as the switching or modulation of large amounts of microwave power by means of relatively low energy gaseous discharges.

An experimental determination of complex conductivity at ten thousand megacycles has recently been made by placing a direct current glow discharge along the axis of a cylindrical microwave cavity. It was shown that both conductivity components can be calculated by determining two quantities: the relative change in transmission of three centimeter power through the cavity, and the shift in its resonant frequency, both measured as a function of discharge current and gas pressure. The experimental technique used can be extended so that high speed transient phenomena may also be investigated. Thus if the discharge current is suddenly stopped, the resultant deionization can be investigated by means of a suitable oscilloscope presentation of the output signal from the cavity, from which values of electron density versus time may be deduced. Since at the high frequencies used the relatively massive ions are not measurably affected by the microwave fields, only effects due to the free electrons are observed, leading to a great simplification in the interpretation of the results. Finally, the cavity technique may be used to study the behavior of dielectrics at microwave frequencies, simply by replacing the discharge tube by a columnar sample of the dielectric substance of interest; accurate determinations of dielectric losses can thus be made. F.P.A.

Measurement of the Complex Conductivity of an Ionized Gas at Microwave Frequencies. By Fred P. Adler. *J. App. Phys. 20: 1125, November, 1949.*

Sanguine

Frequently it is of interest in physiological research to study blood flow rate variations as affected by drugs or by external stimuli such as heat. The instrument described below was developed to meet the need for a reliable, easily operated device which will instantaneously and continuously measure and record blood flow in experimental animals.

The blood vessel in which one wishes to measure the flow is excised and a glass cannula inserted so that the blood flows through it. Heparin is injected into the animal to prevent clotting. The cannula contains two platinum electrodes sealed into the glass so as to contact the blood stream with a minimum of internal discontinuity. The cannula with its two electrodes is placed between the pole pieces of an electromagnet which is excited with sixty cycle power from the AC line. The blood, which is a fairly good conductor, has a voltage induced in it which is proportional to its linear velocity, in the same fashion that occurs when any conductor is moved in a magnetic field. The resulting small sixty cycle voltage is amplified by a conventional amplifier. The output stage provided is sufficiently powerful to operate both a large indicating meter and an ink-writing recorder.

The instrument is calibrated by passing a known volume of saline solution through the cannula in a measured time. The scale of the instrument is linear, so calibration at a single point is sufficient. Flow rates as low as ten centimeters per minute can be read with ease on this instrument.

The electromagnetic blood flow meter, which has seen successful experimental use, is expected to find a fairly wide field of application in physiological research. J.W.C.

An Electromagnetic Blood Flow Meter. By John W. Clark and James E. Randall. *Rev. Sci. Inst. 20: 951, December, 1949.*

Sensitive

The latent image formed on exposing a photographic emulsion to light is generally believed to consist of an agglomeration of silver atoms (a minute silver crystal) formed at the site of a "sensitivity speck" or "trap." But the mechanism of this process is still far from clear although important contributions to its explanation have been made in recent years. In the paper under review, additional information was obtained by measuring the temperature dependence of the spectral sensitivity of photographic emulsions *containing no optical sensitizer* (dye).

Experimental results show the temperature dependence of the sensitivity of the silver bromide itself to be different from that of the additional sensitivity effected by chemical sensitization. It was found that the large drop in the sensitivity of commercial emulsions when they are cooled from room temperature to -195°C is due, in the main, not to a genuine decrease in the light sensitivity of the silver bromide but to the chemical sensitization becoming less effective in enhancing the sensitivity of the silver bromide. Evidence is given that two kinds of sensitivity specks exist, one being numerous and consisting of shallow traps, responsible for the sensitivity of chemically nonsensitized emulsions, and the other kind being few in number and consisting of deep traps, responsible for the larger part of the sensitivity of chemically sensitized emulsions. The two kinds of sensitivity specks are compared with those existing in alkali halides but there are no definite clues regarding their nature. M.B.

Dependence of the Sensitivity of Unsensitized Photographic Emulsions Upon Temperature. By Martin Biltz. *J. Opt. Soc. Am. 39: 994, December, 1949.*

Colour in Nature

How dull is Nature! Few the tints she wears:
Mulberry, maple, hemlock all are green;
The cold, damp earth a yellow-red is seen,
With sky and distant hills the water shares
A dismal blue. Test then the pine that dares
To front the gale, try sycamore, a queen
Among the trees; is there no colour keen
To joy the eye of one who stands and stares?
But I have seen the primrose in the hedge,
The viridescent moss within a cave;
A snow-capped peak aglow with Tyrian hue,
And emerald gleam from mallard midst the sedge.
The sun in setting still will oft engrave
With reckless palette that pervading blue.

A. E. Dodd

On reading: The Colors of Natural Objects and Terrains, and Their Relation to Visual Color Deficiency. By C. D. Hendley and Selig Hecht. *J. Opt. Soc. Am. 39: 870, October, 1949.*