

the decline takes several years. The flare-up must be due to an explosion whose cause is not known. The surface layers expand as a cloud of gas around the star at a speed of hundreds of miles per second. After some months the expelled clouds of gas become visible as a faint nebula around the star.

At the end of the decline the star

is apparently not changed from its previous condition, and it must be concluded that all the disturbance is superficial.

Altogether about 90 novae have been recorded in our milky way system, and over 100 have been found in the neighboring spiral nebula Andromeda.

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## PHARMACY

## Atabrine Production Big

**Synthetic anti-malarial now produced at rate of half billion tablets per year. Called satisfactory substitute for war-scarce quinine.**

► ATABRINE, substitute for war-scarce quinine, is now being produced at the rate of about a half billion tablets per year. Actual production totals may fall somewhat short of this estimate, according to authorities. Still there will be plenty of anti-malarial units to treat millions of cases of the deadly, disabling fever.

High speed laboratory machines are spewing tablets of the bright yellow crystals at an ever increasing rate—making bullets to attack malaria to which the armed forces are exposed.

With our men fighting the world round in malaria infested tropics, anti-malarial supplies are of vital importance. The periodic fever is not only a serious disease but could dangerously affect combat strength.

"We have four enemies," one military medical authority declares, "Japan, Germany, Italy—and malaria. There is only one that can lick us. That's malaria. We've got to get results."

Many Army doctors still prefer natural quinine, extracted from cinchona bark, to atabrine synthesized in the laboratory. But our dwindling stockpile of quinine was obtained mainly from Jap held territory in the Far East. Atabrine relieves the shortage.

It should do the job just as effectively as quinine, it is reported by most investigators. There are fewer relapses of cases treated with atabrine, in fact, than when treated with quinine.

Atabrine also compares favorably with quinine in suppression of the disease, clinical reports show. Malarial parasites which hitch-hike from one soldier to another via the mosquito, are eliminated from the blood picture in about a week under either method of treatment.

Only about a fifth as much atabrine as quinine is required for an effective dose. This amounts to about a seventy-second of an ounce of atabrine per day.

More undesirable side reactions are caused by atabrine than with quinine, some physicians believe, but this is probably not frequent or severe enough to be an important factor. Continued administration sometimes also causes a yellow coloration of the skin which disappears after a couple of weeks.

Known chemically as quinacrine hydrochloride, atabrine has been admitted to the new edition of the U. S. Pharmacopoeia, the official book of drugs which will be adopted in November.

Supplies of chemicals to make the medicine are reported as adequate for our needs. And as production goes up, cost goes down. At the present price, it costs the government about as much for atabrine to treat a case of malaria as it does to send an airmail letter, the manufacturer reports.

Quinine treatment costs several times as much.

Atabrine was tested during field maneuvers last fall. Results were called very good by Army doctors.

Although gigantic production estimates are unofficially confirmed in reliable quarters, the fact remains that only two companies are in production. Manufacture in this country is based on control of formerly German-owned patents now in the hands of the Alien Property Custodian.

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When plans for a *power dam* are drawn up, detailed descriptions of the geology of the proposed site, with data on the character and structure of the rock formations, must be tabulated.

## MEDICINE

## Hormones Are Concerned With Origin of Cancer

► SOMETIMES A WOMAN is afraid she has cancer because she has noticed some change in her breast or has had more or less bleeding than usual each month. These signs might mean cancer, and the wise woman will consult her physician about them at once. The physician may find, however, that the changes are due to change in hormone production.

Hormone disorders are particularly likely to occur in the forties, shortly before the change of life, at an age when tumors are also becoming more common. Hormones also may play a part in causing cancer to develop. To help women understand better the relation between hormones and cancer, Dr. Howard C. Taylor, Jr., of Memorial Hospital, New York, lectured on the subject at the officers training school of the Women's Field Army of the American Society for the Control of Cancer.

"The reproductive organs of women," he explained, "are to a large extent controlled by a special group of chemical substances called hormones. These substances are produced in several of the endocrine glands of the body, those having the most importance being the anterior pituitary gland and the ovary.

"The influence of the hormones is twofold. First of all they lead to the growth and development of the reproductive organs at the time of their adolescence and maintain them in an active state during the years of reproductive life. The hormones are, however, also responsible for the proper functioning of the uterus, the ovaries and the breasts, for the regular recurrence of menstruation and for much that is essential to the normal development of pregnancy.

