Electric properties of thin films of Germanium with relation to their structure. J. F. RIOLLET, *L'Onde Electrique* **44**, 1302 (1964). (In French.) The deposit of a certain number of thin films of germanium is obtained by an evaporation-condensation method. The technique to get thin films with good results is described first. Next, exact details are given on the control of the crystal structure of the deposit, and the electrical measurements, taken as a whole, from these same films. Finally, a corresponding diagram of the measurements taken and the hypotheses that can be put forward on the constitution of thin films is shown.

Thickness measurements of thin layers obtained by the method of evaporation in a vacuum. J-P. THOMAS and B. SAUDREAU, *L'Onde Electrique* **44**, 1308 (1964). (In French.) Thin layers have been developed scientifically and technically. Their application in the fields of optics, electronics and nucleonics goes on increasing. In this article the authors describe various control techniques in particular measurements by photometry, gravimetry and piezo-electric microbalance.

Proton space charge in anodic oxide films. D. A. VERMILYEA, *J. Phys. Chem. Solids* **26**, 133 (1965). The capacitance of anodic oxide films on niobium, tantalum, tungsten, titanium and antimony depends strongly on the electrical potential difference across the film during the measurement. With decreasing applied potential the capacitance of the thinner oxide films increases sharply and may reach values of about 100 $\mu F/cm^2$. The capacitance of films formed on aluminium, beryllium, gallium, zirconium, bismuth and silicon is independent of potential. It is shown that the capacitance increase results from a proton space charge within the film. A quantitative theory is in reasonable agreement with the experimental information.

Thermal desorption of attached gas from surface sites possessing a uniform distribution of activation energies. W. A. GRANT and G. CARTER, *Vacuum* **15**, 3 (1965). Thermal desorption of gas, previously attached to a surface, is a useful technique for investigation of the gas-surface physics and in particular the activation energies for release and the population density of the attached gas. The analysis of this desorption for the case where the trapping sites form a continuous energy spectrum and have a uniform population density is investigated when the surface is subjected to two common heating schedules. The results obtained show that this type of distribution should be distinguishable by observation of the desorption rate and the dependence on the type of heating schedule employed.

Leak detection and detectors. A. H. TURNBULL, *Vacuum* **15**, 3 (1965). While continuous advances in the design of vacuum components and in the techniques of construction have gradually reduced the incidence of "built-in" leaks in vacuum systems, the parallel development of leak detectors has facilitated the detection of smaller and smaller leaks until, at the present time, the lowest pressure attainable in a metal vacuum system is governed by the rate of outgassing of the constructional materials and in a glass system by the rate of diffusion of atmospheric helium through the glass.

Effect of vacuum environment on thin film component reliability. D. J. SANTELER, *SCP and Solid State Technology* **8**, 17 (1965). Among the factors affecting thin film properties are the impurity conditions prevailing in the test vacuum chamber. The total pressure, amount of water vapour and presence of hydrocarbon impurities will affect the reliability and reproducibility of films. This article investigates the factors which may influence the results of a test in a vacuum system, the sources and amounts of different contaminants which may exist in the system, and the interaction of total system pumping speed with the total outgassing. The vacuum environment parameter is as important to control for insuring best film results as factors such as substrate material and cleanliness, temperature, rate of deposition and purity of the melt.

An analysis of physical adsorption isotherms in ultra-high-vacuum range. A. B. HUANG, *Journal of Vacuum Science and Technology* **2**, 6 (1965). The detailed mechanism of physical adsorption was studied by use of the statistical theory of imperfect gases. The Kirkwood-Muller potential was used for the gas-solid interaction. Adsorption isotherms computed from both the classical method (high temperature case) and the quantum-mechanical method (very low temperature case) are given. In the case of the quantum-mechanical method of solution, the important portion of the Kirkwood-Muller