

MEDICINE

Safer Use of Sulfas

Wider benefits from drugs may result from research. Toxic symptoms prevented in rats. Experiments hint of discovery of new B vitamins.

► GREATER, because safer, usefulness for the sulfa drugs and the discovery of several new B vitamins may result from research by Dr. S. S. Spicer, Dr. Floyd S. Daft, Dr. L. L. Ashburn and Dr. W. H. Sebrell, of the National Institute of Health, U. S. Public Health Service. Results of their research so far are reported in *Science* (Oct. 2) with more details scheduled for early publication in *Public Health Reports*.

The remarkable achievements of the sulfa drugs in fighting germ infections, from pneumonia to infections in wounds, have been somewhat offset by the development in occasional patients of what doctors call "toxic reactions" to the drugs. Among these reactions, which both deny the patient the benefit of the drug and give him another ailment to fight, is agranulocytosis. In this condition the granulocytes, white blood cells that fight germ diseases, are greatly reduced in numbers. About three out of every 100 patients given sulfa drugs develop either agranulocytosis or anemia. Thirty or forty have already died of agranulocytosis following sulfa drug treatment.

This condition may result because the sulfa drugs interfere with the production or action of some as yet unknown vitamin, it appears from the experiments by the Public Health Service scientists. If that proves to be the case, suitable doses of the vitamin may make possible the safer use of the sulfa drugs in many more patients.

Rats have so far been the patients in these latest discoveries, so the scientists are cautious about promising too much benefit for humans. Rats on a purified diet supplemented by all known B vitamins needed to keep rats healthy develop agranulocytosis from sulfaguandine and sulfasuxadine, two of the newest sulfa drugs. They also develop hardening and calcification of the blood vessels; necrosis and calcification of voluntary muscles; and a skin disease. The latter can be successfully treated or prevented with biotin.

The other symptoms can be overcome by doses of materials extracted from liver and yeast. These materials are not any of the known B vitamins and

the doses effective in overcoming toxic effects of sulfa drugs are so small the scientists feel sure the materials must be vitamins.

The search for possible new vitamins started this work which may lead to greater benefits from sulfa drugs. A number of scientists had found that sulfaguandine retarded the growth of young rats fed a purified diet. Rats manufacture some growth vitamins in their intestinal tracts, so it was thought the sulfa drug effect on rat growth might be due to interference with this vitamin manufacture.

Investigation of this problem led to the realization that probably several new vitamins existed which could be discovered with the aid of the sulfa drugs. But the possibility of increasing the effectiveness of sulfa drug treatment is so important at the present time that the work is now being pushed along those lines.

Science News Letter, October 10, 1942

ENGINEERING

New RCA Laboratories Dedicated at Princeton

► "ELECTRON HOUSE," new home of RCA Laboratories, was dedicated in Princeton, where a year ago there was

only quiet, green New Jersey farmland.

It is a 488-foot long, three-story structure with 150 laboratory bays in which almost every kind of research related to radio and electronics can be undertaken. Considered "one of America's great arsenals of science," many of the projects are now military and secret. From these new laboratories are sure to come new developments not only important in war but useful in the peace that is to follow.

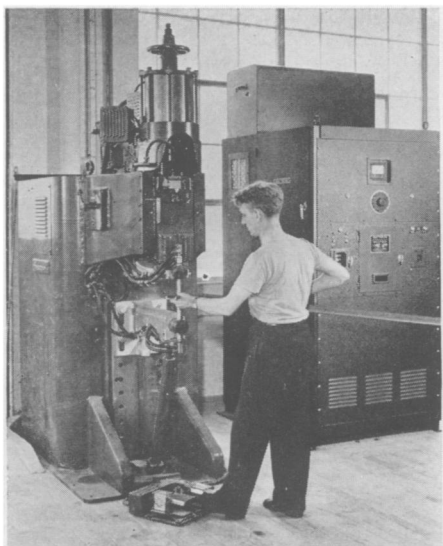
Laboratories in the new building are devoted to television, optics, chemistry, acoustics, electron tube making, radio facsimile, cathode ray, transmitter tubes, etc. A high frequency laboratory is on the roof. In a corner of the 260-acre area is a field laboratory. In an extensive model shop all sorts of experimental instruments are made as they are needed.

For research with fluorescent or "glow" materials, the chemical laboratory has several dust-proof rooms. The rooms of the optics laboratory can be opened up so as to get several hundred feet of space in which to test long beams of light. A free sound room, three stories high, is so heavily padded and acoustically "dead" that one of the scientists explained that spoken words sound "as if you are going under ether." This room does for sound what a darkroom does for light.

