a product of the pancreas which lowers blood pressure. They called it kallikrein—a vasomotor hormone. Since this hormone dilates the peripheral blood vessels, thus lowering the blood pressure, its therapeutic use in disturbances of the climacteric may possibly be of value. Whether this applies also to menorrhagia has so far not been investigated thoroughly.

CONCLUSION

In the short time at my disposal it has been impossible to give more than a short survey of a mere part of the whole hormone question. I have only touched upon those factors which I consider to be of special importance in gynaecology. How great is the interest in hormones, particularly anterior pituitary, was demonstrated at the German Gynaecological Congress which I attended two months ago in Frankfurt-on-Main. Twelve papers were read, and a further thirty speakers took part in the discussion on this subject alone. Most of the papers dealt with animal experiments and were more theoretical than practical, showing that we are still at the beginning of our knowledge. The new tests which the physiologist plans and works out facilitate the preparation by the biochemist of standardized hormonal preparations which can be used by the doctor. Vice versa, the observations and suggestions of the doctor amplify the theoretical laboratory investigations. I see in this very collaboration of several sciences the most practical way of arriving at a correct understanding of the whole hormone question. Not only is this a matter of several branches of science working together in perhaps each separate land, but collaboration between the different countries too. It has therefore given me especial pleasure to appear at the Annual Meeting of the British Medical Association as a German physiologist speaking to English gynaecologists, and I am grateful for the invitation which brought this about.

SOME POINTS IN CONNEXION WITH THE TREATMENT OF GLAUCOMA

BY

R. H. ELLIOT, M.D., F.R.C.S.
LIEUTENANT-COLONEL (LATE OF I.M.S.)

From the earliest days of the operative treatment of glaucoma, dating back over seventy years, there has always been a tendency towards the establishment of two schools of thought: that which favours operative measures and that which relies on medical treatment alone. Formerly there was the strongest antagonism between the two. The more generally adopted view of to-day is a compromise in which both methods are made use of, each case being judged on its own merits. It may be said, without fear of challenge, that no case should be submitted to operation if the use of miotics, the employment of massage, and attention to the patient's general health suffice to arrest the course of the disease and to keep the case *in statu quo*.

MIOTICS

Of the two miotic drugs pilocarpine is to be preferred to eserine in the great majority of cases for several reasons: (1) It causes less conjunctival irritation. (2) It does not give rise to the same measure of spasm and headache, for it acts more quietly and evenly. (3) Suitably employed, it maintains the necessary contraction of the pupil quite as well as its more powerful rival.

When it is a question of producing miosis as rapidly as possible in a patient with congestive glaucoma, the case is quite different, and eserine is the drug to employ. Pilocarpine should be used in the weakest doses that will maintain efficient miosis, and should be given last thing

at night, first thing in the morning, and about 3 o'clock in the afternoon. This timing is important, for, (a) rises in pressure occur frequently during sleeping hours, owing to the withdrawal of the pumping action on the canal of Schlemm exerted by the ciliary and iris muscles; and (b) the afternoon is, for many patients, a time of fatigue in which the vasomotor tone falls, and the pressure in the eye is consequently in danger of rising. If medical treatment is to be fairly tried, miosis must be sustained. Sometimes trouble is experienced owing to conjunctival irritation set up by the drug. This can best be combated by the use of silver collosol, alternated with hazeline eye-drops (40 minims to the ounce of rosewater). It sometimes, however, though fortunately rarely, becomes a very serious factor in the case, making the maintenance of miosis difficult, if not impossible. Operative intervention may then become a necessity.

MASSAGE

The importance and value of ocular massage in glaucoma does not seem, even now, to be sufficiently appreciated. There are certainly quite a number of cases under treatment for raised tension of the eye in which massage is either not being used at all or else not to the fullest advantage. The technique is simple, and any patient can be taught to use it for himself. Both hands should be used, and the index or middle fingers should be placed on the upper lid as far apart as possible and with the eyes looking downward. Alternate pressure with each finger in turn will rapidly lower the tension of most eyes, but the pressure must be made toward the centre of the eye, whereas the great majority of patients employ a stroking movement which is of little value. Strong pressure should not be used; light, quick, almost butterfly movements will do more good and will not hurt the patient at all. In fact, he often offers the comment that he "hardly felt the massage, and does it much stronger himself." It is, however, the light, quick pressure, with the fingers far apart and with every stroke toward the centre of the eye, that is by far the most effective.

