

*On Suprarenal Extract in the Treatment of Mental Diseases.*<sup>(1)</sup>

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OF the innumerable organs and tissues which have been made the subject of research since Brown-Séquard promulgated his doctrine of "internal secretions," it may be broadly stated that there are practically two only in which the existence of such a specific secretion has been determined beyond controversy, viz., the thyroid gland and the suprarenal bodies. The place of the former in therapeutics is now more or less determined; at all events most have tried it and formed their own conclusions; but the uses of the suprarenal glands in treatment are still, to a large extent, undecided. It is true that in certain branches of surgical practice suprarenal extract has been found so useful as a local application that it may almost be said to have gained a position in the surgeon's regular armamentarium, and that it has been employed internally in Addison's disease by many observers, with somewhat conflicting results (1); while its use in cases of heart failure, and also in obstetrics, has recently been strongly urged (2). But beyond these more obvious applications of the properties of its active principle, there are certain other diseases, notably some forms of psychoses, in which it would seem probable that those properties might render it valuable, and what little use has been made of it in this direction to some extent bears out this expectation.

In laying down the principles upon which the investigation of new remedies should be conducted, Dr. Easterbrook, in his valuable prize essay of last year, maintains that no new remedy should be tried until the ordinary methods of treatment have first been applied and failed. No doubt if a new remedy succeeds after this, its efficacy must be admitted; but if it fails in so severe a test a really useful drug may quite possibly be undeservedly discredited, and thus in seeking to avoid one fallacy one falls into another in the opposite direction. The only real test of the usefulness of any therapeutic measure is undoubtedly its employment by a number of

observers, in many cases, and under all possible conditions ; and therefore all such observations, provided that they are accurate as far as they go, even if not very elaborate, have their value as contributions towards the determination of the question. It is with this view that I have decided to bring before you my experiences with suprarenal extract.

The active principle of the suprarenal bodies is secreted entirely by the medullary or neural portion of the gland, and until somewhat recently defied all efforts to isolate it. Amongst those who claimed to have done so were J. J. Abel, who stated that he had obtained a greyish substance of an alkaloidal character, with the formula  $C_{17}H_{13}NO_4$ , which he called *epinephrin*. Von Fürth, also, by a different method, separated a body to which he gave the name *suprarenalin* ; but it is stated that neither of these substances was chemically pure. At the beginning of the present year, however, J. Takamine published an account of a body obtained by him from the gland, which appears to be its physiologically active ingredient. This substance, *adrenalin*, is white and micro-crystalline, of a bitterish taste, stable when dry, but highly oxidisable in solution, soluble in water, and exerting in an extraordinary degree the physiological effect of extracts of the gland. This effect has for some time been known to consist in the power of increasing the action of muscle in general, but especially that of the heart and blood-vessels (3). Thus, if aqueous suprarenal extract or adrenalin solution be injected into a vein, a marked and immediate rise of blood-pressure follows, and a limb enclosed in a plethysmograph shows great diminution in volume. Both effects are due to contraction of the smaller arteries produced by direct action of the drug on their muscular walls, the action upon the central nervous system tending in the opposite direction, as the heart becomes slowed from stimulation of the vagus centres in the bulb. The direct action of the drug upon the heart, if the vagus be inhibited, is, however, also stimulating ; in fact, a heart stopped by chloral can be re-started by injection of suprarenal extract (4). It is stated that the pulmonary and cerebral circulations are not directly affected (5).

The effects of the extract or solution, used in this way, are very transitory, only lasting a few minutes, after which it is supposed that the active principle (which is certainly not

excreted) becomes stored away in the muscles in some stable form (Schäfer). To produce a more prolonged effect absorption must be more gradual, and therefore administration by the mouth seems indicated, more especially as the active principle is soluble in water and is unaffected by digestion; while it is active in such minute quantities that, as Schäfer has estimated, less than  $\frac{1}{800}$  gr. in the circulation of a full-grown man would suffice to produce some physiological effect (6<sup>3</sup>). Yet the administration of considerable doses by the mouth has not been found to produce a rise of blood-pressure appreciable to instruments, within several hours of administration in a normal individual, though where the blood-pressure is abnormally low a distinct rise has been seen (7). I have reason to think, however, that more prolonged administration will eventually raise the blood-pressure, not only from its action in some of the cases which I am about to describe, but also from three rough experiments which I recently made to test this point.

