iris, as after perforated corneal ulcer, or in the later stages of some glaucomas, or by the lens, as in some cases of dislocation of this body, the proof is convincing. The application of the cautery to the sclero-corneal junction is said to block the outflow, thus proving the same thing. Contraction of the pupil, as after eserine or sleep, increases it, probably by the necessarily associated extension and opening out of the fibres of the ligamentum pectinatum. It is also indisputable that fluid passes, in some cases, at all events, forward through the pupil. The bulging of the iris with high tension, in cases of exclusion of the pupil, and the removal of these conditions by iridectomy, constitute conclusive evidence. The refilling of the punctured anterior chamber after death must in all probability come from behind the iris; and fluids experimentally injected into the vitreous body during life, do in most cases actually make their way forwards into the anterior chamber; but the flow may be extremely small, as when hypopyon and hyphæma go very slowly; or perhaps entirely wanting, as in cases of excluded pupil, with iris flat or bulged, and tension no more than normal, and as in cases where coloured injections or hæmorrhages or abscesses in the vitreous body make no appearance in the aqueous chamber.

But there is strong evidence of an additional outflow along the optic nerve. True, coloured injections into the vitreous body give no proof of it, but, on the other hand, they sometimes fail to appear in the aqueous chamber, in which direction the passage of fluid is undoubted, and of comparatively very large amount. But injections by Schwalbe under the inner (pial) sheath of the optic nerve have filled lymph-spaces in the optic disc, and passed into the central canal of the vitreous body (canal of Cloquet), as well as into the sheaths of the retinal vessels and into the lymph-space between the retina and the hyaloid membrane. In some inflammatory affections of the brain-substance, the optic nerve, and especially the optic papilla, are swollen and oedematous, and the fibres of the lamina cribrosa bulged towards the eye, instead of the reverse way. Also numerous pus-cells are found radiating from the optic disc in suppurative hyalitis. Each of these facts might indicate a flow from the optic nerve into the vitreous chamber; but, when taken in association with the fact that pressure on the optic nerve causes swelling of the disc, with, commonly, an approximation of the iris-periphery to the cornea, and with, as I have seen in two cases, an actual undoubted rise of tension, they will coincide readily with the belief in a normal slight outflow, which may be reversed under exceptional circumstances of pressure within the eye itself, or in the optic nerve.

The retina may be very briefly dismissed. Its own waste fluid, with that from the chorio-capillaris, passes back along the sheaths of the retinal vessels into the sheaths of the central vessels of the optic nerve. The plugging of these trunks will speedily produce an oedema of the retina, the obstruction being probably a consequence of the inflammation set up around the central vessels. If the retina be detached, the fluid from the choroid accumulates in the subretinal space, until the pressure becomes the same on both surfaces of the detached retina, when it escapes by its usual route. In the affection known as iritis serosa or keratitis punctata, the other parts of the eye are so far affected that cells are found in the sheaths of the vessels of the retina and optic papilla. Thence they extend, in a very marked manner, along the sheaths of the central vessels of the nerve, extending, at the lamina cribrosa especially, over the nerve generally, though in less degree.

The fluids of the choroid have, as regards its internal layers, already been disposed of. What escapes from its external surface passes from the lymph-space between it and the sclerotic, along the sheaths of the vessels, either directly into the intersheath-space of the optic nerve, or indirectly into the same by-way of the capsule of Tenon and the supravaginal lymph-space.

In practical illustration of these points, we may note that cyclitis is usually associated with some disturbance of tension; that episcleritis may, just like the actual cautery above referred to, cause glaucoma by obstructing the outflow from the anterior aqueous chamber; and that pressure on the optic nerve may cause oedema of the disc and tortuosity of the retinal veins. But swelling of the disc may similarly be caused by inflammatory oedema of the brain-substance, or by inflammatory fluid in the intersheath-space of the nerve, in either of which cases the nerve-fibres on the papilla may themselves be swollen from soakage in inflammatory serum, as in the retinal patches of albuminuric retinitis. Also, a sudden diminution of intra-ocular pressure may cause an almost immediate non-inflammatory oedema of the disc, which may be followed by true inflammatory changes, if the wound have been sufficiently severe to cause inflammation of the deeper structures of the eyeball.

