

BIOCHEMISTRY

ACTH Synthesis Nearer From Clues to Structure

► THE REVELATION of a part of the molecular structure of ACTH, an important step toward possible synthetic production of the important pituitary hormone, has been reported by a group of University of California scientists.

The achievement is reported in *Nature* by Dr. C. H. Li, who first isolated the hormone over a decade ago, and his colleagues, Drs. Irving I. Geschwind, Anthony L. Levy, J. Ieuan Harris, Jonathan S. Dixon, Ning G. Pon and Jerker O. Porath.

The scientists also report that their new insight into ACTH structure was made possible by another achievement, the first purification of ACTH from sheep glands. Pure hog gland ACTH had been isolated earlier by Merck and Armour laboratory scientists.

The work confirmed that there are several different distinct forms of ACTH, and that ACTH used in the past has been a mixture of these distinct forms. Dr. Li calls the newly-purified sheep hormone alpha-corticotropin, indicating that other distinct forms of the hormone will be forthcoming.

The new hormone has a molecular weight of 4,500, and contains 39 amino acids, or building blocks. The scientists were able to determine the arrangement of some of these amino acids. There are indications that some of the remaining ACTH forms may contain as few as 25 amino acids, and that their structures may be more fully and readily determined.

The new hormone, about 150 times as powerful as ordinary ACTH, has been demonstrated to be active in man in clinical trials.

Science News Letter, April 24, 1954

MEDICINE

Cat Scratch Disease Cause Being Sought

► A SEARCH is on for the germ or virus that causes cat scratch disease. This strange ailment which follows a cat scratch or other skin injury was unknown before 1932.

The first case in the United States was reported in 1951. Now 160 cases have been reported from 27 states and eight foreign countries. Latest report on the disease comes from Drs. Worth B. Daniels and Frank G. MacMurray of Washington, D. C., who were also among the first to report cases back in 1951.

The disease starts with a bump or sore on the skin, followed within a few weeks by inflammation of lymph glands and usually fever with aches and pains, nausea and weakness.

Cat scratch fever mimics such diseases as cancer, tuberculosis, tularemia (rabbit fever), infected cysts and infectious mononucleosis. Fortunately, a skin test can now be made to establish the diagnosis of cat scratch fever and rule out the other more serious diseases.

The symptoms disappear spontaneously.

Some of the antibiotics may help in some cases.

Dr. Charles Armstrong, at the U. S. National Institutes of Health, Bethesda, Md., is now trying to isolate the germ or virus that causes the disease. Because there have not been many patients in the Washington area lately, his search is hampered somewhat by lack of material.

The research is reported in the *Journal of the American Medical Association* (April 10).

Science News Letter, April 24, 1954

MEDICINE

Foresee Polio Vaccine From Virus Manipulating

► PREVENTING POLIO by vaccinating with a harmless relative of the natural polio virus is foreseen by Dr. Joseph L. Melnick of Yale University, New Haven, Conn.

This would be like the daddy of all vaccinations, that against smallpox in which the harmless but related cowpox virus is used to protect against smallpox.

The increased tempo of current research on the genetics of viruses gives Dr. Melnick hope that this kind of vaccination against polio is coming in the future.

Meanwhile, he announced at the meeting of the Federation of American Societies for Experimental Biology in Atlantic City, N. J., that he has succeeded in vaccinating monkeys against polio with a live but greatly weakened strain of polio viruses.

The polio vaccine developed by Dr. Jonas Salk of Pittsburgh, which is being tested on children throughout the country, is made of killed polio viruses.

Dr. Melnick's live virus vaccine is made by passing the viruses through cultures of testicular and kidney tissue free of nerve cells. After repeated passages of this sort, mixed populations of paralysis-producing and harmless viruses are obtained. From these, harmless mutations of all three polio viruses are obtained. These are the ones that protect monkeys against the disease.

The manipulation of the polio viruses to get forms that are living but harmless is a start on the development of the harmless polio virus relative.

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BIOLOGY

Salamanders Shun Light But Love Moisture**See Front Cover**

► THE SALAMANDER is a moisture loving amphibian that is usually active only at night. In the North, the creatures spend the winter in hibernation, leaving their mud burrows in the spring.