Taking three mentally sound individuals, of whom one had an abnormally high, another an abnormally low, and the third a high normal blood-pressure, which fell in the normal manner towards evening, I administered to each on the first day 45 gr. of the whole gland in three doses, on the second 90 gr. in three doses, and on the third 100 gr. in five doses to two, while one received an extra dose, making 120 gr. In no case was the morning pressure raised, but in the third subject invariably, in the first on two days, and in the second on one day, the evening blood-pressure was either the same as, or higher than the morning, showing that the drug had acted in these cases. (8) Why it did not always so act in the first and second cases it is not easy to say with certainty, though many conjectures might be made; but it should be noted that little effort was made to ensure uniformity of diet, rest, and general mode of life on the three days (hence I have called the experiments rough). My general feeling, from what I have observed, is that to produce anything of a permanent effect, moderate doses, given for considerable periods, would be required, which is perhaps partly owing to the tonic influence said to be exerted by the drug upon the heart.

In addition to the effect upon the circulation, Easterbrook (8) has found that exhibition of the dried gland by

the mouth tends somewhat to diminish metabolism, as shown by a lessened output of urea and phosphoric acid, and perhaps by an occasional slight reduction in the total urinary solids. This observation was not borne out by analysis of the urine in one of the above experiments, as I found that all three were rather increased than diminished (\*), but for the same reasons as before I do not attach great importance to this result, in comparison with that of Easterbrook's careful experiments. In one of the cases to be described there certainly was a diminution. The point, however, cannot be said to be decided.

Therapeutically, in addition to the uses already mentioned, suprarenal administration has been tried in a number of diseases more or less connected with the nervous system. Of these it is here only necessary to mention epilepsy, in which the drug appears to have been first employed by Mairet and Bosc, who considered it useless if not harmful. C. Hill (9), however, using a compound of glycerine extract of the fresh gland with calcium chloride and sodium bromide, obtained a partial success, and especially lays stress on "the striking improvement in the mental and physical condition of the patients." So far as I am aware, however, the earliest allusion to the use of the drug in actual mental disease is contained in some notes published by myself last August (10), in which I mentioned having employed it with good results in a case of adolescent mania. To Easterbrook (8), however, is due the credit of the first more detailed account of its employment in insanity. He administered it in four cases; in three melancholiacs without effect, and in one case of adolescent mania with distinct benefit, there having been a cessation of excitement during the treatment. This result he attributes partly to reduced metabolism, and partly to the probable rise of blood-pressure produced by it; but he does not appear to have used the sphygmometer in these cases.

I was myself led to try suprarenal administration from a consideration of its property of raising the blood-pressure, as it has been found that in many cases of mania this latter is remarkably low, and consequently I first employed it in a case of adolescent mania, as mentioned above. Since then I have tried it in five other mental cases, including two of adolescent and one of ordinary acute mania, one of an acute attack occur-

ring in a paranoiac, and one of early general paralysis. In addition to these a sane epileptic voluntary patient, with a tendency to depression, was kept for some time on the drug. The form of administration was in all cases tabloids of the dried gland, prepared by Burroughs and Wellcome, given by the mouth, as, if carefully prepared, there is no reason why the drug in this form should not retain its activity for a considerable time.<sup>(5)</sup> The blood-pressure was taken by means of Hill and Barnard's sphygmometer.