GENERAL RULES

Remembering the influence of vasomotor exhaustion on glaucoma, there are certain practical rules which should be impressed on every patient; indeed, it is well to write these down for them.

1. *Avoid Over-fatigue*.—Few things are more dangerous to the man who is threatened with congestive glaucoma than allowing his vital energy to run low. He should work within reason; indeed, this is much better for him than idleness, but he should never exhaust himself. Exhaustion means a lowering of the vasomotor control and a consequent provocation of local congestion, especially in the cerebral circulation. On the other hand, to cut him off from work which engages his attention, diverts his mind from his trouble, and fills his time profitably, is bad and not good, though it is often done. Moreover, the intermittent action of his iris and ciliary muscles is a safeguard of which he is to some extent deprived if he is stopped from reading and writing, and kept in the shade. I have often released a patient from this strict regime of doing nothing, and have never seen harm follow. On the contrary, the patient has benefited materially, and has become more cheerful and brighter in his outlook. The influence of the mental on the physical condition in glaucoma is a psychological factor of great importance. The unoccupied man not only has time to fret, but the very fact that occupations are forbidden predisposes him to do so. Allow him to engage his mind and you cut the vicious circle.

2. *Get Regular Sleep*.—Much of what has been said under the last heading applies again here. If necessary, the aid of drugs, such as luminal, should be invoked. Glaucoma patients are often elderly, and the boggy of

the drug habit can be made too much of in such cases, a view now more widely held than formerly.

3. Take Regular Meals and Avoid Alcoholic Excess.—It is unwise to cut a patient off all alcohol or to limit his diet too strictly. Interference with the habits of a lifetime is often mischievous, and, to many patients, means a real deprivation. While most elderly patients are better the less alcohol they take, there are a few who are benefited by moderate indulgence in this drug.

4. Avoid Stooping and all Sources of Strain.—Running for trains or buses, stooping down with the head low, whether for tying a boot-lace or for weeding in the garden, lifting heavy weights, pulling on straps and cording, the straining of constipation, and any other form of strain should be avoided. This does not mean that the patient is to be an invalid. He can put his foot on a chair to tie his boot-lace; he can weed with a long-handled hoe; and he can get the younger members of his family to strap the holiday trunks. If he cannot catch the train standing in the station he can wait for the next one. He must learn his limitations and live his life as fully as possible within those limitations.

5. Avoid all Causes of Anxiety.—This is easier advice to give than to follow, but it is important to give it for all that. Once the importance of avoiding mental strain is realized, there is a great deal the patient can do in determinedly relegating to his subconscious mind many of the troubles of his daily life. Moreover, this is a detail in which friends and relations can do much to help. Few things have impressed me more in a long experience of this disease than the frequency with which sorrow or the crushing burden of business or family trouble proves the final factor in determining a congestive attack.

GENERAL MEDICAL TREATMENT

It is the task of the general practitioner to examine his glaucoma cases very thoroughly, with a view to improving in every possible way the general standard of health. Much that has been said and written on various bodily conditions in connexion with the etiology of glaucoma is open to question, but it is certainly important to keep the patient as healthy as possible, and so to help him ward off attacks. The subject is too wide to be dealt with further, and can be left to the practitioner's discretion and management. The mistake of using atropine instead of eserine in congested high-tension eyes is fortunately becoming much rarer with the advance of the standard of medical knowledge; but a warning may be permissible against the use of preparations of belladonna, either internally or externally, in all doubtful cases, especially when there is a family history of glaucoma.

Assuming that regular treatment has been carried out by the practitioner, it becomes the duty of the ophthalmic surgeon to test the patient from time to time with a view to ascertaining whether the condition is really stationary or otherwise. In many cases a first examination does not qualify a surgeon to give a definite opinion. It is only by making careful measurements and by comparing the records from time to time that he attains certainty in the majority of his cases. The following factors serve to guide him. The order in which they are dealt with is intentional.

1. Tension of the Eye.—It ought to be unnecessary to-day to emphasize the importance of tonometer readings. These should always be made under a local anaesthetic. If the drug chosen is also a mydriatic, the patient should not be lost sight of until miosis is re-established, even if it is necessary to admit him into a nursing home for the purpose. Reliance on the digital estimation of tension, though apparently not obsolete, is an anachronism. A difference in the tension of the two eyes is a sign of grave significance, especially if it does not yield quickly to medical treatment.

