medical centers in the south are setting up special clinics for treating them.

"These diseases are not readily transferred from the sufferers to other persons by the use of drinking cups, kissing and towels, although granuloma venereum may be," Dr. Cole said. "Sexual relations do spread them rapidly though," he emphasized.

Science News Letter, December 2, 1939

Skin Diseases Predominate

SKIN diseases make up about three-fourths of all occupational diseases in the United States, causing millions of dollars loss in time and efficiency every year, Dr. Marion B. Sulzberger, of New York, declared.

Plants, drugs, cosmetics, textiles, wearing apparel, household articles, parasites, fungi and other agents all may cause occupational dermatitis or skin disease in those whose jobs bring them in contact with these objects. Physical and chemical agents such as dyes, may cause the condition by direct irritation of the skin, but trouble may also be caused in sensitive or allergic persons by substances which in most cases are innocuous.

The "hazards" of the patient's home and working place and even his intelligence and ability to follow treatment and his truthfulness in reporting his case history must be investigated, Dr. Sulzberger said, in order to make an accurate diagnosis and to prescribe effective treatment.

Science News Letter, December 2, 1939

INVENTION

Research Laboratories Announce Useful Finds

FROM industrial research laboratories: A new coating of alkyd resin for copper that keeps it bright and metallic when tested on the General Electric's New York World's Fair building.

Germ destruction by ultraviolet lamps that solves the problem of sanitary control of those paper hood-caps that milk bottles now wear.

Stainless steel serving trays, solid, corrosion-resistant, etched with beautiful designs.

Paints that tell how hot a machine part is becoming by changes in color.

Science News Letter, December 2, 1939

It is estimated that India has 1,500,000 blind and another 3,000,000 partially blind, and that at least half of this misery is due to preventable conditions.

PHYSICS

Use Flickering Beam To Probe Upper Atmosphere

"No Man's Land" of Atmosphere Below the Radio Reflecting Layers Explored With Distinctive Light

THE PIERCING, puzzling searchlight beam which mystified residents of northwest Washington last summer on moonless, dark and clear nights was explained at the meeting of the Philosophical Society of Washington by Ellis A. Johnson, of the Carnegie Institution of Washington.

No ordinary searchlight beam was that seen by Washingtonians. Its brilliant beam flickered ten times a second and identified it, for scientific research, so that its scattering at heights of as much as 24.8 miles could be detected.

The experiments, Mr. Johnson reported, seek to probe the upper atmosphere for its secrets of temperature, density, presence of clouds and other important information at heights which are beyond the reach of stratosphere flights with balloons.

Moreover, the new searchlight experiments tap that region of space lower than the radio reflecting layers in the ionosphere. The new technique thus investigates the "no man's land" of the atmosphere.

While the current experiments have been preliminary, seeking mostly to show the feasibility of the method, they indicate that studies can be carried out on the height of water vapor in the atmosphere, the amount of turbulence, the winds, dust, fluorescence and absorption of these upper altitudes up to nearly 20 miles. Actual measurements have

been carried out at this height and it was found that the beam itself could be detected up to 40 kilometers, or about 24.8 miles.

In outline the searchlight experiment is simple. The beam of a great searchlight was directed upward and made to flicker (modulate) about ten times a second by an automatic Venetian blind type of shutter.

Some three and a half miles away was placed a large mirror, containing at its focus a photoelectric cell. This mirror pivoted upward and caught light scattered from the beam in the sky. The photoelectric current generated by this scattered light was amplified in a special radio amplifier developed by Mr. Johnson, which is so sensitive that it can detect currents of only .000,000,000,000,000,032 amperes. From the geometry of the searchlight and the receiving mirror the altitudes at which the beam is studied can be calculated.

The modulated, flickering nature of the light makes it possible to differentiate it from the general background light of the night sky. Even so, it was necessary to work only on clear nights without moonlight and at times when there was little haze at low altitudes.

The experiments indicate that with a 60-inch searchlight and a 60-inch mirror as a receiver, the study of the upper atmosphere could be pushed to 90 kilometers, or nearly 56 miles.

A particularly useful problem which ought first be carried out, Mr. Johnson indicated, is to study the ozone found in the atmosphere. "Since ozone has a strong absorption band from 2,500 to 3,300 Angstrom units of wavelength," he said, "it would be possible to study the scattering from this region with the scattering from that above 3,400 Angstroms. This can be done by the use of two receivers using sodium and potassium photocells respectively."

Three other research problems, all vital for meteorology, appear to be feasible with the new type of equipment, Mr. Johnson explained.

1. The density and temperatures of the atmosphere at great heights can be determined, which should tie in with present studies deduced from the length, brilliance and heights of the flaming tails of meteors.

2. The ozone distribution in the air (which helps shield the earth from the sun's ultraviolet light rays) can be determined in the region below its maximum concentration around 12 to 15 miles altitude. There is some indication that this ozone is carried by the polar air currents, so that a knowledge of its concentration, eventually, might lead to a better knowledge of polar air currents which are known to influence world weather.

3. The method might also be used to disclose the presence of water vapor above 12 kilometers (7.4 miles). If appreciable water is present there it would provide a mechanism for the re-radiation of solar rays and hence be useful knowledge in meteorology.

Dr. E. O. Hulbert of the Naval Research Laboratory has made measurements in the region of the upper atmosphere studied by C.I.W.'s Department of Terrestrial Magnetism scientists who, besides Mr. Johnson, were R. C. Meyer, R. E. Hopkins and W. H. Mock.

Dr. Hulbert photographed the scattered light from the setting and rising sun at altitudes up to 20 kilometers (12.4 miles) and was able to detect scattering as high as 56 kilometers (35 miles). The new experiments by the searchlight beam extend actual measurements up to 32 kilometers (19.8 miles).

Science News Letter, December 2, 1939

BOTANY

NATURE RAMBLINGS

by Frank Thone

Versatile Rhus

ISN'T IT ODD, what divergences of qualities can be displayed by different species within a single plant genus!

Take the sumac family, for instance; the group of plant species which botanists know collectively as *Rhus*.

We are all familiar with the common smooth sumac, whose thickets along roadsides and on waste lands make splashes of gorgeous red as autumn days grow shorter. With its close relative the low sumac, which never grows more than about a third of its height, it is a favorite with planners of native shrub plantings in parks and on home grounds. It also offers shelter and food to many kinds of birds.

Choosing swampy lowlands instead of rather dry uplands is another close botanical cousin, the staghorn sumac. It looks very much like the ordinary sumac, except that its upper branches are covered with a thick, sooty-black fuzz, like the "velvet" on the immature antlers of a deer. This sumac is perhaps even more planted for horticultural purposes than its smooth-stemmed relative.

Looking very much like these harmless and desirable sumacs is one of the black sheep of the family, poison sumac. Its bark is smooth, but paler than that of the smooth sumac, but its fruits appear as drooping clusters of small, pallid white berries instead of the erect bunches of dark purple-brown "seeds" that mark the other sumacs. Fortunately for most of us, it grows only in boggy areas, so that if you want a "dose" of sumac poisoning you will most likely have to wet your feet to get it.

Not so inaccessible, alas, are those evil three-leaved twins of the sumac cousinship, poison ivy of the eastern half of the country and poison oak of the western mountains. They do not look like