light have been accustomed to measure what is called the resolving power of a spectroscope, which is the same thing as the selectivity of a radio set, by the smallest difference in wave lengths that the instrument could distinguish. Now it is proposed to use for this purpose the smallest difference in frequencies that the instrument can distinguish—just as has been done for our radios.

The suggestion was made by S. Tolansky of the University of Manchester. (*Nature,* July 12.)

Science News Letter, August 23, 1941

PLANT PHYSIOLOGY

Vitamin B_1 Found Concentrated In Buds of Many Common Trees

LARGE quantities of vitamin B_1, the "morale vitamin" which exercises a beneficial effect on the human nervous system, have been found in the buds and leaves of many common American trees, by Yale University botanists.

Using a constant temperature tissue culture laboratory for experiments, the scientists found heavy concentrations of the substance in the buds of oak, red maple, horse chestnut, elm, sycamore and white pine trees.

"Although vitamin B_1 is now produced by synthetic chemical processes, this discovery points to a large natural source of vitamin B_1," stated Prof. Paul R. Burkholder. "This finding may offer a clue to the source of essential vitamins for many forest animals."

Prof. Burkholder, who is conducting his researches in cooperation with Prof. Edmund W. Sinnott, states that the vitamin seems to be formed in the young leaves and growing points of the shoot, whence it is transported through the bark into the roots and various portions of the plant.

Experiments in which basswood and maple trees were girdled, by removing a ring of bark from the trunk early in the spring, show that almost no vitamin B_1 has appeared below the ring in midsummer. Yet huge quantities of the vitamin have been found above the ring. This seems to indicate that ultimately a girdled tree may die not only from lack of food but from vitamin starvation as well.

Yale researches show that most green plants contain sufficient amounts of the vitamin for their normal growth. The amount of essential minerals in the soil and sunlight apparently influence the amount of B_1 which green plants are able to produce.

Vitamin B_1 is heavily concentrated in the buds of trees, according to Prof. Burkholder, just as it is in grain. Recently, flour refiners have sought to increase the vitamin content of flour by restoring B_1 after refining has taken place in order to provide more of the material for the nation's health.

The amount of B_1 is measured by the amount of growth of a mold which is very sensitive and is used as an indicator plane. Growth of the indicator plant will not take place unless vitamin B_1 is added, and the amount of growth varies directly wtih the supply of vitamins.

Science News Letter, August 23, 1941

ASTRONOMY

Distant Nebula Discovered; Looks Like Faint Star

DISCOVERY of a rare type of nebula or shining cloud of gas, at a distance estimated to exceed 10,000 light years, was announced by Dr. Paul W. Merrill of the Mount Wilson Observatory in a report to the Astronomical Society of the Pacific. The nebula was first detected on a plate taken with one of the smaller telescopes on Mount Wilson by William C. Miller, Dr. Merrill's assistant.

A photographic analysis of the light from the nebula made with the 60- and 100-inch reflecting telescopes revealed the presence of hydrogen, oxygen, and helium, three gases which are also found in the atmosphere of the earth. The object is approaching the earth at the rate of 338,000 miles per hour.

Dr. Merrill stated that "although the nebula resembles a faint star even when seen through the world's largest telescope, actually it is probably of extraordinary brightness and may well be several thousand times larger than our whole solar system."

He also stated that the discovery of star-like nebulae may be of considerable interest for future work with large telescopes.

Science News Letter, August 23, 1941

OCEANOGRAPHY

Japanese Fishing Net Ashore at Wake Island

A JAPANESE landing has been made at Wake Island, halfway between Hawaii and Guam, where the Pacific Clippers stop. It will not be the occasion of an international "incident", however, for the landing party consisted merely of a number of hollow glass floats (which Japanese fishermen use instead of cork blocks) carrying a net lost overboard by some fishing boat. Oceanographers estimate that the long and lonely voyage of this bit of jetsam must have covered between 4,000 and 5,000 miles.

Members of the Pan-American Airways staff at Wake found the net on the coral breakwater, and sent the floats to the New York office. The floats are hollow glass globes about four inches in diameter, with a two-character Japanese inscription at the point where they were sealed shut. Similar floats are frequently found on the Pacific coast of this country, sometimes lost from Japanese boats operating on this side, sometimes perhaps having made the long journey from the opposite shore of the ocean, borne north to Alaskan waters by the Japan Current and thence down the coast.

Some of the floats picked up lately have been identical in pattern to the Japanese ones, but have borne the hammer-and-sickle emblem of the USSR. These presumably have been lost by Russian fishermen in the waters off Sakhalin island or Kamtchatka peninsula.

Science News Letter, August 23, 1941

PHYSICS

X-Ray Tests of Fibers Show Key to Strength

X-RAYS are used in a new method for estimating the strength of cotton fibers, developed in the laboratories of the U. S. Department of Agriculture. Dr. Earl E. Berkley, cotton echnologist, has demonstrated a direct relationship between the strength of the fibers and the "grain" of the strands of minute cellulose crystals that spiral through the fiber walls. When the X-rays show this "grain" as relatively straight the fibers are strong; when it makes a large angle with the sides the fibers are weak, like cross-grained lumber.

Science News Letter, August 23, 1941