SCIENCE NEWS

Science Service, Washington, D. C.

ASTRONOMICAL WORK AT MOUNT WILSON

DISCOVERY of an intensely hot star surrounded by a luminous ring of gas four times the diameter of our sun is announced by A. H. Joy, of the Mount Wilson Observatory, from results obtained with the 100-inch reflector.

Viewed from a distance of a billion miles the star would resemble the planet Saturn as seen through a small telescope. The ring is revolving around the star at a speed of 800,000 miles per hour, completing a revolution every 14 hours.

The star is one member of the double star system RW Tauri. The other member is about twice as large with a surface temperature of 11,000 degrees Fahrenheit, or nearly the same as our sun. The large star revolves around its ringed companion once in 66 hours. Evidence for the existence of the ring was obtained from a study of the light variations of the system when the larger star eclipsed the smaller. The ring was found to be composed of glowing gases of hydrogen, magnesium, calcium, and iron.

"Observations are difficult on account of the faintness of the stars," Mr. Joy stated, "but it seems probable that by taking photographic exposures properly timed both the distribution of the chemical elements as well as the light intensity in the ring may be determined."

What was supposed to be an old "new" star or nova that had been abandoned for lack of interest by astronomers for nearly twenty years, has turned out to be actually a variable star of a type previously unknown. The discovery was also reported to the Astronomical Society of the Pacific by Mr. Joy.

Mr. Joy said that the star was put on the program of the 100-inch reflector because in the past it had shown sudden changes in brightness which indicated it might prove to be a recurring nova. But when the telescope was pointed at the object two so-called red dwarf stars were found there instead. Later Dr. A. van Maanen, also of the Mount Wilson Observatory, secured photographs which confirmed the identification. What was still more surprising was the detection of bright clouds of hydrogen and calcium gas in the atmospheres of stars of such low temperature.

"Further observations will be needed to determine whether the observed variations in light pertain to both stars of the pair," Mr. Joy stated. "These observations indicate that certain small low-temperature stars show changes in brightness not fully recognized before."

A remnant of what was probably one of the brightest "temporary" stars on record—the famous nova observed by Kepler in 1604—has been discovered by Dr. Walter Baade, of the Mount Wilson Observatory. The object is very close to the position given by Kepler and resembles a small fan-shaped cloud. It is clearly visible on photographs taken in red light but very faint on the ordinary plates sensitive only to blue light. This probably explains why repeated attempts in the past to locate the star have failed. The star suddenly blazed out in 1604 and for several weeks was as bright as the planet Jupiter. For nearly two years it was studied by the great astronomer, Kepler, until it faded from sight. Although Kepler left careful records of the star's position and brightness, repeated search centuries later with the most powerful telescopes failed to locate the object. Kepler's nova is of extraordinary interest in that it was undoubtedly a supernova, a type of nova far brighter than the ordinary temporary stars. It is believed to have been the third supernova to appear in our galactic system in the last 900 years.

A POSSIBLE EPIDEMIC OF MENINGITIS

WARNING that an epidemic of meningitis, also called cerebrospinal fever, may occur in this country in "the near future" appears in the current issue of *War Medicine,* published by the American Medical Association in cooperation with the National Research Council.

No evidence of an epidemic now or in the immediate future appears in the weekly reports to the U. S. Public Health Service. The latest figures available, for the week ending January 31, showed a total of sixty-five cases of meningitis scattered throughout the entire nation with no concentration in any one place to suggest an epidemic brewing. The total number of cases is slightly above the five-year median of fifty-five cases.

The Federal Health Service, however, points out, as do Dr. John H. Dingle and Dr. Maxwell Finland, of Boston, in their report to *War Medicine,* that conditions are favorable for an outbreak of meningitis. The cold weather, still prevalent in most parts of the country, which keeps people indoors in close association with each other favors the spread of this disease.

"An outstanding feature of the disease has been its occurrence during wartimes in epidemics involving both military and civilian populations. During World War I there were 5,839 cases of meningococcic meningitis in the United States Army, with 2,279 deaths, a case mortality rate of 39 per cent. Although the attack rate and the military non-effectiveness rate have usually been low, the sudden way in which the disease strikes, its mysterious manner of spread and its high mortality may have a serious effect on the morale of civilian and military personnel.

"These features, the unprecedented incidence of the disease in England since the outbreak of the present conflict—a total of 12,500 cases occurred during 1940—and its occurrence on this continent in Nova Scotia all point to the possibility that this country may be confronted with outbreaks of this disease in the near future."

It is pointed out that the sulfa drugs have improved the outlook in this disease considerably, and "may offer a useful prophylactic measure in the prevention of its epidemic spread."

SHARKS ON THE PACIFIC COAST

SAVE the sharks! Such is the strange new conservation cry raised by commercial fishermen of the Pacific Coast.

