the telescope. The shutters can be moved into the field from right and left respectively, each by its own micrometer screw, and to each screw is attached a drum, the one being on the right and the other on the left of the telescope. On each of these drums is cut a helical slot in which runs an index, and the drum is engraved (see Fig. 3)

Fig. 3.

in such a manner that the reading of the index gives the position in the spectrum of the corresponding shutter in wave-lengths direct.

Thus, it will be seen that if, for instance, the reading on the left drum-head is 5,320 and that on the right drum-head is 5,920, the region of the

spectrum from wave-length 5,320 to wave-length 5,920 is exposed to view in the eyepiece.

An adjustment for the shutters is provided in case of possible zero alterations in course of time. These adjustments—which are provided for each shutter independently—are reached by unscrewing the small screw caps on the right and left of the eyepiece end of the telescope. This exposes a screw with a square head, on to which head fits a key which is provided. To adjust the shutter the corresponding drum-head is set to the wave-length of one of the sodium lines. The slit is illuminated by a sodium flame, and the key is turned till the edge of the shutter exactly coincides with that line. The key is then removed and the reading checked. The drum will then read correctly throughout the entire spectrum.

Care should, of course, be taken to avoid pressing inward with the key, to which only a turning force should be applied.

The method of estimating colour perception described above will be found in detail in my book on *Colour Blindness* in the International Scientific Series, and in a paper in the *Transactions of the Ophthalmological Society*, 1907. It is the method which I originally advocated for testing colour perception, but with the two previous spectrometers devised by me the process was very tedious when quantitative observations were required. The same work can be done with this instrument in less than a twentieth of the time. It is made by A. Hilger, 75A, Camden Road, N.W.

The instrument should be used as far as possible with a known quality and intensity of light. The observer should first ascertain the exact position of the termination of the red end of the spectrum, the left-hand shutter being moved across until every trace of red just disappears. The position of the pointer on the left-hand drum is noted, and the wave-length recorded. The left drum is then moved so that the shutter is more towards the middle of the spectrum. The right-hand drum is then moved until the pointer indicates the wave-length recorded as the termination of the red end of the spectrum. The observer then moves the left-hand shutter in and out until he obtains the largest portion of red, which appears absolutely monochromatic to him, no notice being taken of variations in brightness, but only in hue. The position of the pointer on the left-hand drum is recorded. The left-hand shutter is then moved more towards the violet end of the spectrum. The right-hand shutter is then placed at the position previously occupied by the left-hand shutter. In this way the whole of the spectrum is traversed until the termination of the violet end of the spectrum is finally ascertained with the right-hand shutter. The variation of the size of the patches and the terminations of the spectrum with different intensities of light can be noted. The instrument can also be used for ascertaining the exact position and size of the neutral patch in dichromics, the position of greatest luminosity, and the size and extent of pure colours. When it is used to test colour-blindness, the examinee should first be shown some portion of the

interior of the spectrum, and then asked to name the various colours which he sees. In this way he will have no clue to the colours which are being shown him.

The cost of the construction of the instrument was defrayed by a grant from the Royal Society.

TREATMENT OF POST-OPERATIVE SHOCK BY PITUITARY EXTRACT.

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THE great disadvantage of adrenalin in the treatment of shock is that though it produces great rise in blood-pressure and increase in arterial tone, this effect passes off in an hour or so, and the dose has then to be repeated. Any drug which would produce the same effect without the disadvantages mentioned would be a distinct advance. This I think has been discovered in pituitary extract.

I am indebted to Messrs. Burroughs and Wellcome for the samples of the drug which I used in the three following cases. It is an extract of the posterior lobe of the pituitary body, and is a fluid sterilized in the autoclave, each phial of which contains 1 c.cm. of a 20-per cent. solution.

The contents of one of the phials were injected intramuscularly into the patient's arm before the patient had fully recovered from the anaesthetic. The effect was almost immediate, and the almost imperceptible pulse soon became large and bounding. This lasted from twelve to sixteen hours, and gradually passed off. Not only did the pulse become larger in expansion but it was also slowed, and whereas it had been irregular it became regular. This effect seems due not only to the action of the drug on the blood vessels, but also on the heart. I gave the injection in conjunction with normal saline per rectum.

CASE I.

A woman was admitted complaining of great pain in the abdomen. She had a swelling on the right side over the appendicular region and extending up above the umbilicus. The temperature was 101°, and the pulse 120. She stated that she had had this pain and temperature for over a week before admission. Abscess of the appendix was diagnosed, and immediate laparotomy decided on, as the patient was then somewhat collapsed. On the abdomen being opened an ovarian cyst was found with a twisted pedicle, and which was completely bound down by adhesions at the base; 12 to 15 oz. of foul-smelling pus were evacuated. The pedicle was transixed, the adhesions tied and cut, and the cyst removed. The whole operation took an hour and three-quarters. The patient was put back to bed in a very collapsed condition: the pulse was small, thready, irregular, and exceedingly difficult to feel. The heart was fast and irregular, and the apex beat almost imperceptible. Pituitary extract was injected into the deltoid muscle, and in five to ten minutes the pulse became gradually larger in expansion, more regular both in time and expansion, and slower. In about a quarter of an hour the pulsation in her temporal arteries could be seen at some yards' distance. In about half an hour's time 3x of normal saline were given by the rectum, and the same quantity four-hourly during the night (the operation was finished at 10 p.m.). The next morning the pulse was still large, and the effect of the pituitary extract was then evident, but gradually passed off in about fifteen hours. The woman recovered.