CASE 1.—An unmarried girl, æt. 25, was admitted on March 7th, 1900, suffering from a first attack of adolescent acute mania, which had commenced about three weeks before; neuropathic heredity. She was poorly developed and looked much younger than her age, but was physically healthy. She showed the ordinary hysteroidal elevation and flippancy, and was restless, inclined to do impulsive things, would undress herself at times, was wakeful at night, and tended to be wet. Food was well taken. On March 22nd the administration of suprarenal was begun, other treatment having been tried without much effect, though she had become a shade quieter. One tabloid, equivalent to 5 gr. of fresh gland, was given thrice daily, and increased to two tabloids on April 2nd, and again on April 16th to three, which was kept up for over a month, making some two months' treatment by the drug in all. During this time there was steady progress, and on April 22nd slight stupor was noted. It may be remarked also that on the days when the drug was commenced or increased a certain improvement was observed. The patient was so much better towards the end of May that the drug was stopped, but progress became markedly slower, so that after about a month's intermission administration was recommenced on June 22nd, on which date the blood-pressure was found to be only 100 mm. 10 gr. thrice daily were given, increased to 15 gr. on July 1st, and convalescence became much more rapid. On July 25th it was noted that she was "pretty sane, though still a little flighty and elated," and on August 5th that she was "practically well, though a little unstable." On the latter date her arterial pressure had risen to 110 mm., at which height it remained. The drug was stopped on August 17th. As she continued to show signs of instability, however, she was not finally discharged until the following month. She has kept well ever since.

The evidence of benefit derived from the drug in this case was, therefore, rather the comparative rapidity of progress during its exhibition than the shortness of the attack, which lasted seven months, if the date of discharge be taken as its termination; but at the time we had no doubt of the advantage derived from it. The rise of arterial pressure is to be noted.

In the next two cases the advantage gained is not so evident.

CASE 2.—Unmarried girl, æt. 28, admitted December 5th, 1900, suffering from acute mania of six days' duration. Family history of phthisis, and one relative had been weak-minded. This was the third attack, the first, a very short one, having taken place at the age of seventeen; the second, of nine months' duration, which resembled the present, about four years back. She was naturally a silent, nervous, morbidly conscientious girl, and of poor physique, though the only sign of physical disease was the presence of a trace of albumen in her urine. She was restless, noisy, impulsive, destructive, and erotic, wakeful at night, and dirty in her habits. At the same time an element of stupor was perceptible all through, becoming more marked as the excitement subsided. On December 10th suprarenal was begun (three 5-gr. doses being given on that day, and 10 gr. thrice daily on the following days), and on the 10th it is noted that she was rather quieter. Administration was interrupted for a time after December 12th, but was subsequently continued, and the dose was raised to 15 gr. thrice daily on January 5th, and to 20 gr. on the 13th. As it did not seem to be producing any particular effect it was stopped on the 14th, on which day and for a day or two subsequently the patient was certainly worse and more excited, but had quieted down by January 19th. The blood-pressure on December 21st was about 130 mm., but the reading was not very reliable, owing to the patient's restlessness. Some improvement took place, but very slowly, during the late winter and spring. The blood-pressure on March 11th was still high (about 130—140 mm.). On May 10th 45 gr. suprarenal were again administered in three doses, and the same next day; then 60 gr. daily from the 13th to the 19th inclusive, and 75 gr. on the 20th and 21st; but without effect on the mental state. During this trial the urea was estimated, and was found to have diminished slightly, the total output on the 9th—10th being .874 oz., while that on the 21st—22nd was .76 oz. The phosphates were practically unaltered, if not a trifle increased. Blood-pressure on the 21st was 115 mm. Immediately after this the patient was put under thyroid treatment, under which she made a good and rapid recovery, the blood-pressure having fallen to 110 mm. at the time of her discharge.

In this case the suprarenal administration produced little result, but it is to be noted that the blood-pressure was high; in fact, even during thyroid treatment it was usually 120 mm. (in the morning), though it fell subsequently; and with the high blood-pressure is to be correlated the strong element of stupor which pervaded the case throughout. It should also be observed that the albumen reappeared in the urine during thyroid treatment, though it afterwards vanished again. The diminution in the urea excreted under suprarenal treatment is to be noted.

