phine, comes from the opium of the poppy flower.

If the persistence of war in the Far East should ultimately interfere with the world's supply of opium for medicinal purposes, it now appears that physicians will not lack for a pain-relieving substitute that can be made in the laboratories of the chemist, from materials that are readily available.

Dr. Mosettig and his co-workers at the University of Virginia are part of a group of medical scientists who are tackling that vastly vital problem of finding an effective pain-killing narcotic that will not be habit-forming. Their work and their goal is the chemists' contribution toward ridding the world of the menace of narcotic drug addiction.

The research is under the guidance of the National Research Council, the U. S. Public Health Service and the Narcotic Bureau of the U. S. Treasury Department.

The drug described by Dr. Mosettig has so far only been tried on experimental laboratory animals. Whether or not it has addiction or habit-forming properties is not yet known and will not be until it is tried out on humans.

Codeine, which the new drug seems to resemble more closely than it does morphine, is less habit forming than morphine. This property of codeine is partly due to its chemical composition and partly because it is more readily soluble than is morphine. Much larger doses of codeine, therefore, must be taken to get the physiological and mental "kick" attained by morphine addicts. All this means that codeine is less desirable from the addict's point of view.

Science News Letter, January 15, 1938

MEDICINE

Nasal Spraying Seems Best Hope of Preventing Polio

Not Completely Successful at Present, It May Be When Details Are Perfected; Should Lose Smell Sense

NEW research which gives a clue to the mechanism that gives immunity to infantile paralysis and seems to show that spraying of the nose with chemical or other germ-fighting agents will eventually prove the means of preventing this crippling malady was reported at the meetings of the Society of American Bacteriologists.

In actual practice with children, the method has so far not been anything like 100 per cent. successful. But from reports presented, it appears that the method is fundamentally sound and that success is only a matter of perfecting details, such as finding the best substance to spray and the surest way of getting the spray onto the strategic area.

The lining of the nose appears to be the key to the situation. Not only does the virus of the disease enter the body through this lining, but resistance to the virus develops naturally in this lining. This last important point appears from research reported by Drs. Albert B. Sabin and Peter K. Olitsky of the Rockefeller Institute for Medical Research.

They found that when a monkey becomes immune to the disease, as a result of having had one attack, the cells of the membranes that line his nose have antibodies—germ-fighters—that can dispose of the infantile paralysis virus and prevent its getting at the nerves to destroy them and cause paralysis of muscles.

Nasal sprays have been used heretofore with the idea that they could block the passage of the virus by sealing up the membranes. Drs. Sabin and Olitsky investigated this point also, but so far have been unable to discover whether this actually is the case, or whether the chemical of the spray exerts its protective action in some other way.

Of all the chemicals they tested, zinc sulfate was the most effective for protecting monkeys against the disease.

Loss of Smell Important

Loss of the sense of smell after the nose has been sprayed with zinc sulfate is a sign that the spraying has been done thoroughly enough to protect the child or adult against infantile paralysis, Dr. E. W. Schultz of Stanford University pointed out.

Dr. Schultz is leader of one of the research teams that found zinc sulfate nasal sprays effective in protecting monkeys against the disease.

Reason for the failure of the spray to give children as much protection as it does monkeys is because the spraying was not done thoroughly enough, Dr. Schultz believes. The virus which causes infantile paralysis gets into the body through the tiny hair-like endings of the nerve of smell. When these nerve endings are destroyed by chemicals, the virus apparently cannot get through. Destruction of the nerve endings can be detected by testing the sense of smell. When it is lost—scientists call the condition anosmia—Dr. Schultz believes it is a sign that the child is protected against the disease. The loss is only temporary, as the nerve endings regenerate. In children the loss of sense of smell following chemical spraying may last only 3 or 4 days, and in adults it may be lost for a few months. When the sense of smell returns, it is time to spray again, if infantile paralysis is still prevalent in the neighborhood.

Vaccination will not protect against infantile paralysis, Dr. Schultz reported, because vaccination is only effective against germs that get into the blood. The infantile paralysis virus which travels nerve routes rather than the blood route must be fought by chemicals that will strengthen nerve resistance. So far, no way of doing this other than by chemical blockade of the nerve endings with a spray is known.

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CHEMISTRY

Spray Drying Produces Tiny Bubbles of Milk

THE NEW methods of spray drying, which is used for milk, eggs, soap, potato flour or blood, were described at the 4th Chemical Engineering Symposium held at the University of Pennsylvania.

If you have ever used any of these dried products you may have noticed that they may come in the form of tiny, dried bubbles which are light and hollow inside. It is spray drying which produces this unsual form. Additional solubility attained when one wants to put the dried product back into an edible or usable form is a merit of the method.

Ben B. Fogler and Robert V. Kleinschmidt of Arthur D. Little, Inc., described new techniques. It takes only from 15 to 30 seconds for little liquid bubbles of the material to be dried into hollow spheres, they indicated. Great towers, sometimes two stories high, are employed. The sprayed solution comes in the top of the tower and drops by gravity during the drying.

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