2. Central Visual Acuity.—It is often hard to get a patient to realize that this may be quite unimpaired,

though the glaucoma may be steadily advancing. Indeed, in the great majority of non-congestive cases, this is the rule. A fall in central visual acuity is a distinct sign that intermittent congestive attacks have been taking place, even though such a possibility may not have been recognized either by the patient or by his medical attendant. The explanation of the oversight may be that the increases of ocular pressure occur only at night in the early history of the case.

3. Curtailment of the visual fields associated with a difficulty in orientation is a sign of grave significance. Constriction of the nasal side of the field and the appearance of a Roenne's step have in no way lost their importance in the past twenty years.

4. Enlargement of the blind spot, or paracentral scotomata are of very great importance, especially if the defects are increasing in size. They point to dangerous interference with the nerve fibres as they emerge from the optic disk. Complaints by the patient that his vision is not so good as it used to be are sometimes disregarded by the surgeon because there is full central vision in the eye. An examination with a scotometer will often provide complete justification for these complaints, which are usually founded on very real grounds.

5. Failing light-sense is a symptom which should not be disregarded. It is never absent in progressive glaucoma, and it is certainly one of the most distressing sequels that remain, in a large percentage of cases, long after the pressure has been relieved by successful operation. It makes things very difficult for the patient in a poor illumination, or when he goes from darkness into a bright light, or vice versa.

6.—Cupping of the Optic Disk.—This is perhaps the sign that most people would expect to see placed first, and it may be thought wrong to put it so late. It is the one most easy for the general practitioner to recognize, and in its typical condition, in which the whole disk is pushed backward, it is highly significant. At the same time, it is to be remembered (1) that it may be imitated by other conditions, and so there arises a common source of error in diagnosis, and (2) that a very marked glaucomatous cup may persist after all signs of the progress of the disease have been brought to a stop by medical or other means. It is not necessary to enter here into the differential diagnosis between glaucomatous and other forms of cupping. Those who are interested will find the subject fully dealt with in various textbooks. There are two points, however, to which special attention should be drawn, for they are both pregnant with meaning: (1) Considerable atrophy of the optic nerve accompanies all cases of advanced glaucoma. The pallor of the disk is of grave significance when associated with complete cupping. *The more pronounced the atrophy, the graver the prognosis of the case.* (2) An arterial pulse, on light pressure with the finger on the eyeball or after the use of cocaine or any other mydriatic, has long been recognized as a grave danger signal. It is a custom with some surgeons to use a mydriatic deliberately in order to elicit this sign. I feel mostly strongly that it is not worth the risk involved. In the past eighteen years of practice in London I have seen a number of cases in which glaucoma has been induced by the instillation of various mydriatic drugs, including cocaine, homatropine, and atropine, and in one by the injection of cocaine for the removal of a tooth. In the majority of cases where atropine was responsible, the drug had been used to produce mydriasis in order to improve vision in patients suffering from nuclear cataract. This is a most dangerous procedure. The performance of an iridectomy is vastly preferable, as it brings all the advantages of the drug with none of its risks. An arterial pulse is a sign that should always fill the surgeon with anxiety, for it shows that the eye is on the edge of a glaucoma crisis. However it may have originated, the patient should not be let out of sight until this sign has disappeared. He should be kept in bed under the influence of sedatives, eserine should be used freely, a brisk purge be given, and leeches applied to the forehead.

The surgeon will weigh all these points before deciding in favour of an operation. It is very important that he should **not** be in a hurry, but it is essential that he should **not** delay a day longer than necessary, once he has **satisfied** himself that non-operative treatment is failing to hold the disease in check. I have stressed this point for very many years. Operation at the earliest moment was one of the tenets of von Graefe some seventy years ago, and de Wecker earnestly supported his master in this detail. On the other hand, no case of glaucoma is at too late a stage for trephining, always provided some sight is left. Indeed, in acute cases, even when all sight has gone, recovery to some extent may occur after relief of pressure. Needless to say that, in dealing with late material, a certain number of failures are inevitable, but there are some things that can be said without the least fear of contradiction. (1) Given an early diagnosis, one should **rarely**, if ever, have a failure in sclero-corneal trephining. (2) The later the case the greater the risk of failure, and the greater the probability that even a technically perfect trephining, resulting in an ideal scar, may not suffice to stop the progress of blindness. Few cases are more disappointing than these. (3) The earlier operation is done, the better the prognosis. (4) No case, however late, is hopeless if some vision still remains.

