

chrome green and monastral blue. This method appears promising and will be much less laborious than the clipping technique. A method has been evolved in which the digestibility of organic matter is calculated from the nitrogen content of the faeces. This appears very promising and is convenient and time-saving.

Study of Milking Methods

Development of Recording Devices.—Apparatus developed last year for the semi-automatic weighing and sampling of milk from every milking of a cow has been under test during the whole season. The method has proved very satisfactory, eliminating many personal errors normally associated with such work and reducing considerably the labour required. The apparatus is being installed in all Ruakura sheds.

As a further aid to research work in this field an apparatus developed for automatic timing of the milking process promises to be extremely valuable and effective, eliminating personal errors associated with older means.

An apparatus for measuring intra-mammary pressure has been constructed and submitted to laboratory tests. Work with this instrument in the shed will be commenced shortly.

Milking-machine Equipment.—The "weighted relief valve" designed to give accurate vacuum control and shown under test to be highly efficient has been streamlined for commercial production. Sample models produced appear to be very satisfactory. The importance of making available a reliable valve to farmers is further emphasized by results of field surveys of large samples of milking-machines carried out during the year in Northland and Canterbury. Thirty per cent. of the valves in Northland and 50 per cent. of those in Canterbury were working incorrectly. With from 50 per cent. to 60 per cent. of vacuum gauges also incorrect, it will be obvious that the field position is far from satisfactory at present.

A new installation design for mounting the milking-machine vacuum pump has been developed. The method gives several advantages over that normally used and has proved very satisfactory in use. Full details have been published for the benefit of farmers. Work on the design of an electrically controlled pulsator unit to replace present mechanical types has reached an advanced stage.

Milk "Let-down" Studies.—A uniformity trial with identical twins to determine their relative suitability for this type of work has been completed. It is clear that these animals will be particularly valuable for fundamental studies of milking behaviour and they will be used, as far as possible, in all future milking-method work.

With a view to finding a suitable technique for assaying milk let-down activity, the method of Turner and Cooper has been tried on rabbits. This method was found to give results with variability within the usual range of biological assay techniques. The chief drawbacks are the necessity for keeping a large colony of rabbits and the reliance placed on eye judgment in determining results which may be to some degree obscured by the temperamental reaction of the rabbit.

Cattle Disease Projects

Mastitis: Penicillin Treatment.—Further investigations have confirmed the opinion that penicillin is a very valuable agent in the treatment of mastitis, as indicated by the following results. These all refer to cases which were diagnosed bacteriologically as being