MEDICINE

PABA and Salicylates Give Rheumatic Fever Treatment

➤ BETTER treatment for rheumatic fever may result from an innovation suggested by Dr. Hugh R. Butt of the Mayo Clinic. This consists in giving para-aminobenzoic acid, a member of the vitamin B complex familiarly known as PABA, with salicylates, drugs used for rheumatic fever treatment for three-fourths of a century.

Good results with this combined PABA and salicylate treatment in the first patient it was tried on are reported by Dr. Butt and Drs. Thomas J. Dry and Charles H. Scheifley in the Proceedings of the Staff Meetings of the Mayo Clinic.

PABA, they found in this case and in two control experiments on healthy men, increases the amount of the salicylate in the blood and therefore, presumably, gives this drug a better chance to combat the rheumatic fever.

Science News Letter, January 25, 1947

METEOROLOGY

Thunderstorm Study Planned for Ohio Area

➤ FRONTAL TYPE thunderstorms of the Middle West are to be studied by Army planes equipped with radar and other weather instruments, the U. S. Weather Bureau revealed.

It is a joint project, to be based at the Clinton County, Ohio, Army air field, in which the Bureau, the Army and the Navy will cooperate. The National Advisory Committee for Aeronautics and certain universities will also join in the research.

Frontal type storms are common from the Rockies to the Atlantic seaboard during certain months of the year, the Bureau states. They are caused by the passage of cold fronts or cold air masses over areas that have been subjected to warm air masses. These types of thunderstorms are usually more violent than the convectional or radiation types common in Florida, already studied by the same agencies.

The project will cover a 450-square mile area southeast of Wilmington, Ohio, which is adjacent to the Army field. Operations will begin about the first of April and continue until October. The data collected should prove of great importance to aviation, farmers, business and the general public. The project in general will follow the procedures of the similar Florida study of last summer.

In addition to the use of Black Widow Army planes to be used in observations in the air, some 60 land-based stations will be established, encompassing the area. The Army planes, carrying a Weather Bureau observer and Army radar operator, will fly through the storms. Light-powered Navy planes will circle the storms, and also fly through bulging cumulus clouds, to measure storm characteristics.

Science News Letter, January 25, 1947

AERONAUTICS

Portable Lighting System Aids Safe Night Landings

➤ PRIVATE PLANES using small-town airfields will be able to make safe night-landings with the help of a new portable lighting system revealed by Westinghouse at its lighting division plant. The relatively inexpensive system requires only one attendant.

The system includes a beacon, floodlights, landing strip markers and a wind cone. The key of the system is a two-wheel trailer which carries an electric generator and from two to four powerful floodlights, depending upon local needs. The trailer can be pulled by one man or towed by a car.

In use, the trailer with its floodlights is placed at one end of the runway with its beams directed down the landing strip. The beams light up reflecting runway markers which are stuck in the ground at about 100-foot intervals. These markers, shaped like croquet wickets, are made of wire covered with cloth that is impregnated with particles of glass. The shining glass clearly outlines the landing strip to the approaching plane.

When the wind changes in direction, one field attendant can relocate the entire equipment in a short while by merely moving the floodlight trailer and the runway markers.

The beacon used with the system is three and a half feet high, and can be mounted on a hangar or an inexpensive tower. Its 500-watt tubular lamp produces two brilliant 100,000 candlepower beams, visible 10 miles in normal weather, which are directed by lenses on opposite sides as the beacon revolves six times a minute. A duplicate lamp and lens system in the beacon is available as a standby. The eight-foot wind cone is mounted on a hinged pole and lighted by four 100-watt lamps.

Science News Letter, January 25, 1947

IN SCIEN

PHYSICS

Loud-Speaker System Is Used on Train

➤ DETAILS ARE now revealed of a loud-speaker system to be used on a new Baltimore and Ohio train by means of which all passengers will be at all times within reach of the conductor's voice announcing from any one of several locations.

The same device will also bring radio programs, when not in use for other purposes. The train is for regular runs between Baltimore and Cincinnati by way of the nation's capital. Each car is equipped with two loud-speaker units, one power amplifier, and a rotary converter.

Microphones for the use of the conductor, stewardess and dining car steward are located at the buffet lunch counter, the conductor's desk in the club car, the stewardess' compartment in the first coach, and the dining car. Transmission through the train is by four wires running the length of the train and connected through regulation train connectors.

Radio receivers are in the same locations as the microphones. By means of a simple switch, a radio program can be cut at any moment to give way to another announcement.

Science News Letter, January 25, 1947

BACTERIOLOGY

Essence of TB Resistance May Be Isolated

➤ THE MATERIAL in the tuberculosis germ essential for producing resistance to the germ may have been isolated by Dr. Nine Choucroun at Cornell University Medical College.

It is a complex of starchy and fat material that is soluble in chloroform. The material was obtained in a paraffin-oil extract of dead tuberculosis germs, Dr. Choucroun reports in *Science* (Jan. 10).

Animals injected with this material in oil "showed an excellent acquired resistance against infection when they received living bacilli (tb germs) more than three months after they were injected.