Supply shafts of unique design run from basement to roof in 104 locations to carry all sorts of electricity, gas, water, compressed air and gases, etc. to 420 work benches. There are little workshops in the corridors on each floor where a researcher can go to make with his own hands a part that he needs immediately.



NEW LABORATORIES—This is the new building of RCA Laboratories, facing the afternoon sunshine.



BIG—This resistance welder at RCA Laboratories is one of the largest in the country. It will weld aluminum and has an electronic power supply, which in appearance resembles a radio transmitter.

The dedication ceremonies were held on Sunday (Sept. 27) in order not to interrupt the daily work of both visitors and the laboratories.

Science News Letter, October 10, 1942

PHYSICS

Bump Gives Automobile Seven Kinds of Motion

➤ AN AUTOMOBILE traveling over a bumpy road is subject to seven different kinds of motion in addition to the smooth straightforward one we would all prefer. These are the bounce, pitch and roll, and four kinds of vibration from the wheels. Each has a different frequency. All seven are excited by the passage of one wheel over one bump. Multiply the number of bumps by the number of wheels and you may want to stay at home.

All this was found out by Pierre Ernest Mercier of Electro-Mechanical Research, Inc., of Houston, Texas, after an extensive study of the subject which he reported in the *Journal of Applied Physics*. As a result he finds that independent springing of each wheel is better than springing only the axles. But he has also devised and tested a number of "suspensions" which are superior to any now in use. Perhaps, after the war, our automobiles will roll more smoothly than ever.

Science News Letter, October 10, 1942

ASTRONOMY

Comet Is Not New One

"Discovery" announced by Finnish astronomer turns out to be the famous Schwassmann-Wachmann Comet No. 1, constantly observed for last 15 years.

➤ A NEW comet announced by L. Oterma at the Observatory of the University of Turku, Finland, reported to Harvard Observatory through Lundmark, Sweden, is declared by Harvard astronomers to be none other than the famous Schwassmann-Wachmann Comet No. 1 which has been under constant observation by American astronomers for the past 15 years.

This is not the first time that this comet has been mistaken for a new one. On August 29, 1941, Dr. G. Neujmin of the Simeis Observatory in the Crimea observed it and announced a new comet. But only a few weeks before Prof. G. Van Biesbroeck had observed it at the Yerkes Observatory. This time again it was observed only shortly before being mistaken for new, namely, on Sept. 6 at the McDonald Observatory. Dr. Van Biesbroeck has recently calculated its positions for the last four months of this year.

This comet is one of the most remark-

able known. Its orbit is nearly circular, lying wholly between the orbits of Jupiter and Saturn about 500,000,000 miles from the sun—five times the distance of the earth from the sun. From time to time, the comet, for some unknown reason, increases in brightness, although never becoming visible to the unaided eye. It was during one of these flare-ups that it was discovered in 1927 by the two German astronomers whose name it bears. And it was at a flare-up on each occasion that it was mistaken for new.

Because of its nearly circular orbit, the comet is seldom beyond reach of our powerful telescopes and our photographic plates. It descends at times to the 18th magnitude, at other times brightens, as at present, to the 12th magnitude, 250 times as bright. It shows at present a sharp nucleus surrounded by a nebulous envelope. At other times it appears like a faint star.

Science News Letter, October 10, 1942

ASTRONOMY

Only Skin Deep

Bursting forth of a new star is not a deep-seated cataclysm, but a surface explosion. Afterwards the star returns to its retiring normal life.

➤ A TEMPORARY star or nova which suddenly flares up in the heavens without warning and then gradually fades, is not quite the cataclysmal event that some theoretical physicists have supposed. This view was expressed by Dr. Dean B. McLaughlin, professor of astronomy at the University of Michigan and secretary of the American Astronomical Society, speaking before the Rittenhouse Astronomical Society at the Franklin Institute.

The outburst is a surface explosion, Dr. McLaughlin believes, of tremendous proportions to be sure, involving as it does the entire surface, but not necessarily fatal. After "blowing off steam," the star returns to approximately its former state. Its temporary excursion into notoriety produces little change in its nor-

mally humdrum life in the heavens.

Dr. McLaughlin's view is based on a personal examination of all spectra of "novae," or new stars gathered at the University of Michigan Observatory and at the other leading observatories of the United States. It is a good idea, he said, for "one set of eyes, with one set of prejudices" to examine all the observational material.

New stars at maximum light, he explained, are about 50,000 times as bright as the sun, though they are so far distant that they appear like ordinary stars. Before outburst they are about the same real brightness as the sun but are smaller, denser and hotter—a type known as sub-dwarfs.

Increase of light from minimum to maximum takes only a few days, but