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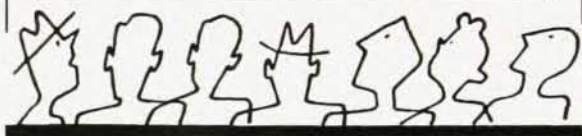
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JOURNAL NOTES *Continued from preceding page*

To date, this camera has been used successfully to photograph the shock waves from spherical charges at rates exceeding 10^5 frames per second. M.S.

A 100,000,000 Frame per Second Camera. By M. Sultanoff. *Rev. Sci. Inst.*, 21: 653, July, 1950.

■ New Pressure Gage

This gage was developed to measure air pressures in the upper atmosphere when mounted on a high speed rocket. It has been used in the Viking and V-2 type rockets over the White Sands Proving Ground in New Mexico and significant data up to 50 miles have been obtained, where the pressure is approximately one hundred-thousandths of the atmospheric pressure at sea level. During May 1950 six of the gages were flown on a Viking rocket launched from the USS NORTON SOUND near the equator. This rocket reached an altitude of 106 miles above sea level.

With a small heated wire inside a bellows which is moved by an electric motor, pressures from atmospheric down to 10^{-5} millimeter of mercury have been detected, the latter pressure being a practical laboratory limit because of the effects of microphonics and gassing of the bellows. Theory indicates that a signal at 10^{-7} millimeter of mercury would be above the thermal noise in the detecting hot wire. This new gage works on the principle that an alternating current electrical signal can be obtained from a Pirani type pressure gage by cyclically changing the pressure at a given frequency. This signal is a function only of the average pressure and the supply voltage and is essentially independent of the ambient temperature, which is the principal source of error when the Pirani gage is used in rockets. This same principle of cyclically changing the pressure can be used with other pressure detectors to eliminate sources of error, if these sources of error can be held constant while the pressure is changed in a known way.

The chief problem remaining is to develop techniques of gage construction such that gassing and microphonic troubles will be eliminated. If this were accomplished, the gage could be used in a rocket to measure pressures at altitudes up to 80 miles where the estimated pressure is about 10^{-5} millimeter of mercury. Measurements at these altitudes and higher are extremely complicated because of the copious quantities of gas coming out of the rocket, and also because of the pitching and the yawing of the rocket.

From the data obtained from this type of gage, suitably mounted in a rocket, one is able to obtain the ambient pressure, density, and temperature of the upper atmosphere. Its extremely wide range and its ruggedness makes it particularly useful to scientists engaged in upper atmosphere research. H.E.L.

A New Vacuum Gage. By R. Havens, R. Koll, and H. E. LaGow. *Rev. Sci. Inst.*, 21: 596, July, 1950.