

structed upon these principles none of the objections which have been so often justly raised against mechanical treatment can be applied to it, and we shall be enabled by its help to treat our patients much more effectually and rapidly than if we depended upon non-mechanical treatment by itself.

Queen Anne-street, W.

ON BEDSIDE URINARY TESTS.

By GEO. OLIVER, M.D. LOND., M.R.C.P. LOND.

ALL busy practitioners must admit the clinical utility and importance of accurate, time-saving, and portable tests, by which they may, during their rounds, decide with precision and certainty, and on the spot, pathological conditions of the urine, or satisfy themselves, and their patients, if need be, without delay as to the soundness of that excretion. From the numerous contributions on portable urinary tests which have recently appeared in these pages, it is clear that practical men, who have long realised the serious inconvenience of carrying about caustic fluids for testing at the bedside,¹ are anxiously feeling their way to more manageable and handy yet equally trustworthy reagents, and I take it the profession at large is prepared to accept any useful suggestions towards this end. Hence the articles of Dr. Roberts on Acidulated Brine,² of Mr. Stephen on the Volumetric Estimation of Albumen,³ of Dr. G. Johnson on Picric Acid, and of Dr. Pavy. The corrosiveness of nitric acid and the causticity and instability of Fehling's solution, rather than want of faith in the trustworthiness of these tests, have doubtless mainly prompted the suggestion of more portable reagents. In the substitutes we therefore seek for compactness, handiness, and portability, without the sacrifice of the generally admitted reliability of the old forms for clinical purposes. Doubtless others besides myself have been trying to supply this desideratum, and may be prepared to offer useful hints. Having, however, attained to certain results which have satisfied my own clinical needs, I feel I should not delay further in communicating them to those of my professional brethren whom they may interest; and I do so with the hope that they may prove useful, especially in the saving of time to busy men, and may facilitate urinary investigation at the bedside. My experiments have embraced the qualitative and quantitative testing of albumen, sugar, and total acidity. I should make the preliminary statement that I have succeeded in all my reagents in abolishing the fluid state, and likewise the solid form, either of powder, crystal, or pellet. It occurred to me some time ago that evaporation of the test fluids I was then using on chemically inert filtering-paper, linen, or other similar fabric, would secure the deposition of the reagents in a finely divided and concentrated state, a condition it was hoped favourable to such a rapid re-solution of them in the urine as to produce a quick and sensitive action on the constituents sought for. I soon discovered that my pieces of chemically charged paper were, when dropped into a small quantity of the urine in a test tube, very delicate and cleanly tests; and being in the most portable and compact of all forms for clinical work, and, moreover, affording better results than I had previously obtained from the old corrosive test solutions, it was not long before I cleared my spoilt urinary case of the latter; and I can assure my readers I did so with a feeling of satisfaction and comfort. Then, inasmuch as it was an easy matter to graduate the papers with standard solutions of the reagents, I next proceeded to inquire how far this simple process could be carried in determining the quantities of albumen, sugar, and total acidity; in other words, I thus attempted to apply at the bedside the volumetric method of analysis in the form of pieces of filtering paper charged with definite quantities of the reagents with a quantitative colour limitation on paper from which the percentage of the constituent sought for could be at once read of. Up to the present I am satisfied in having attained rapid and, for all practical purposes, sufficiently accurate results. I intend shortly, as a matter of curiosity, to scrutinise the figures indicated by my paper method for the estimation of albumen by the side of the burette with its

standard solution; and I hope on some future occasion to be able to state definitely how near I can approach quickly at the bedside the results which can only proceed from the laboratory with its attendant delay. I must content myself in the present communication with my notes on—

THE QUALITATIVE ESTIMATION OF ALBUMEN.

When picric acid was brought forward by Dr. G. Johnson as a remarkably delicate test for albumen, it occurred to me as likely to assist in deciding the sensitiveness of the various albumen tests from clinical evidence rather than from the laboratory, to take a series of urines containing very small proportions of albumen, to subject them to all the best-known tests, and to carefully tabulate the results. Since then I have met with twenty urines, among others, which supplied the required condition, all being faintly impregnated with albumen presumably derived from the presence of a small quantity of pus, or of blood, or of both, as determined by the microscope.⁴ The table of results annotated at the time of every testing is before me. All the urines were acid except one, which was alkaline. The reagents employed were the following:—

1. Strong nitric acid.
2. Boiling the sufficiently acid urine and afterwards adding dilute nitric acid.
3. Saturated solution of potassium ferrocyanide, and the urine freely acidulated by citric acid, as suggested by Dr. Pavy.⁵
4. Saturated solution of picric acid as advised by Dr. George Johnson.
5. Acidulated brine after Dr. Wm. Roberts.
6. Standard solution of potassio-mercuric iodide, after Tauret, and recently brought to notice by Mr. Stephen, with this modification—strongly acidifying the urine with citric acid instead of acetic.

