

Piston Gauge Pressure Measurements

THE dead-weight piston gauge, also called the 'gauge-tester', 'dead-weight tester', 'pressure balance' and 'piston manometer', can be used to measure pressure in terms of the fundamental units of force and area. The piston is inserted into a close-fitting cylinder, and weights loaded on one end of the piston are supported by fluid pressure applied to the other end. The construction varies as to the method of loading, the methods of rotating or oscillating the piston to reduce friction, and the design of the piston and cylinder. Errors in the measurement of pressure with the gauge arise from failure to take into account the parameters of the instrument or environment, or from uncertainty as to their measured values. In National Bureau of Standards Monograph 65, J. L. Cross discusses the variables which affect the pressure measurement and presents a general equation and simplified procedures for the calculation of the pressure (*Reduction of Data for Piston Gauge Pressure Measurements*. By J. L. Cross. Pp. iii + 9. Washington, D.C.: Government Printing Office, 1963. 15 cents). Uncertainty of the mass of the loading weights and of measurements of the effective area of the piston and cylinder is an obvious cause of error. Less easily recognized sources of error are air buoyancy on the weights, fluid buoyancy on the piston, the value of local gravity, the force on the piston because of the surface tension of the fluid, thermal expansion and elastic deformation of the piston and cylinder, and the fluid heads involved. In the various appendixes to the monograph, working equations, examples of calculations and guides for compiling correction tables are given.

Farm Motorization, Consumption and Prices of Motor Fuels

Development of Farm Motorization and Consumption and Prices of Motor Fuels in Member Countries is the title of a publication recently issued by the Organization for Economic Co-operation and Development (Pp. 96. Paris: Organization for Economic Co-operation and Development, 1963). It is essentially statistical in outlook although relieved by pertinent comments on developments of interest to all concerned with European trends in replacement of manpower by machines in agriculture. The report is divided into three sections: (A) development of motorization from pre-war until 1960; (B) consumption of motor fuels used in agriculture from 1952 until 1960; (C) development of prices of motor fuels from 1950 until 1960. In the summary under (A), the main conclusions reached are that the number of farm tractors has steadily increased commensurate with the equally steady decline in available active agricultural (human) and draught animal populations. In section (B), dealing with consumption of motor fuels in European agriculture during 1952-60, "... it can be stated that the increase by 61 per cent was less noticeable than the rise in the number of tractors by 161 per cent for the same period. Consequently, the annual average consumption per tractor declined for the European O.E.C.D. area as a whole from 2,100 kg in 1952 to 1,600 kg in 1960 and that per horsepower from 82 kg to 66 kg accordingly". It is thought that the future trend will be slowed down because farmers will make a wider and more efficient use of their modern tractors annually compared with past years. As regards prices for motor fuels used in agriculture in countries covered by this report, the conclusion is reached that farmers' expenses for this vital factor in their economy are increasing annually, reaching in 1960 the somewhat staggering total of about 491 million U.S. dollars, naively described as "... rather an important cost factor of agricultural production".

Mineral Dust in Industry

THE proceedings of a symposium, *Mineral Dust in Industry*, which was held in the laboratories of the British

Ceramic Research Association, Stoke-on-Trent, during December 19-21, 1961, have recently been published (Pp. v + 153. London: H.M.S.O., 1963. 22s. 6d. net). The symposium was sponsored by the Department of Scientific and Industrial Research which is showing increasing interest in industrial health, which is not unreasonable because of the close relationship between health, the human working environment and the engineering, physics and chemistry of the processes and products which are being handled. In the symposium are papers on pneumoconiosis (dust disease of the lung) in the pottery and foundry industries. The latest magic word 'parameter' comes up in a description of the biological significance of dust parameters but, happily, there is no excess usage of the word 'integrate'. The sampling and control of dust and technicalities of instrumentation are dealt with, as also are ventilation of dusty shops, the design of protective clothing for the workpeople, and the amount of disability which they may suffer if they breathe in dust for long enough. The title of the booklet is a little wide for its subject range, in view of the large areas of the problem unmentioned. The contents possess a medical bias rather than one of fundamental physics and chemistry, and the emphasis is a little on potteries. It is interesting to note that in the study of dusts the physics is well ahead of the chemistry, and little appears to be known, as yet, about what happens on the surface of a particle of dust when it is inside a biological cell. The booklet is well charted and illustrated and will be useful for anyone with either a medical or technical interest in mineral dust.

Nutrient Requirements of Livestock: Poultry

THE first of the Agricultural Research Council's pamphlets on *The Nutrient Requirements of Farm Livestock* has recently been published (No. 1: *Poultry—Summary of Recommendations*. Pp. v + 50. London: Agricultural Research Council. Obtainable from H.M.S.O., 1963. 2s. 6d.). It covers the needs of "all those tame birds reared for their flesh, eggs or feathers, and provides some information about the pheasant". The intention is that the *Summary* shall be brought up to date periodically, and that Technical Reviews will detail the mass of material now abridged. Although special attention has been paid to conditions in the United Kingdom, and therefore to British experiments, the recommendations differ little from those of the U.S. National Research Council since, indeed, American studies predominate overwhelmingly in this field. Feed compounders and farmers will not, therefore, gain an immediate advantage from this statement. However, since each section provides a precise and careful examination of present-day knowledge, it exposes the deficiencies of available information and should stimulate work in these areas. Subsequent issues should profit from this: so, too, should research workers, teachers and students, who will also be grateful for the comprehensive sectional bibliographies. To-day, the poultry industry is changing rapidly both with respect to the breeding of the birds it exploits and in its husbandry techniques. It can be anticipated that its most costly item, feeding stuffs, will be improved concurrently, and that this pamphlet will be a standard reference point in this development.

Folklore in French Canada

Bulletin No. 182 of the National Museum of Canada describes the work of recording folk traditions in the Islands of Saint-Pierre and Miquelon (*Saint-Pierre et Miquelon: Une Mission Folklorique aux Îles*. Pp. 192. Par Carmen Roy. Ottawa: Imprimeur de la Reine et Contrôleur de la Papeterie, 1963. 3 dollars). A description of the area, its history and economy, and its people, introduces the major portion of the Bulletin, which considers the traditions under various headings, including place-names, customs and beliefs, stories and songs. Full