In increased intra-ocular pressure, an increased flow into the nerve

would be naturally expected. This is probably the cause of the neuritis which is so invariably set up after the establishment of a glaucoma. A long continued slight excessive flow may excite neuritis, and thus account for the loss of field and redness of the optic disc common in glaucoma simplex, and which may even occur without the establishment of any rise of tension perceptible by the touch.

OUR DUTIES IN REFERENCE TO THE SIGNING OF LUNACY-CERTIFICATES.

Read before the South-Eastern District of the Metropolitan Counties Branch.

By GEORGE H. SAVAGE, M.D.,
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WHEN asked by your Secretary to contribute a paper to the evening's proceedings, the *genius loci*, as it were, fixed the nature of my subject, and I decided to select one from the many burning questions of lunacy. My own wish at first was that it should be one of the more medical aspects of the subject; but, overruled by your Secretary, I chose the very serious and important one of our duties as to certifying. I think enough has been said as to lunacy-legislation, till we really know the nature of the changes which the present Government intend to make. It seems as if the present state of the lunacy law was like the ministers in a distracted Government; everyone has a special treatment for the crying ills, yet these ills do not decrease.

I do not think that the general public are at all in a position to judge as to what is needed, and I fear there are many signs that those who should lead public opinion are in a state of panic. One object of this paper is to try, in a small way, to stop this panic. At present, there is no denying that there is a very general and, I believe, groundless fear that many persons are both kidnapped and put away in asylums quite unnecessarily; that, in fact, many are detained in asylums, especially private asylums, who ought to be at large. The dread is, that these are being kept from sordid motives alone. The recent epidemic of lunacy actions has been one of the chief excitants of this feeling; and this shows how easily and falsely the public are led, for the only action that has been won is the one which shows that the lunacy laws are not so very lax, as the prosecutor was never in na asylum at all.

The public mind has been disturbed by rather boisterous articles, by specialists and others, on the question of detention in private asylums; and, if the enemies of one's peace are within one's own household, it is not surprising that distrust spreads to those outside. Medical journals too have, to my mind, made a great deal too much fuss about these matters, and have stirred up rather than allayed the storm. Any way, whatever the cause, panic has arisen, and the medical mind is full of fear. I trust that the fact of there being danger will not suffice to deter medical men from doing their duty, and I shall try to point out that I consider the signing certificates in lunacy as part of the medical man's duty. Certificates are still necessary for the legal detention of persons of unsound mind. These persons may for a time require that they should be deprived of their liberty, as much for their own sakes as for that of society. Medical men are the only people who are in a position to give an opinion as to this necessity, and thus I maintain that they have here a duty which they cannot shirk. I, for one, do not think a medical man has a right to say, "I will, under no conditions whatever, sign another lunacy-certificate." Certainly medical men are not justified in advising seclusion for patients, and yet declining to assist in the carrying out of their own directions, unless they have first of all warned the friends that they never sign certificates. Surely, if a medical man be convinced that a patient's best interest requires that he should be secluded, he should not shrink from aiding in the accomplishment of his own treatment. I think he owes the duty to himself as well as to society. My first contention is, that the medical profession is likely to do injury to itself by joining a form of trades-union which has for its object not signing lunacy-certificates. It is not a dignified course to take, and is one which is likely to injure the patients, to injure society, and do no good to anyone.

Let medical men guard themselves as well as they can, but do not let them do this to the avoidance of their duty. I repeat that I think the medical journals have done harm by their appeals to medical men not to sign.