The test fluid and the urine were in all the experiments brought into contact, as in Heller's method of using strong nitric acid, and the line of juncture was carefully examined for at least five minutes. Out of the twenty urines strong nitric acid failed to indicate the presence of albumen in sixteen instances, boiling in fourteen, acidulated brine in fourteen, and potassium ferrocyanide in twelve; while picric acid and potassio-mercuric iodide gave a distinct and generally a sharply defined ring of precipitated albumen in every case. The reaction was indicated by varying degrees of rapidity by the different tests; I must name the potassio-mercuric iodide and picric acid as the readiest; and of the two I would, if pressed for a preference, decide in favour of the former. I found as a rule strong nitric acid, acidulated brine, and potassium ferrocyanide much slower whilst bringing to light mere traces of albumen. I should here remark that I do not attach much clinical importance, so far as I can see at present,⁶ to the ability which the most sensitive of these tests possess in the detection of albumen in minimal proportions; for if I did not do so it might be justly thought by the practical physician that such observations as these indicate an ultra-refinement in testing of no utility in daily work. They were simply made for the definite purpose of affording data suggestive of the most thorough of all the best tests for the discovery of albumen in urine; and as such they undoubtedly point to the potassio-mercuric iodide and picric acid; and to potassium ferrocyanide and acidulated brine as next in order. I should remark that, with regard to potassium ferrocyanide, I am not quite satisfied that the method (Heller's) followed throughout these observations for the sake of uniformity in obtaining the comparative results, fairly put to the trial the capacity of this test as an albumen precipitant, for on several occasions I noticed the production of a very slight opacity all through the urine instead of a well-defined ring. I am, therefore, with this qualification in my mind, inclined to think somewhat better of it than the above-recorded number of failures might lead anyone to suppose. The outcome of these observations, as well as of more recent ones, suggests to me the grouping of the tests in the following rising order of power to detect small quantities of albumen:—1. Strong nitric acid and boiling. 2. Potassium

⁴ Whenever albumen was detected by any of the reagents mentioned in this paper, the urinary deposit was subjected to microscopical examination, and the impregnation was indicated, or at least suggested, by the presence of blood, pus, or casts.

⁵ See THE LANCET, vol. ii., 1882, p. 823.

⁶ Since writing the above, observations have, however, caused me to modify my first-formed impressions as to the clinical value of the keenest albumen precipitants as at present known.

¹ Hence the fact of many medical men having given up urine testing entirely during their rounds.

² THE LANCET, vol. ii., 1882, p. 613.

³ Ibid., vol. ii., 1882, p. 614.

ferrocyanide and acidulated brine. 3. Picric acid, potassio-mercuric iodide, and the two new tests brought forward in this paper. I have, as a rule, found the members of each group to be nearly equivalent, and confirmatory of each other; and, further, the albumen which strong nitric acid and boiling discovered was always detected with greater facility by all the other reagents, and those tests which comprise the third group frequently revealed traces which the others failed to bring to light; lastly, potassium ferrocyanide and acidulated brine certainly took precedence over strong nitric acid and boiling. As confirmatory of the foregoing observations I may mention that I lately supplied an analytical chemist with some strongly albuminous urine, and he subjected it in the following way to a comparative examination by strong nitric acid and the tests I am introducing in the paper form. After diluting the urine until the albumen was just detectable by the acid, he proceeded to further dilution, when the reaction failed to appear, though still the more delicate paper tests distinctly indicated the presence of the albumen. The albumen precipitants which I find work well as test papers are: potassio-mercuric iodide, potassium ferrocyanide, the two new tests, and picric acid.

1. *Potassio-mercuric iodide* was introduced by Mr. Guy Neville Stephen to the readers of this journal⁷ as an albumen precipitant discovered by Tauret of Troyes. I select it for production as a test paper because I formed a favourable opinion of it while working it side by side with the other tests, and because it enables one to readily determine the quantities of albumen at the bedside. I moreover found that this double halloid mercuric salt could be evaporated to dryness on filtering paper without impairing its albumen-precipitating power; and the charge thus communicated still retains its integrity, though introduced over six weeks ago. Each paper contains one-fifth of a cubic centimetre of a standard solution, the formula for the preparation of which I hope to give in an article "On the Quantitative Estimation of Albumen at the Bedside," after my return from a holiday abroad. In the mean time I should say it differs considerably from that given in Mr. Stephen's paper. Hitherto, whenever the presence of albumen was indicated by this test paper, corroboration was furnished by picric acid, and the other tests of kindred power; and when the amount of albumen was such as to bring it within the range of less sensitive reagents, these also afforded confirmation. This mercuric salt is said to cause a quasi-albuminous precipitate in the urine of patients taking alkaloids; but I am not yet convinced of the correctness of this assertion, which I must leave, from want of conclusive evidence, neither positively confirmed nor denied. To this test I have repeatedly subjected the urine of one patient taking six grains of extract of opium every night and two grains of codeia twice a day, of another having two daily subcutaneous injections of morphia and atropia, and of another taking fifteen grains of salicine three times a day with this result: a very faint cloud on adding the paper and a delicate ring by the "contact" method of testing; but the same reactions followed the use of picric acid, and the microscope revealed the presence of pus cells. After giving up the salicine, the urine still gave the same faint indications of albumen in small quantity. But should this source of error exist, it is not likely to induce more than a semblance to the merest traces of albumen, and it is, moreover, easy to guard against it. Then, again, should a patient be taking an alkaloid, this series of test papers provides other equally sensitive albumen precipitants.