CASE II.

A boy, aged 2, was admitted suffering from intussusception of ileo-caecal type, with a history of sixteen hours' duration. An hour after admission he was operated on and the intussusception reduced. The last portion of the bowel was very difficult to reduce, and was very dark in colour and congested, with a considerable deposit of lymph. It was returned, and the wound closed. The boy was put back to bed, and was found to be suffering from considerable shock. An injection of 7 minims of pituitary extract was given into the deltoid muscle, and in a few minutes the small, feeble pulse became large, regular, and forceful. Saline was also given by the rectum in small quantities. The effect lasted about twelve hours, and the boy made an uneventful recovery.

CASE III.

A man suffering from Jacksonian epilepsy was trephined, and a considerable area of bone nibbled away over the motor area. A tumour was there found, but proved irremovable. The wound was stitched up, and the patient put to bed. There was considerable shock. An injection of 1 c.cm. of pituitary extract was given into the deltoid muscle, and the same effect was observed as in the other cases. The man got over his operation, and left the hospital.

In the adults the full dose of 1 c.cm. was given. There were no signs of any ill effects whatsoever. There was

an increase of the urine passed next day after operation, and it was passed naturally. There was no increased tendency to haemorrhage. The only disadvantage observed was that there was a tendency to reaction after the effect of the injection had passed off, but this was transitory, and the patient was then over the worst period.

I have to thank Mr. Stamford for permission to publish the first two cases, and Dr. Foulds for the third.

INVERSION OF THE APPENDIX AND CAECUM.

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THE number of recorded cases of partial or complete inversion of the appendix appears to be small, so the comparative uncommonness of the condition, as well as its interest, leads me to think that observations on an additional example are worthy of recital.

dilated and the caecum was not visible. The portion of the ascending colon in view was widely and tightly distended and fixed to the posterior abdominal wall. The appearances were very confusing, as three portions of small gut seemed to enter the base of the mass; on pulling gently on these one was seen to come away out of the centre of the mass, and proved to be a loop of small intestine which had merely packed itself into the hollow—most likely very recently, as it was not in any way strangulated. This disposed of two of the entering portions of small intestine; the third was then defined as the termination of the ileum connected with an intussusceptum. Traction on this caused the tumour in the transverse colon to recede rapidly until about midway in the ascending colon, where it became immovable, and further reduction was impossible without serious tearing of the structures. A longitudinal incision was then made in the colon, the mass extracted, cut off at its neck, the disparity in the calibre of the tubes adjusted, fine silk sutures inserted, and the junction returned into the colon; a line of similar suture material was carried round the joint on the peritoneal aspect, the wound in the intussusciptions united with a double row of sutures, a pint of hot saline poured into the peritoneal cavity, the abdominal incision closed with through-and-through sutures of silkworm gut, a wick of gauze carried down to the vicinity of bowel repair and retained for forty-eight hours.

Fig. A.—Mucous surface of excised portion. 1, Colon; 2, ileo-caecal valve; 3, inverted appendix.

History.

A girl, aged 7, was admitted to the Newport and County Hospital under my care on February 29th, 1908, with a history of having had attacks of pain in the abdomen for five weeks previously. There was some diarrhoea at first, but lately the bowels had acted only in response to aperients. Blood had been passed by the rectum, and vomiting was frequent.

Condition on Admission.

The patient was obviously very seriously ill, the pulse small and rapid, the abdomen somewhat distended. Examination revealed a soft elongated tumour in the region of, and parallel to, the direction of the transverse colon; the tumour was freely movable, and manifestly tender to touch. A diagnosis of intussusception was ventured, and immediate coeliotomy determined on. A.C.E. was administered by Dr. R. McC. Linnell, and Dr. O. K. Wright assisted at the operation.

Operation.

A vertical incision about 10 cm. long was made through the middle of the right rectus; the small intestine was found to be

Fig. B.—Peritoneal surface of excised portion. 1, Colon; 2, ileum; 3, tip of the appendix.

After-History.

The child made an excellent recovery, and was discharged well on March 26th, 1908. I have seen the patient recently, and she is in good health.

Description of Part Removed.

An examination of the specimen shows it to be composed of caecum and colon 11 cm. in length, its width when cut vertically and spread out, 9 cm. The length of ileum removed is 5.5 cm. The appendix is 4 cm. long, 1 cm. of its base being inverted; the meso-appendix is thick and strong. The distance between the centres of the aperture of the appendix and ileo-caecal valve is 3 cm.

A careful scrutiny does not reveal any evidence of the ileum having passed through the ileo-caecal valve.

The accompanying illustrations will demonstrate the parts more clearly than any more detailed description.

Fig. A shows the mucous surface; the figure 1 is on the colon; 2 on the ileo-caecal valve; 3 the inverted appendix.

Fig. B shows the peritoneal surface; the figure 1 is on the colon; 2 on the ileum; 3 on the apex of the appendix. The mass is swollen, oedematous, in parts almost gangrenous; the