Next, I would say that greater harm will surely arise if the better educated and better placed medical men refuse to sign the

necessary forms for treatment; for if they do not sign, the less capable will do it in all cases of emergency, and thus the best men will lose their hold on one of the most important of their medical functions. No good will be attained by an attempt at a blockade, for this can never be complete, and the patients will certainly suffer by the delay in treatment.

It appears to me that those who refuse to sign are placed in an awkward position; for they either say "I recommend a treatment which I am not prepared to assist you to get," or else they appear to agree with the general wild outcry against patients being sent to asylums at all. If the patients can as well be treated at home, why has it been so necessary hitherto to send so many to asylums? The doctor is self-condemned, by formerly signing and now refusing to sign.

Another point arises as to who should sign lunacy-certificates. I believe, for many reasons, that the family medical man is one who should take that responsible duty, and I think that, where attainable, an independent physician should be selected for signing the second. I shall be told that this last class is the one most given to decline to sign certificates at present. Many, I know, are refusing, and I believe the reasons are that the majority are not sufficiently versed in the laws of lunacy, and do not think it is worth while to get this knowledge up, and, to avoid bother, they decline to do their duty. In lunacy, there is much difficulty caused by ignorance of the clinical history. In an ordinary case of disease, the general physician is able to piece together the facts observed by himself, and the history of the development of the symptoms given by the patient or his friends. But in insanity this is different; before a certificate can be signed, the medical man must assure himself of facts of insanity present at the time; but there are many slight signs which, to the more expert, are sufficient indications of disease, which, to the less expert, would not suffice to satisfy him who has to sign the certificate. The time is nearing when a more general knowledge of insanity will make the recognition of the symptoms more easy. With the consulting physician, then, I should say ignorance of insanity and ignorance of the lunacy laws at present prevent them from fulfilling their duties. It may be supposed, then, that I should like to see a special set of men appointed to fill up lunacy-certificates; to this I should most emphatically reply "No." If we get an official set of signers, we shall get all the faults of officialism; most of the certificates will be signed, as a part of a duty to be done as easily as possible; the safety of the public will be no more secure in the hands of the official signers, than it has appeared to be in the hands of magistrates or poor-law officers. My own feeling most certainly is, that both the general practitioner and the pure physician should sign certificates for patients who require seclusion, and that they have no right to let the patient be driven from pillar to post on account of their fear, till some catastrophe happens to the patient or his friends.

There is one anomaly out of which it is hard to see any way; it is that those who are most skilled in lunacy, asylum-physicians, are prevented from signing certificates. The Commissioners look most jealously at any certificate which has been signed by an asylum-physician, at least for a fee. There are reasons why there should be no chance of a patient being confined by certificates under the man who signed them, but this has been already arranged for in the Lunacy Laws. The question of the difficulty in getting certificates is not a sentimental one, and I wish I were in a position to place before you in black and white the evidences of the tragedies which have resulted from failure to get certificates signed. I know of both suicides and homicides, which might have been prevented if medical men had not been afraid to do their duty.

To continue this paper to a practical conclusion, I must add a few special details after all this general admonition.

There are some cases in which there ought to be no doubt as to the necessity for certificates. Such are cases in which there is marked and active suicidal tendency, and also where there is direct evidence of homicidal impulses or delusions, such as lead to homicidal attacks. I know it is impossible for even the most careful expert to detect all the conditions of mind which may lead to suicide; but, as a rule, the friends have been able to find out enough to satisfy the medical man as to whether there is real danger or not. For convenience, too, I should say that, if you have made up your mind that a patient is suffering from general paralysis of the insane, there need be little or no fear of legal trouble; for though there may be threats, the mind, slowly becoming weaker, leaves the patient easily led.

