THE DETERMINATION OF MOISTURE AND MINERAL MATTER IN BISCUITS AND FORMS OF CONCENTRATED BREAD.

By SERJEANT A. DADY.
Royal Army Medical Corps.

The determination of the moisture and mineral matter present in samples of biscuit or concentrated bread is usually attended with a certain amount of difficulty. These are two of the most important factors for which it is necessary to obtain a percentage value, and if care be taken to obtain a correct result the carbohydrates can then be safely determined by difference.

After considerable experience I have found that the moisture percentage is best obtained by weighing the samples, such as biscuits, without pulverizing, and re-weighing after drying at a temperature of 100° C. in a hot-water oven for eight hours. At least three samples should be dried at the same time to obtain an average. A shallow dish containing calcium chloride, placed in the oven, hastens the drying considerably, where a vacuum oven is not used.

The usual method of grinding in a mortar cannot be carried out without a certain loss of moisture, and when the finely ground sample is dried in a crucible only a small surface of the sample can be acted upon, this dried surface preventing the lower layers from parting with their moisture. Likewise stirring with a glass rod entails very careful manipulation. By using these methods unsatisfactory results are apt to occur. If the samples be carefully weighed and dried whole, the greater surface acted upon causes the sample to dry more quickly and consequently more satisfactory results are obtained.

After removal from the oven the samples should be cooled in a desiccator and weighed, being again returned to the oven and dried for a period of two hours, to make certain that the whole of the moisture has been driven off.

The estimation of the mineral matter must be carried out by means of a tared porcelain capsule or crucible, subjected to a very dull red heat in a muffle furnace, or over a Bunsen flame protected with wire gauze. The residue obtained after estimation of moisture is usually recommended for determination of the mineral matter, but in practice I have found that some trouble arises and a good ash will not result, a considerable amount of carbon remaining.

From experience obtained when estimating the mineral matter in biscuits, bread, flour, etc., it has been found that a freshly weighed-out sample will ash more readily. In a very moist sample a portion of the water may be driven off to prevent spurting, but the total absence of moisture tends to prevent oxidation of the sample.

If, of course, the sample does not lend itself to thorough oxidation, the
contents of the crucible should be washed on to a filter and the residue repeatedly washed with hot water. The filter paper and contents are then again transferred to the crucible and incinerated as before, the weight of the ash of the filter paper being deducted from the final weighing in the usual manner. The filtrate is then evaporated down in the same vessel; incinerated; again weighed after cooling, and the total mineral matter calculated.

A CRITICISM ON THE USE OF "DRY" URINALS IN STANDING CAMPS.

By Staff-Sergeant W. A. MUIRHEAD.

Royal Army Medical Corps.

This note is the outcome of having read the article "A Plea for the trial of 'Dry' Urinals in Standing Camps," by Quartermaster-Sergeant E. B. Dewberry, which appeared in the July issue of the Journal.

How far this type of urinal deserves a trial depends upon its merits over the generally adopted system of pails plus "cresolization." What are they?

Few facts regarding the working of this form of "dry" urinal are given. The late Dr. Poore's experiments in the carpentering works cannot be taken as a guide, for the urinal used by the workmen was not "worked" as one used by troops would be, and for other reasons the results are not comparable.

The chief feature of the system appears to be the pit in which are placed various materials, among which sawdust is to play the major part. What part the stones, gravel and sand are to play is not stated, but absorption of urine by the sawdust is aimed at, for it is said, "The amount of filtrate (?) would be comparatively small." (The query mark is mine.)

The question of the apparently unlimited absorbability of such materials as sawdust, moss, etc., is, to say the least, a debatable one; for, given a pit of, say, twenty cubic feet capacity, when twenty cubic feet of matter have been put into it, whether the matter be sawdust, urine and sawdust, or urine alone, the pit becomes full, and any excess added either flows over the ground at the mouth of the pit or soaks into the soil. If that pit is partly filled with stones, gravel, sand and sawdust, its capacity for urine is reduced accordingly unless the urine, when in contact with sawdust, is possessed of some power of the fourth dimension.

The writer is inconsistent: he states that the sawdust should have a large surface for evaporation, yet the pit cover in the sketch appears to be sealed. In fact, very little evaporation could occur, and that little would be through the untrapped waste pipe (connecting the urinal basins) into the urinal enclosure.