are in process of amendment, and the same principle is being applied to instruments for the arrest of visceral oozing and for parietal and omental hæmorrhage and for the simplification of the operation of total removal of the uterus. Also for operating on hæmorrhoids. I do not advocate my proposals as likely to reduce the primary mortality of operations, I believe that has been done so far as may humanly be possible. But I am quite sure that they or some others on similar lines will go far to secure our secondary results being more satisfactory and encouraging alike to our patients, ourselves, and to the art of surgery. I have no doubt the new electric hæmostat will find many fields of usefulness in general surgery.

The Crescent, Birmingham.

PERINEAL PRESSURE IN CYCLING.¹

By ARTHUR CHARLES ROPER, F.R.C.S. EDIN.,
M.R.C.S. ENG.,

CONSULTING SURGEON TO THE EXETER DISPENSARY; SURGEON TO THE
DEVON AND EXETER HOSPITAL; AND ASSISTANT SURGEON TO THE
WEST OF ENGLAND EYE INFIRMARY.

FOR the whole of last summer and for an uncertain number of antecedent cycling seasons I have noticed that when riding a cycle any considerable distance, and especially when riding at a good pace, I have found it necessary to dismount and urinate every hour or oftener, and this was obviously not on account of any increase in the amount of urine excreted. When doing this I have found the penis to be cold and shrunken and the scrotum in a similar condition. The return to a normal condition was often accompanied by considerable aching. There was usually a very slight difficulty in passing urine and a difficulty in getting rid of the last few drops, so that if one was unhappily hurried or disturbed in the final stage of this somewhat commonplace operation a familiar and uncomfortable trickle down the left thigh marked the fact that one was in a more or less senile condition. Another thing which I noticed or subsequently called to mind was that I had to micturate oftener than usual at night. I mean that, my usual habit being to empty my bladder before getting into bed and having no further occasion to pass urine before morning, I found that after riding I had to get up once or perhaps twice for this purpose. Many cyclists have complained to me of the foregoing symptoms and I am inclined to regard them as danger signals which should be regarded lest, as in my case, worse befall. In the beginning of last September I took a ride of about thirty miles and had to travel over some very rough roads. First came the frequent micturition trouble, followed by dull aching over the pubes, and by the time I reached home I was in a state of considerable discomfort and had much difficulty in passing urine and pain in the act. A hot bath relieved the retention, but I had to use a morphia suppository to cure the pain, and I was soon forced to the unpleasant diagnosis of cystitis, which I could not and cannot doubt was traumatic in its origin and was probably started by bruising and constant jarring of the bulbous portion of the urethra. To cut a long story short I had a most uncomfortable two months of it. The pain was at times so bad that I had to lie on my bed for an hour or two. I had the greatest difficulty in so arranging my work as to be certain of passing a public urinal every three-quarters of an hour or getting to a patient's house where I could lose myself in the w.c. on my way to or from the bedroom (it was astonishing to me to discover how closely those places are watched; I had never suspected it before); and as to medicines, boracic acid, salol, and benzoate of soda were worse than useless; citrate of potash with hyoscyamus and buchu were useful as palliatives, though uncertain; belladonna suppositories afforded by far the best relief from the strangury, but were of no use unless pushed to absolute dryness of the Schneiderian membrane; and the drug which cured me was arsenic, which my friend Mr. Bruce Clarke prescribed for me about the middle of November, though it was not until about Christmas that I ceased to find the call to micturate very urgent, albeit not unduly frequent. I found on three or

four occasions when I was very bad that thoroughly washing out the bladder with hot water and boro-glyceride gave me a day's relief, but my urethra was so tender in front of the triangular ligament that I avoided that as far as possible, only doing it when my urine was alkaline and the mucus unusually abundant.

In order to show the mode of origin of these troubles I will first briefly refer to the anatomy of the perineum. It is a rough triangle, or, as anatomists prefer to call it, a lozenge-shaped space, bounded behind by the coccyx, the edges of the glutei muscles and sacro-sciatic ligament, and at the sides and apex by the pubic arch and symphysis. In the middle line from behind forwards are the rectum and the urethra with its bulb. On either side are the ischio-rectal fossæ, containing the nerves and bloodvessels which are distributed to the rectum and overlying skin, and which run forward to supply the penile and urethral muscles, and are finally distributed to the integument of the penis, scrotum, and perineum. The floor of the perineum is formed anteriorly of the unyielding triangular ligament, which is pierced by the urethra at its posterior part and nearer to the symphysis pubis by the dorsal vein and dorsal arteries and nerves. After the bulb it is with the nerves that we are most concerned, and they are—(1) the inferior pudendal, from the small sciatic, which pierces the fascia lata, curves forward and, running along the ramus of the pubis, is distributed to the skin of the scrotum; (2) the anterior and posterior superficial perineal from the pudic; (3) the muscular branches of the pudic to the transversus perinei, the accelerator urinæ, erector penis, and compressor urethræ muscles; and (4) the dorsal nerve of the penis, the terminal branch of the pudic, which perforates the triangular ligament behind the crus of the penis. We have then between the skin and the bone the inferior pudendal nerve, and between the skin and triangular ligament the bulb, urethra, and superficial perineal nerves, and the accelerator urinæ and erector penis muscles with their nerves. Obviously, then, anything which can exercise pressure between the sides of the pubic arch must compress these structures more or less against the bone and the unyielding triangular ligament, thus accounting by pressure on the sensory nerves of the part and on the motor nerves which supply the muscles of the urethra for the shrivelling and aching of the penis and inability to completely empty the urethra after micturating.