There are some dangerous cases in which every precaution and every guarantee should be sought. For, though it has been frequently ruled that a man, suffering from temporary insanity due to drink, may be sent to an asylum, yet I should say that, of all the litigious lunatics, those

from drink are the worst. The acute alcoholic, having experience of his former recoveries, thinks he might just as well have been allowed to get well at home, as to be sent to an asylum, and he is dissatisfied; and the chronic alcoholic is as perverse morally as a man can be, and never, even at his best, perfectly recovers his balance, so that he still harbours vengeance against those who have acted for him in his illness. The more I see of insanity, the more I feel that, of all cases, those due to drink are most unsatisfactory, both from their frequent recurrence, and the want of gratitude of the patients; so beware how you sign for these, but still do not refuse to sign, but guard yourself. A good deal has been said from time to time about getting indemnities from the friends before signing the certificates; and I have heard that such guarantees have proved of service on several occasions, rather by preventing the patient from taking an action which would involve his nearest relation in expense than from any other cause. It is interesting to hear from Dr. Hack Tuke that guarantees were in use twenty-five years ago; and I suppose this points to the recurrence of the scares, and to the recession of panic which I prophesy will follow all this storm. There are many other words of caution which I might give; but the object of this paper is accomplished if both the general practitioner and physician will take their part in allaying panic, and I believe they will do this by doing what is most certainly their duty in signing certificates.

SOME REMARKS ON THE PRESENT STATE OF OUR KNOWLEDGE OF THE COMMA-BACILLI OF KOCH.

By E. KLEIN, M.D., F.R.S.,

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THE reason of my making a few remarks on the above is a twofold one. 1. Certain observations were made by my friend, Mr. Watson Cheyne, at a recent meeting of the Royal Medical and Chirurgical Society (March 24th, 1885), and printed in this JOURNAL (March 28th, p. 655), which appear to me to be based on a complete misunderstanding on the part of this gentleman, as to what Koch has really said and taught as regards the choleraic and other comma-bacilli, and I am, therefore, anxious that the members present at that meeting, and the readers of those observations, should have a correct idea about these matters. 2. I wish to define more fully than I was able to do at that meeting, owing to the lack of time at my disposal, the position I hold in reference to the comma-bacilli.

1. My friend Mr. Watson Cheyne said this: "Koch defined a comma-bacillus as a curved organism, which, when grown in gelatine in tubes, had certain characters; on potatoes, certain other characters; and in plate-cultivations, also special characters. The sum of these characters gave us a definition of the comma-bacillus. The idea seemed to have got abroad that Dr. Koch defined the bacilli found by him in Asiatic cholera by their microscopic appearances, and that they were comma-shaped."

Now, I ask the reader to turn to page 22 of Koch's pamphlet (*Conferenz zur Erörterung der Cholerafrage*), or to the literal translation of it in this JOURNAL, September 6th, 1884, p. 453, and he will find this statement of Koch's: "In Egypt, ten *post mortem* examinations could be turned to account. It is true these were only microscopically examined, for I was not then sufficiently acquainted with the qualities of the comma-bacilli, which they show while growing in food-gelatine, to be able to make use of the gelatine-process for proving the presence of bacilli." (The italics are mine.)

Now, where, may I ask, were the comma-bacilli discovered by Koch? In Egypt. Where has Koch stated that the comma-bacillus is peculiar to cholera, and must, therefore, bear a definite relation to the disease? In Egypt. All the beautiful investigations as to the peculiar behaviour of the choleraic comma-bacilli in gelatine were made by him subsequently in Calcutta. But their discovery, their description, and their specific relation to cholera, were asserted by microscopic examination only. And lest there should be any doubt on this point, Koch says (see the translation of his pamphlet, in this JOURNAL, August 30, 1884, p. 404): "These bacteria, which I have called comma-bacilli, on account of their peculiar shape, are smaller than the tubercle-bacilli."

Mr. Watson Cheyne further said: "Now, Dr. Koch had stated that, having this fact in view, he had searched for these organisms in saliva, in faeces, in all sorts of decomposing materials, and in other materials