THE PROGNOSIS AFTER OPERATION

As already indicated, the later the operation the worse is the prospect, though the latter is not hopeless even in very late cases in which the field is reduced to a small central area. The higher the tension is before operation the greater the prospect of a material improvement after intra-ocular pressure is relieved. This is only what might have been expected, for the interference with vision under conditions of high ocular pressure is partly due to anaemia of the retina and partly to atrophy. The longer the condition has persisted the greater the atrophic element in the damage, and vice versa. Hence, in chronic cases the surgeon may be satisfied if he can keep the vision as he finds it, whilst in acute ones he can hope for a considerable restoration of function as soon as pressure is relieved.

In any operation for so serious a condition as glaucoma it is unwise to make light of the risks involved. To do so may lead to very unfortunate results. On the other hand, there is no need to exaggerate the risks in ordinary early and straightforward cases. The surgeon's task is to put all the facts before the patient, or before his relatives, and to leave the burden of a decision on his or their shoulders. In dealing with cases of advanced glaucoma it should be pointed out that it is a relentless disease, and, when progressive, leads to certain blindness. In these circumstances, it is well worth while to take any means, however hazardous, that offer a possibility of escape. It is always an open question whether, in desperate cases, one should put this so bluntly to the patient himself. His relatives should be told the naked truth, and should be left to decide what is to be said to him, it first being pointed out to them that, both during the operation and in the succeeding convalescence, the patient's mind is supernormally active, and that, consequently, morale is a very important factor in success. The conditions are very different from those that prevail immediately before and in the days that follow many general surgical operations in which the patient is too ill or too drowsy to be able to take any interest, either in his condition or his prospects. Once an operation has been decided on, everything should be said and done to keep the patient's hopes and courage as high as possible. He will then be better operation material for the surgeon. On the other hand, if he knows that his

chance is a small one, and if his courage sinks, his prospect is decidedly poor. The task of encouraging him is made more easy by the excellent results that so often attend very late operations.

EXPECTATION OF LIFE

This is a very important factor in a disease most of whose subjects are advanced in years. The surgeon makes periodical examinations and convinces himself, in certain cases, that the disease is progressive. This alone does not suffice. He must measure the rate of the downward drift, and must weigh this against the prospect of life in each individual, not forgetting that very old patients often stand the operation of sclero-corneal trephining very well indeed. The family history of longevity and the vigour of the subject have to be weighed in the balance against the rate of progress of the disease. Then again, there are the patient's personal predilections. One man would rather be dead than blind, and many of us will sympathize with him in this. Another dreads an operation, and will do anything possible to avoid it. The general practitioner will often prove most helpful in these cases, especially when every side of the case is put plainly before him. There is the further advantage that he is the patient's friend, with no suspicion of an axe to grind, and with the power of bringing a trained intelligence to bear on the difficult position which confronts his patient.

DISPLACEMENTS OF THE UTERUS AND PELVIC FLOOR *

BY

S. GORDON LUKER, M.D., F.R.C.S., F.C.O.G.

General ill-health in women (headaches, fatigue, and aches and pains) often has its origin in one of three situations—the eyes, the feet, or the pelvis. If the eyes are at fault, headaches which result can be cured by suitable glasses. If the feet, weakness of arches and flat-foot are followed by fatigue in the feet, legs, and back. This can be relieved by attention to the feet and shoes.

There remains the pelvis, in which displacements of the uterus and pelvic floor are common in women who have borne children. As a result, there is a constant feeling of discomfort and pain, which takes it out of the patient. If there are, in addition, symptoms of menstrual dysfunction or disturbances of micturition, and these prey upon the mind, carrying fear and apprehension of evils worse than those which really exist, then the joy of life is lost and chronic ill-health results.

Displacements of the uterus and pelvic floor therefore play an important part in the health of women, and should always receive the most careful attention. Until thirty years ago, the majority of those suffering from these displacements were treated with rings and pessaries, and were compelled to use a douche every day and receive medical attention every three months. Pessaries are not satisfactory, because they do not cure, require frequent attention, and, if neglected, set up discharge and sepsis. They may even be forgotten, and give rise to foul and blood-stained discharge suggesting carcinoma of the cervix. These instruments have now been superseded by carefully planned plastic operations, which give perfect results. Without doubt this is a great advance in gynaecology, comparable with the treatment of hernia by operation instead of by truss.

The displacements may be grouped under three headings: (1) retroversion or backward displacements of

* Read before the Dorset and West Hants Branch, October, 1931.