It's all because of vitamins, Dr. Lewis Radcliffe, vice-president of the Izaak Walton League of America, explained speaking before a group of wildlife executives in Washington. During the past couple of years, the high vitamin value of the liver oil in certain shark species has been discovered. The soup-fin shark, once sought as a source of an exotic Chinese delicacy, is especially prized. Its liver oil is bracketed along with codliver and halibut liver oils for highest vitamin potency. However, other shark livers have their value. Even the humble but abundant dogfish shark yields a liver oil of at least moderate vitamin value.

Shark liver oil is especially sought for during the present war emergency, not so much because more vitamin pills are needed in this country, but because it is very much in demand for lend-lease shipment to Britain, for the enrichment of margarine. Lower grade shark liver oils are also of use here, to heighten the vitamin values of stock feed, especially for dairy cattle and chickens.

All this has resulted in the sudden growth of a shark fishing industry on the West Coast. It used to be that if a fisherman chanced to pull in a shark of any kind, he would angrily chop off its tail, to make it bleed to death quickly, and kick the despised carcass back into the ocean. Now he carefully saves the liver. As recently as 1938, government reports did not give a separate listing to shark liver oil. In 1940, the catch amounted to 223,000 gallons, valued at $1,125,000.

Shark liver oil has higher vitamin potency at some seasons than at others. In the soup-fin shark, for example, it is lowest during summer, when the young sharks are being born. Hence, the present demand for protection of the shark fisheries includes also a call for restriction of the fishing season to the times when the liver oil has its highest natural vitamin potency.—FRANK THONE.

STABLE FLIES

HORDES of flying enemies that threatened the success of the new aviation training program along the northwestern Gulf coast of Florida have been defeated in a joint chemical warfare campaign conducted by the U. S. Department of Agriculture and the U. S. Public Health Service. Benefitted also were the civilian population of the region and the long-suffering Florida cattle.

The enemies were uncountable myriads of biting flies, known locally as dog flies. They were the same species known as stable flies elsewhere—insects that look very much like common house flies, but armed with fierce little dagger-like mouthparts that make life miserable for man and beast.

These flies have long been intolerable pests to human beings, and sometimes a cause of loss among cattle. The poor beasts flee into swamps to escape their bites, become bogged down and perish. However, when they began seriously to interfere with the aviation training program, prompt action was called for.

When Dr. W. E. Dove, of the Bureau of Entomology and Plant Quarantine, with headquarters at Panama City, Fla., moved into the field, the first thing he sought was the places where they bred. He found this to be the great windrows of fermenting aquatic vegetation cast up on the shores of bayous and backwaters reaching inland from the coastal sandbars.

Sprays of arsenical insecticides were found to be effective, but the most practicable and economical means of attack proved to be creosote oil, diluted in a light diesel fuel oil. Attack was delivered from barges operating in the shallow inshore waters, each barge carrying a power sprayer and lines of hose with nozzles. Colored day laborers formed most of the crews. A single application was found to be completely effective against larvae and eggs already in the fermenting masses. It also discouraged adult flies from returning to deposit more eggs. Residents of the region reported that they had never enjoyed a season so nearly completely free of dog flies, and the flying cadets could concentrate on learning the business of winged warfare.

There is a different kind of dog-fly plague inland in the South, Dr. Dove states. Here the insects breed in heaps of decaying leaf-trash left in peanut fields after the nuts and peanut hay have been harvested. Remedy for this situation is simple, and can be left to the farmers. All they need to do is scatter the trash heaps and plow them under.—FRANK THONE.

THE PERUVIAN FLAX INDUSTRY

PERU is enjoying a war-born boom in flax, a new crop for the South American republic. Starting with an experimental hundred acres or so only three years ago, Peruvian planters jumped the acreage to 35,000 for the crop now being prepared for market. Most of Peru's flax will be bought in this country, partly replacing the European imports cut off by the war.

A survey of the new Peruvian flax industry has been brought back to the U. S. Department of Agriculture by Dr. B. B. Robinson, of the Bureau of Plant Industry, who has returned from a tour of the West Coast countries of South America, as a member of a scientific mission studying plant resources of possible use in the joint defense efforts of the Americas.

Dr. Robinson states that Peru seems to be exceedingly well adapted for the raising of flax. Constant sunshine over rich soil, with plenty of water for irrigation leaves the planter nothing to wish for. Flax responds by growing tremendously—six-foot stalks are not at all uncommon.

Techniques for harvesting and handling the flax are still crude, but experience is already indicating the way to improvements, with increased use of machinery. Present scarcity makes it advisable to produce all the flax possible, without waiting for the development of better methods. In fact, Dr. Robinson states, there is a tendency to go through the typical boom-crop cycle and plant as great an acreage as can be seeded, regardless of the prospect of collapse that may occur in post-war readjustment days when the return of European flax sources to the market, together with other factors, can be expected to cause a steep drop in prices.