This amphibian, shown on the cover of this week's SCIENCE NEWS LETTER, can be found under logs or stones. Some live in water, and all eat living animals. It is frequently confused with lizards, which are reptiles.

Science News Letter, April 24, 1954

IN SCIEN

TECHNOLOGY

Jet Torch Used to Fix Casting Imperfections

► A BRILLIANT electric torch with a 6,000-degree Fahrenheit flame is being used to fix defects in large steel castings for the American Chain and Cable Co., Reading, Pa.

It turns out better quality work than the conventional pneumatic chipping gun, and has replaced this tool in 75% of the foundry's cleaning operations. It also is being used to melt away excess metal from the castings.

The jet torch, as it is called, is a carbon electrode with a diameter of one-half an inch, mounted in a suitable holder. A small jet of air is blown out beneath the electric flame. The air whisks away the molten metal and slag burned from the casting. Workmen then repair the defect by building up the worked-over area with weld metal.

Science News Letter, April 24, 1954

PUBLIC HEALTH

Incendiary Bombs Release Suffocating Gas

► A REMINDER that H-bombs, A-bombs and nerve gas are not the only gas and bomb danger to be met in war comes in a report in the *Archives of Otolaryngology*.

Gases from incendiary phosphorus bombs can cause suffocation and subsequent death unless the victims get an immediate operation to cut an opening into their windpipes.

Experience with this bomb danger in Berlin during World War II led Dr. Heinz G. A. Bayer, now at Civil Hospital, Kandy, Ceylon, to run some guinea pig tests. When these were poisoned by the burning of white phosphorus, the skin and the mucous linings of the windpipe and larynx were inflamed and destroyed, and spots of bronchopneumonia appeared on the lungs.

These effects, Dr. Bayer explained, were the result of oxides produced by the burning of the phosphorus. When these oxides came in contact with the mucous membranes of the respiratory tract, they extracted water and oxygen from the tissues and formed acids that cauterized the membranes and in combination caused suffocation.

For protection, especially of civilians, against this phosphorus gas danger Dr. Bayer advises one of the following: 1. gas masks; 2. breathing through a wet towel or handkerchief; 3. breathing through a towel soaked in a solution of potassium permanganate. This will convert the oxides of phosphorus into acids which will be held in the towel and kept from the breathing tract.

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CE FIELDS

VIROLOGY

Mold Remedy for Polio Hinted in Mouse Study

► HINT OF a possible mold remedy, related to penicillin, for polio patients appears in a report by Dr. Kenneth W. Cochran of the University of Michigan School of Public Health at the meetings of the Federation of American Societies for Experimental Biology in Atlantic City, N. J.

Dr. Cochran has discovered that the crude filtrate of a penicillium mold, known as M5-8450, has "a prophylactic action" against the polio virus in mice and monkeys.

The mice had been given polio virus by injection into their bellies, and the monkeys got theirs by injection under the skin. When the virus is put into the animal's brain, it seems to be less vulnerable to the action of M5-8450.

In some dosages, mice given the virus by inoculation into the brain survived about twice as long when treated with M5-8450 as untreated mice. Treating the mice before the polio virus injections further increased the survival time of the animals.

Whether this or some other extract from the penicillium mold can be converted into an effective remedy or preventive of polio in humans remains for further research to show. Penicillin, which also comes from a penicillium mold, has not shown any anti-polio action. Dr. Cochran's studies followed an earlier discovery by another scientist that this material has antiviral action against viruses that attack nervous tissue, such as the polio viruses.

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PSYCHOLOGY

Patients Rescued By Group Treatment

► PEOPLE WHO are hardly alive, mentally, are being rescued by treatment in groups instead of alone.

How 28 men schizophrenic patients were rescued from an apathetic or stuporous life on the "back wards" of a mental hospital and restored, through group therapy, to an interest in their surroundings and improved so that they can enjoy movies, athletics and hospital parties was described to the Eastern Psychological Association meeting in New York by Drs. Joseph M. Sacks and Stanley Berger of the Franklin D. Roosevelt Veterans Administration Hospital, Montrose, N. Y.

When the men first came to the therapeutic sessions, they did not know what group therapy was all about and did not care. They paid no attention to other patients or the doctor. They sat the whole time lost in their own reveries.