CASE 3.—Unmarried girl, æt. 27, but looking younger, admitted December 14th, 1900, suffering from mania. Two previous attacks of insanity, both of mild melancholia, the first at the age of about twenty-four; no insane heredity. Present attack had lasted about eight and a half months, and was said to have been caused by overwork and neglect of physical health. She had been under treatment since an early period of the attack in a well-known English asylum, where her mental condition appears to have been much the same as during the earlier part of her residence at Farnham House, and had improved little, if at all, for some time. She was excited and elevated, restless, at times twisting her limbs into attitudes, laughing, crying, whistling, chattering more or less incoherently, did not respond readily or coherently when spoken to, and betrayed hallucinations of hearing. Coincidentally there was a certain element of stupor present, especially marked at times. She was wakeful at first, but soon began to sleep fairly. Her appetite was good. The bowels tended to be constipated, but she was wet and dirty. The general physical health was good, except for a little anæmia and cardiac weakness, and a very slight trace of sugar in the urine on one or two occasions. The blood-pressure could not be taken, owing to her restlessness.

Suprarenal administration was begun on December 19th, on which day 10 gr. were given, increased to 30 gr. in three doses on the 20th and 21st. From December 22nd to January 23rd 45 gr. *per diem* were given, the drug being stopped on the latter date. At first it seemed to have a slightly quieting effect, and it was found possible to discontinue sedatives at night after the first dose, but improvement, if due to the drug at all, soon ceased or became very slight, and when administration was stopped there was no perceptible change.

The patient's progress not being satisfactory another trial was determined on, and from April 3rd to 9th inclusive she received 45 gr. *per diem*. Since the beginning of that month she had been subject to fits of ill-temper with violence, but about the 7th (*i. e.*, the fifth day of suprarenal administration) it began to be noticed that while there was ill-temper morning and evening, in the afternoons the patient was saner. She was menstruating from the 9th to the 11th. On the 13th she was kept in bed as a preliminary to thyroid treatment, and on that day for the first time she was rational and behaved sanely. A light thyroid treatment was given (though perhaps, as improvement had already set in, it was hardly necessary), and she made a good and uninterrupted recovery.

The condition of the blood-pressure during the acute part of the attack is unknown, as it was first taken on the morning of April 14th, being then 110 mm. During the thyroid treatment it varied a good deal from day to day, but on the whole tended to be high at first,—at least in the mornings, being 120 mm. on the 17th and 18th, and 115 mm. on the 19th; but afterwards it sank to 95 mm., and remained about that up to the time of discharge. No inference, of course, can be drawn as to its condition during the earlier part of the attack, but from the existence of stupor it is not improbable that it was high.

The first trial of suprarenal seems, therefore, to have been

without effect in this case, and it is very doubtful if the second had anything to do with determining the rather sudden improvement which occurred after it ; but just possibly it may have given a useful filip at the right moment.

CASE 4.—Unmarried woman, æt. 59, admitted July 31st, 1900, suffering from acute mania, which had set in suddenly four days previously. There was some neurotic heredity, and the patient had had five previous attacks, the first when about twenty years of age, the last over thirteen years before the present one. The duration of the last three attacks, which occurred fairly close together, was respectively eighteen, twelve, and four months. All seem to have been maniacal. She was restless, noisy, destructive, and violent at times, and especially at night, when she was wakeful ; at other times she was quiet, but a little jerky and elated, and would not speak. She was wet and dirty. There was a slight systolic bruit audible in the aortic area, and on one or two occasions, shortly after admission, albumen was present in the urine. Blood-pressure four days after admission was found to be 140 mm., and on September 24th was 145 mm. She had quieted down somewhat by the end of September, but was sometimes flighty and elated, sometimes depressed, and not being satisfied with her progress I decided to try suprarenal treatment, which I had so far refrained from doing owing to the high blood-pressure (erythrol, it may be noted, produced no result but headache). Suprarenal gland was first given at the rate of 15 gr. *per diem*, in three doses, on September 27th, and increased to 30 gr. two or three days later, and to 45 gr. on October 8th. She became rather depressed a few days after the commencement of the drug, especially in the mornings, but otherwise was much improved mentally, writing a very sensible business letter on October 8th ; and on the 29th of that month it is noted that she had been “practically well for some time, though a little excitable and jerky at times.” On this day suprarenal was stopped, after being reduced to 30 gr. some days before. The patient continued well, and was discharged recovered on November 7th.