Science News Letter, January 25, 1947

CE FIELDS

AERONAUTICS

Helicopters to Shuttle Passengers to Airports

➤ HELICOPTERS that have proved their worth in shuttling mail from city post-offices to neighboring airports are now entering a new job. They will be used to shuttle passengers from suburban cities to mainline airports used by long-range transports.

A large-capacity Sikorsky craft will be tested in this service this spring by United Airlines, and additional craft will probably follow the tryout. Other companies are understood to have similar plans. The proposed service is for the benefit of important communities at which landings by commercial transports cannot be made economically.

The helicopter ordered by United Airlines can carry a pilot, three passengers, baggage and 250 pounds of cargo. As an all-cargo plane it can carry 790 pounds.

Science News Letter, January 25, 1947

ENGINEERING

New Floor Construction Gives Stronger Bridges

➤ STRONGER bridges with lighter steel beams in their concrete flooring are possible with a new type of floor construction, the American Society of Civil Engineers was told by C. P. Siess of the University of Illinois. It is called "composite construction."

This new construction utilizes a design which provides rigid connection between the concrete slab that forms the roadway of the bridge and the steel I-beams on which it rests. This is accomplished by welding steel clips to the tops of the beams and embedding them into the concrete as it is poured.

This method enables bridge builders to obtain greater stiffness in their structures, and to save up to 30% in the weight of steel beams used. It often permits the use of a shallower beam. Even with a lighter section, he said, the stiffness of the composite beam will be from two to three times as great as the stiffness of the original non-composite beam.

Science News Letter, January 25, 1947

MEDICINE

Purest Polio Virus Yet Gives Hope of Vaccine

➤ THE PUREST POLIO virus yet obtained has been isolated by Drs. Hubert S. Loring and C. E. Schwerdt of Stanford University.

The virus is 80% pure or better, the scientists state in announcing their achievement.

With a relatively pure virus obtainable there is hope of producing an effective vaccine against infantile paralysis, but it may be a long time before the hope is realized.

One apparent obstacle to speedy production of a vaccine is the small yield of virus. Only about a thousandth part of a gram of virus, or 0.000035 ounce, is obtained from 150 grams (about five ounces) of starting material, which is the brain and spinal cord of cotton rats infected with infantile paralysis.

High speed centrifugation, near-freezing temperatures and chemical treatment are used in isolating the virus. Seen with the electron microscope, it appears as a relatively spherical particle so tiny that its diameter is estimated as 25 billionths of a meter. Chemically, the virus reacts as a protein.

Experiments leading to its isolation in 80% purity were financed by the National Foundation for Infantile Paralysis with dimes contributed by the American people. Technical assistance was given by Patricia Ruth Schwerdt, Dr. Schwerdt's wife; Madeline Brill, Nancy Lawrence, and Dr. Jane Anderson.

Science News Letter, January 25, 1947

CHEMISTRY

"All-Weather" Paper Finds Peacetime Uses

➤ "ALL-WEATHER" paper which preserved wartime maps through water, mud, grime and oil in all theaters of World War II will find many important peacetime uses, scientists at the National Bureau of Standards, who helped develop the paper, predict.

Some of the possible uses for the strong, tough paper are to wrap such varied items as wet fruits and vegetables or radio parts, to make strong bags and sacks, and for outdoor advertising.

Secret of the high wet-strength of the map paper is a colloidal solution of melamine-formaldehyde resin added to the pulp. This resin bonding process helps the paper stand up under conditions which would disintegrate conventional types of paper. Best results were obtained in experiments by using fiber "furnishes" of 100% bleached sulfate pulps. Opacity, the ability to resist light rays, was achieved by adding titanium dioxide.

A light-weight type of map paper was developed late in the war to save space and weight in air shipment. This paper saved an estimated 25% in shipping weight and bulk.

Experiments are now being conducted at the Bureau of Standards to produce papers with even wider uses than the wartime map paper.

Science News Letter, January 25, 1947

INDUSTRY

1946 Rubber Production Greatly Decreased Shortage

➤ THE 66,000,000 passenger car tires produced by American companies during 1946 brought joy to hundreds of thousands of car owners, but there are other users of rubber whose demands were met to the same degree. They range from doctors to coal miners.

Rubber products in the public health field are particularly important for surgical goods, hospital sheeting, rubber drug sundries, and protective rubber footwear and clothing. Rubber in industry is important, ranging in uses from packing material to great conveyor belts, with large quantities employed for electric insulation.

Achievements of the rubber industry in production during 1946 to meet backlogs in orders were revealed by the Rubber Manufacturers Association. For the first time in history, it says, annual rubber consumption topped the 1,000,000-ton mark. Approximately 37% natural rubber and 63% synthetic rubber were used. During the preceding year the industry used 12% natural and 88% synthetic rubber of the GR-S type.

In addition to tires for passenger cars, 13,680,000 casings were made for trucks and buses. This is 92% above the best previous peacetime record. Passenger tire production was approximately one-third greater than in 1940.

By and large, the Association states, rubber manufacturers escaped any major production stoppages during the year, though these were frequently threatened by scarcities of raw materials and components.

Science News Letter, January 25, 1947