., 69 W. Washington St., Chicago 2.)
20-23. International Assoc. for Dental Research, annual, Detroit, Mich. (D. Y. Burrill, Univ. of Louisville, School of Dentistry, 129 E. Broadway, Louisville 2, Ky.)
23-26. American Assoc. of Dental Schools, annual, Detroit, Mich. (M. W. Moreau, 42 S. Greene St., Baltimore 1, Md.)
29. South Carolina Acad. of Science, annual, Charleston. (Miss M. Hes, Dept. of Biology, Winthrop College, Clemson, S.C.)
30-3. American College Personnel Assoc., annual, St. Louis, Mo. (L. Rigs, DePauw Univ., Greencastle, Ind.)
April
2-4. American Assoc. of Anatomists, annual, Buffalo, N.Y. (L. B. Flexner, Dept. of Anatomy, School of Medicine, Univ. of Pennsylvania, Philadelphia 4.)
2-4. Instruments and Regulators Conf., Newark, Del. (W. E. Vannah, Control Engineering, 330 W. 42 St., New York 36.)
4-5. Southern Soc. for Philosophy and Psychology, annual, Nashville, Tenn. (W. B. Webb, U.S. Naval School of Aviation Medicine, Pensacola, Fla.)
7-11. American Assoc. of Cereal Chemists, annual, Cincinnati, Ohio. (J. W. Pence, Western Utilization Research Laboratories, Albany, Calif.)
8-10. Electronic Waveguides Symp., New York. (J. Fox, Microwave Research Inst., Polytechnic Inst. of Brooklyn, 55 Johnson St., Brooklyn 1, N.Y.)
9-12. National Council of Teachers of Mathematics, Cleveland, Ohio. (M. H. Ahrendt, NCTM, 1201 16 St., NW, Washington 6.)
10-11. American Inst. of Chemists, annual, Los Angeles, Calif. (L. Van Doren, AIC, 60 E. 42 St., New York 17.)
10-12. National Speleological Soc., annual, Gatlinburg, Tenn. (G. W. Moore, Geology Dept., Yale Univ, New Haven, Conn.)
10-12. Ohio Acad. of Science, annual, Akron, Ohio. (G. W. Burns, Dept. of
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fine-finished float which rises or falls in a precision-bore glass tube to expose more or less of a V-shaped orifice cut in the wall of the tube. Standard flow-tube sizes are ½ in. and ¾ in., with ranges from 0.05 to 0.50 lit./min to 1.35 to 13.0 lit./min. Maximum operating pressure is 80 lb/in.² at 70°F; maximum operating temperature is 150°F. Other ranges can be furnished. (C-Mar Corporation, Dept. S810)

- **Phase shifter** consists of resistance-capacitance networks, a phase inverter, and an output cathode follower. Phase-angle lag between input and output is shown on front-panel dials for 400 cy/sec operation. Range is 0 to 360 deg. Maximum error at 400 cy/sec is less than 0.1 deg. Maximum input signal is 25 v r.m.s. A correction curve permits use of the instrument at frequencies other than nominal. (Advance Electronics Lab., Inc., Dept. S808)

- **Electrophoresis apparatus** features a chamber with built-in interlocks to prevent electrical shocks. The power supply will accommodate four chambers. Voltage is variable up to 500 v, current up to 50 ma. Each migration chamber will hold 20 ½-in. strips or 12 1-in. strips. (Labline, Inc., Dept. S813)

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- **Laboratory furnace**, for temperatures to 1760°C, operates on any available fuel gas. Working temperature is reached in 1 hr and is held with fuel consumption of 160,000 Btu/hr. Charge space is 4½ in. in diameter and 2¾ in. long. By removal of a single element, the furnace may be converted into a lower-temperature unit with a larger charge space. (Selas Corp. of America, Dept. S816)

- **Crystal-controlled oscillators** are transistorized for compactness. Seated length is 5½ in. and diameter is 1½ in. Output is 600 µw in the frequency range from 4 to 250 kcy/sec. Stability is ±0.015 percent from −40° to +60°C. Shock of 100 g and vibration of 0.03 in. total excursion at 5 to 55 cy/sec are tolerated. (Dynamics Corp. of America, Dept. S817)

- **Speed-deviation recorder** indicates and records percentage deviation from a predetermined but adjustable speed. Input is received from a d-c tachometer generator and is compared with a stable d-c reference voltage. Accuracy is 0.1 percent. A variety of ranges is available; minimum span is 2 percent. (General Electric, Dept. S811)

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**Joshua Stern**

**National Bureau of Standards**