(To be concluded.)

7 Op. cit.

A MEETING of the governors of the Cotton District's Convalescent Fund was held at Manchester on the 22nd inst., the Earl of Sefton presiding. The architect's report showed that the new hospital at Southport was making satisfactory progress, and arrangements were made for connecting the new with the existing hospital. It was resolved to continue the granting of beds without charge to patients until otherwise ordered by the governors.

THE outbreak of scarlatina in Belfast has lessened considerably, and last week the number in the Union Hospital was down to fifty-three, twenty-five convalescents having been discharged during that period.

CASES OF NASAL POLYPUS PROJECTING INTO THE NASO-PHARYNX; WITH REMARKS.

By E. CRESSWELL BABER, M.B. LOND.,
SURGEON TO THE BRIGHTON AND SUSSEX THROAT AND EAR DISPENSARY.

THE following cases present several points of interest both as regards diagnosis and treatment

CASE 1. *Aural Polypi on both Sides; Removal. Right Nostril: Small Polypus removed from the Front with Forceps. Left Nostril: Much narrowed, preventing view from the Front, but Polypus seen projecting into the Naso-Pharynx by Posterior Rhinoscopy; Removal with Cold Wire Snare.*—E. S—, female, aged thirty-two, was admitted a patient at the Throat and Ear Dispensary on May 30th, 1879, suffering from deafness, vertigo, and discharge from the ears. She had all her life been subject to an offensive discharge from the nose, with hard pieces coming away. Both auditory canals were occluded by large polypi. These were removed in the usual manner, leaving perforations in the tympanic membranes, and intermittent purulent discharge from the tympana. After treatment of the ears, attention was directed to the nasal cavities, and a small polypus was seen by *anterior* rhinoscopy in the right nostril. On July 30th it was removed by the somewhat unscientific method of avulsion with forceps, a proceeding which, by the way, I do not recommend. A polypus was also seen in the left nostril by *anterior* rhinoscopy, but owing to extreme narrowness of the nasal cavity on that side attempts to remove it were unsuccessful, only a piece being removed with the snare on Sept. 21st. On Nov. 28th by *posterior* rhinoscopy, with reflected sunlight, a glimpse of a polypus projecting through the left choana was obtained, and it could also be felt by palpation. The patient was ordered insufflations of tannin, and remained away a few weeks, being readmitted on Jan. 19th, 1880. Careful examination then showed a polypus of considerable size nearly filling the left choana, and projecting into the naso-pharynx. Voltolini's palate-hook was employed, but produced so much irritation that it could not be borne. The left nostril was so narrowed by deflection of the septum that the polypus could not be seen from the front, although a soft mass was felt with the probe, from which two small portions were removed with the cold wire snare. On Jan. 28th the polypus was removed in the following manner. The author's self-retaining nasal speculum¹ having been adjusted to the left nostril, a large loop of steel wire attached to an ordinary nasal polypus snare was introduced through the anterior nares along the side of the septum until it reached the posterior pharyngeal wall. By means of the left forefinger inserted in the naso-pharynx, the loop of wire (which expanded by its own elasticity) was then pushed round the growth. The wires were tightened by an assistant until the point of the instrument almost touched the polypus, and the growth was then easily cut off by drawing the loop home. Owing to its size, however, the polypus could not escape through the nostril, but had to be pushed back into the naso-pharynx with a probe, being then ejected through the mouth. The day following, both superior and middle turbinated bones on the left side could be plainly seen on posterior rhinoscopy, but no sign of the polypus was visible. The left nostril was so clear that when the patient was discharged, five days after the operation, the movement of the palatal muscles on deglutition on the left side could be seen by *anterior* rhinoscopy, which affords, I find, a fair test of the permeability of the lower part of the nasal cavity. Ten months later, examination showed no return of the growth.

CASE 2. *Nasal Polypus on left Side projecting into Naso-Pharynx; Removed with Cold Wire Snare. Right Nostril: Small Polypus removed from Front of Middle Turbinal. Also small Erectile Growth on Right Side of Septum, near Posterior Nares, removed with Snare. Use of Voltolini's Palate-hook.*—This case is very similar to the preceding. E. Y—, nurse, aged forty-eight, was admitted to the Dispensary on April 3rd, 1880, with the following history:—

¹ Dr. A. Hartmann, referring to this instrument (Archives of Otolaryngology, March, 1882, p. 85), says that with it it is impossible to press the tip of the nose upwards. He cannot have tried it, or would find that, by applying the band *obliquely* in the manner figured in the British Medical Journal, the tip of the nose is easily raised by means of the double-curved hook.