A curious archeological discovery was made on one

large hacienda, in the course of digging a retting pit for the flax. (Flax is processed by retting, or soaking in water for two or three weeks, to permit the connective tissues of the stalk to decay and free the fiber.) Several feet under ground, a big copper tank, nine feet long, three feet wide and three feet high, bearing a sixteenth-century date, was found. Some years ago, another big copper tank shaped like a soup bowl was found in the same neighborhood. Nobody knows what they were used for.

Elsewhere in his travels, Dr. Robinson studied the growing of hemp in Chile and the harvesting of kapok in Ecuador. Chilean hemp has always had its principal market in England, but some of the crop will now be sent to this country. Regrettably the 1941 crop of kapok, the lighter-than-thistledown fluff used in life-preservers and pillows, was an almost total failure, due to unfavorable weather when the trees were in blossom.

GAME HERDS OF NEWFOUNDLAND

THE Newfoundland Department of Natural Resources has recently completed a survey of their Virginia-sized island with the thought of increasing the game and meat supply by introducing either American white-tail or English red deer. By some incredible accident of geography this oldest of English colonies was never populated with the same numerous big game species as was near-by Canada and the United States. Only the black bear and woodland caribou are native to Newfoundland.

Some years ago moose were brought from the mainland and released on the island paradise. Since then they have become established and reproduced to the point where some hunting is possible. Moose and caribou, however, are animals that prefer to remain as far away from human habitation as possible, and it is doubtful that they will ever populate the parts of the island occupied by scattered farms.

Deer, on the other hand, are quite agreeable to living in close proximity to human habitation. It is the thought of game officials that they can perform a dual function by introducing deer. Not only will they be increasing the game supply but they will also be alleviating the fresh meat scarcity in farming communities. At the same time they will be introducing an animal that will merely occupy a place heretofore vacant, an animal that will not compete in food or territory with the moose or caribou.

ITEMS

THE fact that the epidemic of eye disease reported among West Coast shipyard workers is limited to one class of workers, specifically welders, makes it unlikely that it is a germ disease spread by saboteurs. If the disease were due to germs, it would almost certainly spread to other workers and to the families of the welders. There is no infectious, or germ-caused disease peculiar to welders.

ALL air force personnel in Canada and Newfoundland are being tested with the Schick and Dick test for susceptibility to diphtheria and scarlet fever. Those found susceptible are being given injections of diphtheria toxoid and scarlet fever toxin. That more than 50 per cent. of the personnel are susceptible to diphtheria on entering the service, is reported by Flight Lieutenant A. H. Sellers, R.C.A.F. Medical Branch, in the *Canadian Medical Association Journal*. The number susceptible to scarlet fever exceeds 25 per cent. on the average. "The health of the personnel of the British Commonwealth Air Training Plan has continued to be maintained at a high level, but outbreaks of diphtheria and scarlet fever during the winter and spring of 1940–41 caused sufficient sickness and loss of time to justify the introduction of procedures promising an effective measure of future control."

A TWENTY-YEAR-OLD youth whose heart ceased to beat for 20 minutes while he lay on an operating table completely recovered partly because of heroic surgical teamwork, partly for reasons not understandable. His heart was forced to continue its motion artificially by the rhythmic contractions of the surgeon's hand placed directly on the paralyzed organ. Described by surgeons as "almost unheard of" this case is reported in the *Journal* of the American Medical Association, by Drs. Herbert D. Adams and Leo V. Hand, of Lahey Clinic, Boston. The patient's heart stopped two hours after anesthesia had begun during a chest operation. Immediately the surgeon began the artificial contractions of the heart with his hand, while stimulants were injected into the heart muscle and artificial respiration maintained. At one time the heart stirred naturally, beat five or six times, then ceased. Finally it began its natural beat, this time permanently. Normally death comes from 7 to 10 minutes after the heart stops. In this case these brain centers were kept alive by lowering the patient's head to aid blood flow, artificial respiration and circulation. Drs. Adams and Hand comment: "This case demonstrates that the time interval of cardiac arrest compatible with normal recovery is much longer than formerly appreciated."

WORN machine parts, such as shafts, bearings, hinge pins, pistons and the like, can be built up to their original dimensions at one third to one half the cost of new parts and in some cases with wearing qualities superior to the original, was stated by W. J. Cumming, automotive engineer of the Surface Transportation Corporation, at the Detroit meeting of the Society of Automotive Engineers. The building up is done by spraying the worn part with a fine mist of molten metal blown from a gun. The piece is first prepared by roughening its surface by sand blasting or other means according to the nature of the metal. This insures interlocking or dovetailing of the new metal to the old. The built-up piece is then machined or ground to the proper size and quality of surface. The wearing qualities of the built-up piece can be made superior to the old by coating it with a harder metal. This can also be done with new pieces, Mr. Cumming stated. This would effect an economy of the hard metals.