And now let us look at an ordinary bicycle saddle. Could anything be more deftly contrived to exercise this pressure? What is it but a modified wedge which becomes more and more operative as it is softened and stretched by use? Stretched by use! And when it is so stretched, is the modification in its shape a betterment or the reverse? The answer is unhesitatingly to be given, worse, far worse, for then we ride upon what is more or less of a strap, which shapes itself with painful accuracy to the perineal curve, while the concave form which it takes renders it practically impossible to sit back upon it and get good bearings for the ischial tuberosities. Let us for a moment turn our attention to its construction. It is mounted on a spring of some kind or other, or it is merely put on the machine without a spring, the resiliency of the pneumatic tyre sufficing for some riders. It is fixed at the peak only in front and behind by its whole posterior border to a steel plate called the cantle. It is unlike the equestrian saddle in not being supported in its whole length by a plate, technically the "tree." Its ground plan is roughly that of an isosceles triangle suspended between the apex and the base, a bridge, nay, a veritable "pons asinorum," and one that may claim to rival the "pons" invented by that terror of my youth, Euclid, in the amount of discomfort which it has caused.

Now, of course, the parts of our body which are specially adapted for sitting are the tuberosities of the ischium with their surrounding cushions of muscle and fat. It is, however, the bony parts which are intended to carry the weight, and it certainly is not intended that our ischio-rectal fossæ and the delicate structures of the perineum should carry the weight of the body upon a jarring or bumpy road. The transverse diameter of the outlet of the pelvis—i.e., the distance between the ischial tuberosities—is four inches, and at least one inch and a half must be added to this on either side if we are to derive the full benefit from our natural padding, and since we should not find it comfortable to sit on the steel base of our triangle we should have, if we use a suspension saddle, at least seven inches of suspended leather behind upon which to sit, exclusive of the steel cantle. But even supposing that we have a new saddle upon which we

¹ A paper read before the Devon and Exeter Medico-Chirurgical Society, Feb. 21st, 1896.

can sit comfortably upright with our tuberosities properly supported, what happens as soon as we begin to drive our machine? Our thigh straightens, our hamstring muscles contract and harden, &c., the edge of the saddle acting as a fulcrum, we are levered forwards until we come to that part of the saddle where no leverage obtains, which amounts to the same thing as that part of the saddle where our tuberosities have no firm bearing. This can be discovered in a moment if you will sit on a table and straighten your thighs. The action lifts you off the table. Thus, then, you are lifted on to the narrow part of the saddle and your body weight is transferred from the back to the peak of the saddle, from your tuberosities to your perineum and ischio-rectal fossa. But this is not the only source of pressure. Men, at any rate when they ride against a wind or up a hill, lean forward in order to present a less opposing surface to the wind or to throw their weight and centre of gravity directly over the pedals, and in this position of leaning forward bring much more pressure to bear upon their soft parts in front. To escape the former difficulty—i.e., the levering of the body forward by the act of pedalling—you may slightly tilt the peak of the saddle upwards, say 5° from the horizontal, and this will keep you fairly in your seat back upon the saddle, but it brings the peak up against the perineum, and when you lean forward you are worse off for apposition of the peak to the perineum than you were with the saddle in the horizontal. Many are the inventions which have been patented in view of this difficulty. A patent agent informed me a short time since that the patents handed in at the Patent Office for bicycle saddles only amount to fifty yearly, and a cycle accessory dealer wrote to me a few days ago saying that he has sixty or seventy saddles illustrated in his list for this season. But they may be divided for our purpose into two classes—saddles and seats; and I propose to go into this question, which appears to bear more upon cycling than surgery, because it is necessary that we should be able to advise our patients upon this subject, and to advise them well we must understand the subject thoroughly.