"The evidence that the hormones are concerned with the origin of tumor growth is quite convincing. In many laboratories it has been possible by the injection of hormones, particularly those of the type formed in the ovary, to produce a great variety of tumors. In guinea pigs fibrous nodules develop in the uterus which are quite similar to the fibroids appearing so commonly in women at about the fortieth year. In mice the ovarian hormones certainly increase the tendency to cancer of the mammary glands.

"For the human being the evidence is not so good, but it has long been known that certain non-malignant

tumors of the uterus grow only during the years of active ovarian function and

begin to shrink after the change of life or if the ovaries are surgically removed."

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PSYCHOLOGY

## "Door-Key Children"

Youngsters who used to stay only a short while on the playground now arrive in the early morning with the front door key and money for the evening meal.

► "DOOR-KEY" CHILDREN of war workers are a new problem in many communities. Supplying these offspring of the war and their parents with proper recreation was the main problem of the War Recreation Congress meeting in Cincinnati.

Children whose parents are at work or war, often come to the playgrounds in the morning bringing the front door key with them. Children who used to stay only a short while now remain all day until mother returns from work.

On a Baltimore playground the youngsters deposit their keys on a key-board when they enter, Ruth Garber Ehlers, Baltimore supervisor of social recreation, reported. Many of them check marketing money with the leader. When it is time to go home, the leader returns keys and the grocery money for the evening meal.

Special central playgrounds have been established in defense areas so that the children can be cared for.

"Stowaways" have even been found here. Tots in baby carriages, too young to be accepted at the playgrounds, are left there when the leader isn't looking. The mothers go to work.

To care for these "defense work orphans," day nurseries have been opened in Paterson, N. J. Admission is 25 cents per day "American plan," according to William Bruterri, acting superintendent of recreation there.

Canada has found this problem serious enough to set up a government sponsored plan, Jean Hall, Women's Division of Canadian National Selective Service, told the Congress. The new program to care for children of war workers will go into effect within the next few weeks. Thousands of married women with children, answered the first call for workers without making proper provision for their offspring.

The Canadian plan, perhaps a fore-taste of things to come in this country, provides nursery care for small children. Lunches will be served to school child-

ren and they will be cared for after school hours until their mothers return from factories. There is also provision in the government plan for "foster homes" for those who prefer that type of care.

Despite separation of families by war work, after-hours recreation is helping to bring adults and children closer together in their relationships, said Russell J. Foval, superintendent of recreation at Alton, Ill., in addressing the meeting. Adult participation on the same playgrounds with the young people is reported greater than ever before.

Working at top speed in war plants, sometimes beset with war worries, such wholesome recreation is essential.

As war plants are thrown up, working hours "staggered" and now gasoline rationed, it is increasingly difficult to carry on the usual recreational program at industrial plants. Industries are doing what they can, but permanent facilities at the plants are often practically useless except for lunch hour or pre- and post-shift programs, W. H. Edmund of the Goodyear Aircraft Corporation, pointed out in one of the discussion groups of the War Recreation Congress. New industries, in many cases, are promoting and using community facilities in the neighborhoods where the employees live.

Other recreation leaders present also concentrated on plans to minimize the effect of war on the physical and mental health of John Q. Public.

"War inevitably distorts life," declared Ray Johns, director of field operations for the U. S. O., in addressing the War Recreation Congress. "War pressures and tensions can be met only by persons who have reserves of physical, intellectual, and spiritual resources. Recreation in war-time has an important role to play. Recreation is not a peacetime luxury; it is a war-time necessity. Recreation is more than an escape from war's tensions . . . Recreation maintains, creates morale."

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**GUAYULE**—These plants are two years old and contain about 9% rubber of dry weight.

AGRICULTURE

## Rubber Is Being Grown In California Valley

See Front Cover

► A SEA of guayule plants which will do their bit toward relieving the rubber shortage is shown under cultivation on the front cover of this week's SCIENCE NEWS LETTER.

It is the plantation of the Intercontinental Rubber Producers in the Salinas Valley, California, which is said to be the only place in the world where guayule is being cultivated. The plant grows wild in United States and elsewhere.

Rubber can be extracted from the plant after one year's growth, but the best yields are obtained after four years.

The rubber does not occur as latex, as in rubber trees, but as solid particles and shreds embedded in the tissues of the plant, amounting to 18% to 20% of the weight of the plant. In harvesting the entire plant is pulled up roots and all. It is chopped up and ground in water and the rubber floats to the surface.

The photograph on the cover and those on these pages are official pictures from the files of the U. S. Department of Agriculture and the Farm Security Administration.

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