

MEDICINE

Make Better Vaccines

Water-in-oil emulsion in just the right proportions doubles life of influenza vaccine and also gives protection against more strains of the virus.

► MIXING WATER with oil, in just the right way, is the latest trick of medical scientists to get better vaccines for protecting against virus diseases such as influenza and polio.

It was one of the tricks used by Dr. Jonas E. Salk of the University of Pittsburgh to improve his experimental vaccine against polio (see SNL, April 4, p. 211). Now he reports in the *Journal of the American Medical Association* (April 4) that he has used it again. This time the water mixed with oil tricked the influenza virus so that a vaccine against it becomes more effective.

Secret of the trick is two-fold: 1. The virus in the vaccine, technically called the antigen, stays for longer periods at the place it is injected. 2. The light mineral oil attracts the particular cells of the body which form anti-flu or anti-polio fighting substances. The emulsifying chemical used to make the water and oil mix may also play a part in making these cells accumulate around the injected vaccine.

The trick works, Dr. Salk points out, only with a water-in-oil emulsion in which the oil surrounds the vaccine in the emulsion particles.

Using this trick, Dr. Salk finds that anti-

influenza vaccine protection last two years instead of one and also makes the vaccine protect against more strains of 'flu virus.

For each type of influenza virus there are several strains. In the past, this has been considered one difficulty in making a vaccine that would protect against whatever influenza virus was going around. The water-in-oil emulsion makes a vaccine that protects against not only the particular virus strain in the vaccine but also against other strains not in the vaccine. This was the case with some strains of some influenza types in Dr. Salk's experiments. He thinks now that it will be possible to make a vaccine with enough strains to cover all the strains for each virus type.

This would mean a 'flu vaccine that protected against the disease regardless of which type and strain was causing an epidemic.

This is even more probable because of a hitherto unpublished finding announced by Dr. Salk. This is that the great differences among strains of a virus type found in tests on laboratory animals do not show up in similar tests in humans.

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ASTRONOMY

Universe Twice Size

► STRIKING EVIDENCE supporting the idea that the universe is twice the size previously calculated has been obtained by University of California and Australian astronomers.

Results are announced by Dr. Gerald E. Kron of Lick Observatory and Dr. S. C. B. Gascoigne of Australia's Commonwealth Observatory to the Astronomical Society of the Pacific.

Evidence was obtained electronically in studies in Australia of globular clusters in the Magellanic Clouds.

Globular cluster magnitudes are one of the chief yardsticks of stellar distances, and the intergalactic distance scale is based on the Magellanic Clouds.

The astronomers found magnitudes of clusters in the clouds too faint if the present distance scale is accepted. However, if the clouds are twice the accepted distance from our galaxy, that would account for the faintness of the clusters. They conclude that if the Magellanic Clouds are twice the accepted distance, the other extra-galactic objects must be similarly twice as far away.

That would double the size of the known universe. The original theory that this is so was formed by Dr. Walter Baade of Mount Wilson Observatory.

Evidence for a larger size and older age of the universe based on photometric globular cluster magnitudes was also reported by Dr. Harlow Shapley of Harvard to the American Astronomical Society in December. (See SNL, Jan. 10, p. 19.)

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MARINE BIOLOGY

Whale's Milk Richer In Fat and Protein

► TO DISCOVER how whale's milk compares with cow's milk, first milk a whale.

And that is what the whaling vessels Southern Venturer and Southern Harvester did eight times for Dr. J. C. D. White of the Hannah Dairy Research Institute, Kirkhill, England. They collected milk from the mammary glands of two blue whales

and six fin whales during the process of cutting the blubber from the carcasses.

The milk, which had the consistency of heavy cream, was white or pale cream in color, Dr. White states in *Nature* (April 4). It had a faint fish-like odor. When analyzed, it was found to be much richer in fat and protein than cow's milk, but contained less lactose sugar.

Because international regulations forbid the killing of whales with suckling calves, it is only rarely and accidentally that lactating specimens are taken. From 1948 to 1952, in which time the Southern Harvester and Southern Venturer took between 16,000 and 17,000 whales, only 24 lactating whales were killed.

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PATHOLOGY

Unusual Lung Tumors Chiefly Affect Women

► ACCIDENTAL DISCOVERY of 20 cases of unusual, very small lung tumors that chiefly afflict women at an average age of 57 was reported by Dr. John T. Prior of the State University of New York Medical Center, Syracuse, N. Y., at the meeting of the American Association of Pathologists and Bacteriologists in Chicago.

Only 13 other cases of this type of tumor have previously been reported.

Malignant tumors, or cancers, of the lungs chiefly afflict men.

The tumors Dr. Prior reported are not, in his opinion, cancerous, although those who have previously studied them think they are.

Dr. Prior discovered the 20 he reported in examinations of autopsy material and of material removed during surgical operations. The tumors do not appear to be associated with any co-existing lung disease, although about one-fourth the patients had bronchiectasis.

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PHYSICS

Acousto-Electric Effect Discovered in Crystals

► PREDICTION OF the discovery of a new acousto-electric effect, by which electricity is generated by sound, is made by Dr. R. H. Parmenter of the Massachusetts Institute of Technology, Cambridge.

By exploring theoretically what happens when a crystal, such as in sodium or germanium, has a longitudinal acoustic wave travel through it, Dr. Parmenter concludes that it should be possible to measure the generated current, which is dependent on the power but not the frequency of the sound.

The new results may help explain some of the effects being obtained with semi-conductors. The research is reported to the American Physical Society's *Physical Review* (March 1).

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