The first cycle was the hobby-horse, which might be described as a bone-shaker, without pedals, the feet being used as propellers on either side—punting on a bicycle. Obviously the position of the rider must have been hanging over a something which did duty for a saddle by his fork or perineum, and not sitting on his tuberosities. I should imagine that perineal pressure had a good deal to do with bringing this into disrepute. After a long hiatus which was partially occupied by the four-wheeled velocipede came the bone-shaker propelled by pedals on the axle of the front wheel where the saddle was retained, and as cycling has never since ceased the descent of the saddle may be thus briefly traced. Doubtless it was found to be more convenient than the seat of the velocipede, and in my opinion as a practical cyclist it undoubtedly is the best, and until something better and hitherto undiscovered arises the saddle or some modification thereof will remain. In spite of the advertisements of the makers of anatomical seats and the opinions of many eminent medical men I contend that for the work which has to be done on it the saddle-type of seat is the best, though I contend with an equal conviction that the ordinary make of saddle is bad and deleterious. I will take the seat first and will ask you to note that the absence of a peak, something to project between the thighs, means considerable loss to a cyclist. First, the peak keeps him on the saddle and steady, and without it he has to use some amount of force—very little it may be, but still some—to keep him on, and this is noticeable from the aching of the arms or thighs which attends the first efforts on a seat. Secondly, it deprives the cyclist of a considerable portion of one of his means of steering. These means are (1) the handle bar and (2) balance; and it is balance which is rendered easy by the peak of the saddle. I see letters in the cycling press from men who have become accustomed to seats who say that they find them more comfortable than saddles. I cannot claim to have given them a prolonged trial and so do not wish to pose as an authority on them; I have, however, tried those which I here show you and may give you my impressions of them.

1. The Burgess Seat is composed of two pads mounted on separate springs and capable of any adjustment necessary to make it fit the rider. So far as design goes it is ingenious, and one would have thought that the circular shape would have obviated the tendency of the thigh action to lever one off the seats, but I found the same difficulty in all the seats excepting

La Sellette Papillon, that I had to use a definite amount of force both of arms and legs to keep on the seat, and any unusual jolt such as would pitch one forward in a saddle pitched one forward off the seat. I think that this seat is well suited to elderly riders who may have prostatic trouble and who do not want to ride fast and are careful in choosing their road. It has one advantage over the next which I

FIG. 1.

Burgess.

shall show you in having no resistance for the thighs to overcome in the act of extension. The seat or seats are made concave on their upper surfaces to take the ischial tuberosities, and I regard this seat as a good attempt at solving a difficult problem. 2. The next seat is the Autapto, which looks like two short thigh-splints distinct and parallel, and each one working on a well-adjusted recovery spring. It follows the thigh up from extension, but the resistance of the spring has to be overcome by the

FIG. 2.

Autapto.

muscles which extend. I suppose that it would be arguable that the force thus expended in overcoming the resistance is restored as the spring brings the thigh up again, but this does not seem to me to be quite fair on the extensors, which certainly have the hardest part of the work to do. I found this seat less inclined to throw me forward than the others, as although I was always coming off on one side I was all right on the other. My impression of the Autapto is that it is comfortable and safe, though I must own to a distaste for the extra work which that recovery spring throws upon my hard-worked extensors. 3. La Sellette Papillon is, to my mind, the

FIG. 3.

La Sellette Papillon.

most comfortable of all, and I could be content to ride on it if I had to give up the saddle. It is a well-planned and comfortable seat, and the velveteen covering lends grip to the buttocks and so gives a feeling of security. In a short trial of it I found nothing to make me think it would cause saddle soreness, and I should place it first in the category of seats.

With regard to saddles it will be well for us to start upon this concluding portion of my paper with an idea as to what we want (1) to have and (2) to avoid. We want to have something that we can sit astride of (not hang over) and work our legs without hindrance or discomfort to our

thighs and without levering our tuberosities off the seat and on to the peak, and, further, it should provide means of escape for the soft perineal structures in case a jolt or voluntary alteration of position should tend to put pressure upon them. We want to avoid perineal pressure and anything which tends to riding forward off the broad part or to galling the buttocks or thighs. To meet these requirements I think it will be apparent to you that the surface of the saddle should be a plane and the saddle must be capable of a slight tilt backwards if the rider require such to keep him seated, and, secondly, a groove or opening for the perineum is advisable, though not essential, for in the Brooks' B 90 saddle you will find as comfortable a saddle as you can wish for. Then saddles may be divided into suspension and treed saddles, and for ease and comfort the suspension have my preference. The Sans Bec is misnamed, as it has a beak.

FIG. 4.

Sans Bec.