Now, a year later, the sessions are lively, often with several patients trying to talk at the same time. They are interested, not only in themselves but in each other and in the doctor. Many take part in hospital activities and work details.

Progress of these patients was compared with that of another group of similar age, duration of hospitalization, diagnosis, education and intelligence who did not receive the group treatment.

Forty-six percent of the group therapy patients are improved as compared with only four percent of the others.

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OCEANOGRAPHY

Study Ocean Bottoms for Key to Drilling Gushers

► OIL PROSPECTORS should study the ocean bottom before drilling for gushers if they hope to repeat recent discoveries of booming fields in Canada, west Texas and the Middle East.

These big oil fields were found in limestone and other rocks laid down millions of years ago when shallow seas covered much of the continents.

The key to finding such lucrative limestone deposits lies in a close study of the formation of limy sediments in the ocean today, Prof. John Rodgers of Yale University told the American Association of Petroleum Geologists meeting in St. Louis.

By understanding the sediments now in the ocean, prospectors can concentrate on the specific types of limestone most likely to contain oil.

Limestone sediments being laid down at the present time are of three kinds, Prof. Rodgers said. Limy deep-sea oozes cover a third of the ocean bottoms. They are relatively recent, only 100,000,000 years old, and have not yet yielded any oil.

Coral reefs are widespread today in warm oceans, and ancient reefs now on dry land have been sites of important oil field discoveries in the last 10 years.

The third type of sediment is formed in shallow parts of the ocean, such as off the Florida coast. Deposits of this sort account for the largest amounts of ancient limestone and more and more oil is being found in such deposits, Prof. Rodgers pointed out.

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MEDICINE

Hydrocortisone Helps Poison Ivy Victims

► HYDROCORTISONE may help some poison ivy victims this season. "Much improvement" in 36 of 47 patients given this hormone chemical in either pills or ointment is reported by Drs. Leon Goldman and Robert H. Preston of the University of Cincinnati College of Medicine in the *Journal of the American Medical Association* (April 17).

Science News Letter, April 24, 1954

NUTRITION

Poor Diet Leads to Poor Gland Function

► A POOR diet, especially one scanty in animal protein and the vitamins, riboflavin and niacin, leads to disturbances of the body's glands, Dr. Salvador Zubiran of the Mexican National University School of Medicine, Mexico City, declared at the meeting of the American College of Physicians in Chicago.

He reported a study of 583 patients with chronic malnutrition at the Hospital for Nutritional Diseases in Mexico. Associated with him in the study were Drs. Francisco Gomez Mont and Jose Laguna.

Investigations of food habits, gland function and clinical signs and symptoms were carried out, in addition to histopathological studies, function tests and hormone determinations.

The endocrine disturbances resemble those resulting from decreased activities of the pituitary, adrenals and gonads, Dr. Zubiran said. He offered the theory:

"In malnutrition, as a consequence of the lowered general metabolism, both the utilization of hormones in the tissues and their destruction in the liver are diminished. Thus, although the activity of the target glands is similarly decreased, the blood concentration of hormones is normal. The net result is the usual inhibition of pituitary function."

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CHEMISTRY

Living Matter Mimicked By Silicone Compounds

► LIVING ORGANIC chemicals are mimicked by new and strange offspring of the marriage of the cold, flinty element, silicon, with the element carbon, which is the basis of living compounds, the American Chemical Society meeting in Kansas City, Mo., was told. The families of silicon-based compounds nevertheless show family resemblances to non-living matter.

Included in the families of new silicones are relatives of organophosphorus nerve gases, which are the subject of extensive war gas experimentation. The new silicone phosphorus compounds do not have the same effects on living matter as the nerve gases. These new compounds were reported by A. R. Gilbert and F. M. Precopio of the General Electric Research Laboratory, Schenectady, N. Y.

Compounds are formed when carbon joins silicon without oxygen as an intermediary. These offer a new world to chemists learning to make and use them.

The profound effect that silicon exerts is unexpected on the basis of carbon chemistry, J. R. Elliott, also of the General Electric Co., explained. Now chemists are trying to make the silicones more reactive, whereas heretofore they have been valued for their inertness.

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