

## ALBUMIN IN URINE.

### METHODS OF QUANTITATIVE ANALYSIS.

By W. J. HATCHER.

While the amount of albumin present in a pathological urine is not necessarily an accurate guide to the severity of the patient's condition, an estimation of the amount present is always regarded as important by the physician.

The finding may help in the clinical examination of the patient and in certain cases gives a valuable guide to response to treatment. There are many methods of estimating the amount of albumin present in urine, but the one almost universally employed in clinical work is that known as Esbach's.

While Esbach's method is not perhaps very accurate, it is, however, very simple, and unlike some of the other methods requires no expensive apparatus or special technique.

Several attempts have been made to introduce a method using artificial turbidity standards; the principle of these methods is that a precipitate is formed, usually by the addition of sulphosalicylic acid and the amount of turbidity present judged by comparison with a set of known standards. While this procedure has the advantage of avoiding the delay associated with Esbach's method, it requires the services of a laboratory to prepare and occasionally check the values of the standards, as they tend to deteriorate with keeping.

#### Esbach's Method.

The principle of this well-known method is precipitation of protein (albumin) in urine by a picric acid solution (Esbach's Reagent), this procedure being carried out in a special but simple piece of glass apparatus called an albuminometer tube. The amount of albumin precipitated is measured by means of graduations on the albuminometer tube.

#### Procedure.

Acidify the urine if necessary with 10 per cent. acetic acid, fill the Esbach Albuminometer tube to the mark "U," then add Esbach's Reagent to the mark "R." Carefully stopper the albuminometer and slowly mix the contents by inverting several times; it is very important that the contents should be properly mixed.

A small wooden stand is supplied with the albuminometer which ensures that the instrument is held in a vertical position; the reading should be taken 24 hours after the test has been set up. The graduations on the albuminometer range from 0.5—12, and the figures represent grams of albumin per 1,000 c.c. of urine.

#### Reading.

Results may be read direct, for example, if the precipitate is level with the 4 graduation on the tube, this will mean that the urine contained 4 grams of albumin per 1,000 c.c., or 0.4 per cent. albumin. Figures less than half a gram cannot be accurately estimated by this technique; alter-

natively, if a very large amount of albumin is present the specimen may be diluted and the reading obtained multiplied by the dilution.

#### Fallacies of Esbach's Method.

As has already been pointed out, Esbach's method is not strictly accurate; it is, however, sufficiently accurate for most clinical purposes. One or two points must, however, be carefully observed if large errors are to be avoided.

Only a specimen collected over a 24 hour period should be used, urine with a specific gravity above 1.010 may not settle properly and the specimen should be diluted and of course allowance made in the reading for the dilution. One of the several fallacies of Esbach's method is that other substances other than albumin may be precipitated by Esbach's Reagent, these substances are principally creatinine, resin, and certain acids.

The urine must always be tested for reaction before the test is put up, and rendered just acid by the addition of 10 per cent. acetic acid. Also it is important that the albuminometer should be stood in an upright position, the use of the stand ensures this.

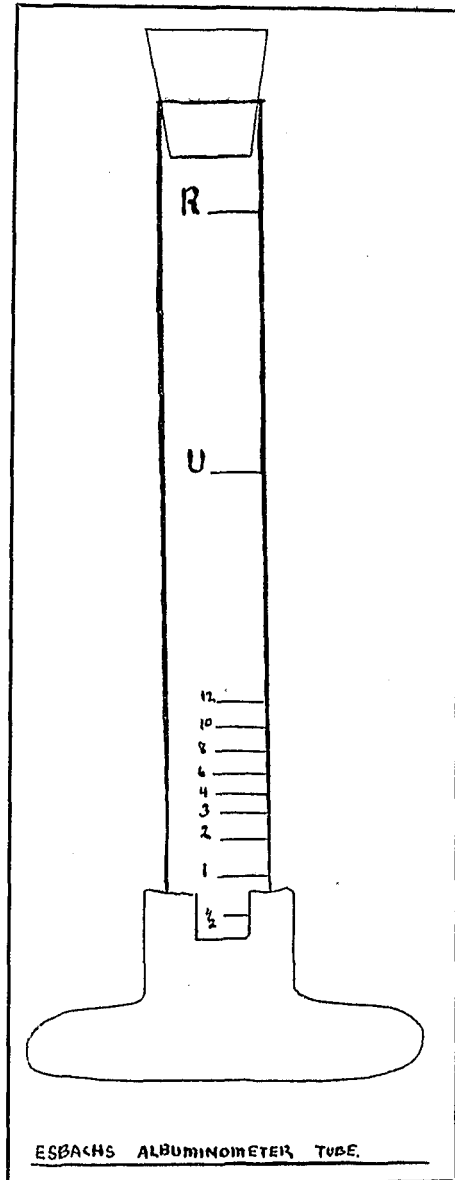
#### Formula of Esbach's Reagent.

10 grams picric acid.  
20 grams citric acid.  
1,000 c.c. distilled water.  
The reagent keeps quite well.

## MENINGITIS TREATED WITH NEW DRUG.

The Khartoum correspondent of *The Times* reports successful treatment of Meningitis with a new drug. He writes: "Results which are described as astonishing are being obtained in the treatment of cerebro-spinal meningitis in the Equatorial Province. In all previous epidemics of this disease the mortality rate has been very heavy, ranging from 60 to 80 per cent. of cases, whereas now a recovery rate of over 90 per cent. is being obtained with the new drug of British manufacture, which at present is known as M and B 693. The results have been consistent in hundreds of cases, and it is hoped that this disease can henceforward be controlled with little loss of life."

A further note gives a medical opinion as follows: "The results which are being achieved with the products of the Sulphanilamide group (of which M and B 693 is one) have come as a great and most agreeable surprise to the medical profession. These drugs, an early example of which was the so-called 'prontosil,' exert, in many cases, powerful therapeutic effects upon streptococcal infections, and thus are being used with success in a wide variety of ailments, including infections of the brain and spinal cord. They are also being used with striking advantage in cases of pneumonia. This is perhaps the most notable advance in therapeutics which has taken place during the past 20 years."



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