The peak is, it is true, reduced to a minimum and the sweep for the thighs is good. You will see that it is made on a tree which is perforated for the reception of symmetrical and ingeniously contrived rubber pads, which are placed on either side of a deep but too narrow central furrow. I expected to be comfortable on this saddle, but was not, and I think that the reason was that it was not roomy enough. I should get sore on it. It is a saddle which may be recommended to young men who care more for lightness and speed in riding than for actual comfort, and they need have no apprehension of perineal pressure. Suspension saddles are the various makes which are usually supplied and are usually faulty. There is, however, one which I mentioned just now, the Brooks' B 90,

FIG. 5.

Brooks' B 90.

which is comfortable, and from its length practically safe. Furnished with an elastic, easy, spring, it is most comfortable to ride upon though it will never come into general use, I fear, on account of its size and weight; but to those riders who do not heed these matters it will be found a desirable seat and may be slightly tilted backwards with advantage.

I have worked at this saddle question for some time and have had various wooden ones carved, each with an opening for the perineum, and I have found them not uncomfortable to ride upon. I have, however, a liking for the suspension saddle and have had these two made by a smith and

FIG. 6.

harness maker for my own use. You see that they are long and have an almost absolutely flat surface save only for the slight downward curve of the cantle. The peak has hardly any superior surface, being occupied almost entirely by an

opening which runs back from the pommel and is preserved in one case by a metal fork and in the other by a wire. The peak, too, rotates round its horizontal axis and so provides a slight and comfortable amount of play with the thigh action.

This paper will be incomplete to a far more serious extent than it is if I omit all mention of women's saddles. I have had no case of injury to treat, but have been asked about chafing and soreness. As these occurred, without exception, in beginners one must not regard them too seriously. I think, however, that women are less liable than men to damage from pressure. They have not the exposed urethra, and have no prostate to be bumped about. Still they, or those who ride in skirts, have to use a short-peaked saddle, and I think that they would be as much benefited by a groove as men are. They do not ride as fast or as carelessly as men do, and so can somehow do better with a seat than we do. A word of practical advice to any who know of women who are beginning and have a fancy for the seat is that they ride on it as soon as they have learnt to keep on their machine, as the more they get accustomed to the saddle the more difficult they will find it to make the change. In conclusion, let me say that I can recommend no saddle as being universally applicable. I might as well recommend one pair of boots to fit everybody. Each rider has his peculiar method of sitting and pedalling, and each must select for himself a saddle which suits him. I do advise riders to try their saddles before they buy them, and to try them on a ride and not as they do a machine by a few turns up and down the street outside the agent's shop. They should understand thoroughly the right position of the saddle, which is such that they can, at the fullest extension required of the leg, sit properly upon the broad part of the saddle; and to obtain this the saddle must be low enough and far enough back, and probably in riding this position will be assisted by a slight raising of the peak. If the saddle is too high they are obliged to hang over the peak to reach the pedals, and if it is too far forward the leverage of the thighs throws them on to the peak and pommel. A good rule as to the height of the saddle is to see that at the point of greatest extension of the leg the heel can be brought to, or slightly below, the level of the pedal. Given a good saddle properly placed I am confident that only a few elderly riders need fear perineal pressure in cycling.

Exeter.

HÆMORRHAGE DURING THE EARLY MONTHS OF PREGNANCY.¹

By AMAND ROUTH, M.D., B.S., M.R.C.P. LOND.,

OBSTETRIC PHYSICIAN WITH CARE OF OUT-PATIENTS AT CHARING-CROSS HOSPITAL, PHYSICIAN TO THE SAMARITAN FREE HOSPITAL FOR WOMEN, ETC.

WHEN I was asked to read a paper at the South-West London Medical Society I thought over the various common obstetric and gynaecological ailments which most concern us as practitioners. In the special departments of medicine, obstetrics and gynaecology, the two symptoms which at once attract a woman's attention are *pain* and *hæmorrhage*. As an isolated symptom in gynaecological cases, pain is more likely to lead a patient to her physician than hæmorrhage. It is this fact which acts so disastrously during the course of uterine cancer, most patients neglecting the early hæmorrhage and discharge, only seeking advice when pain is superadded. In obstetric cases, on the other hand, where a woman believes herself to be pregnant, the onset of hæmorrhage usually induces her to send for professional assistance. I therefore chose Hæmorrhage during the Early Months of Pregnancy as the subject for my paper, and did so with the hope of learning a good deal more from my audience than I can hope to personally impart. I do not propose to discuss the subjects of accidental hæmorrhage or that arising from placenta prævia, for these varieties are best recognised in the later months and are for all practical purposes indistinguishable from other cases of threatened abortion, even if they should cause hæmorrhage in the early months. Cases of hæmorrhage during the early months seem to naturally fall into two groups: (1) where the hæmorrhage is

¹ A paper read before the South-West London Medical Society on May 13th, 1896.