The blood-pressure on October 4th was still 140 mm., but on October 29th, *i. e.*, after about a month's use of suprarenal, it had increased to 150 mm. On the day before discharge, eight days after cessation of the drug, it had fallen to 135 mm. This case, therefore, supports the view which I have already expressed, *viz.*, that suprarenal extract, given by the mouth, has actually the power of raising the blood-pressure after a prolonged administration. It also seems to show that an initially high blood-pressure is not an absolute contra-indication of the drug, at all events if there is reason to suppose, as in this case, that the high blood-pressure is usual for the individual.



CASE 5.—This is a case in which an intercurrent attack of acute mania occurred in a paranoiac with delusions of the erotic type, who was admitted on July 23rd, 1900. She was an unmarried woman of thirty, with very bad heredity, and her delusions had been slowly developing for about a year. There was no physical disease, but the heart was a little weak and irregular. At first she was rational and pleasant, but soon began to be troublesome in small ways, and then to make persistent and senseless efforts to escape. After about a fortnight she had to be tube-fed, and then became excited, restless, and violent, stripping herself, molesting the other patients, striking and kicking the nurses, absolutely refusing food, obstinately silent, wakeful, wet, and dirty. She also looked pale and ill. Hypodermic injections of hyoscine had to be given more than once. On August 6th, at the beginning of the attack (the day on which she was first tube-fed), blood-pressure was 135 mm. About the end of the first week in September suprarenal administration was begun, the dose being increased to 45 gr. a day about a week later. On September 11th it is noted that she was still violent, wet and dirty, wakeful, and wanting to strip herself; but two days later she ceased to be wet and dirty, and on September 18th “somewhat suddenly became composed, began to dress herself and take her meals at table, and to behave in a more civilised way,” though still silent during the day and wakeful at night. Blood-pressure on this day was 115 mm., as against 135 mm. on August 5th. Improvement was maintained upon the whole, and on October 8th she began to speak again, and wrote a sensible letter. Three days later her father said that he failed to see anything wrong with her mentally, and she was probably better than she had been before the attack. Blood-pressure on October 12th had risen to about 120 mm. There has been no acute attack since, though a little troublesomeness at times; but the delusions persist, and she is, I fear, incurable.

In this case, though I am unfortunately unable to give the actual day of the commencement of suprarenal treatment, there appeared to be a very definite relationship between it and the commencement of mental improvement, while a further improvement seems to have followed increase of the dose. It may be noted that the blood-pressure in this case fell during the acute attack, though, as it was not taken while the patient was at her worst, I cannot say how low a point was reached.

CASE 6.—This was a case of very early general paralysis in a powerful man of forty-five, admitted on October 5th, 1900. He was irritable, assertive, violent, and restless, with various delusions of a grandiose type, and had to be kept more or less under sedatives. Forty-five grains daily of suprarenal gland were given on two days, but produced no noticeable effect. Possibly longer exhibition might have yielded better results, but I was obliged, for various reasons, to have him transferred to another asylum.

CASE 7.—In this case—one of minor epilepsy of many years' standing—the patient, a man *æt.* about 33, was sane, though usually with a tendency to depression, increased by the use of the alkaline bromides, of which he was in other respects somewhat intolerant, though it was necessary for him to take them in order to keep the seizures in check. I accordingly resolved to try suprarenal, not only on account of the favourable results obtained by C. Hill (to which I have already referred), but also because at that time the fits seemed to occur at periods of the day when the brain was considered likely to be anæmic, and it was hoped that this temporary anæmia might be counteracted by raising the arterial pressure. Administration was accordingly begun on March 18th, 1900, at the rate of 5 gr. three times a day, and was persisted in for about a month, being repeated again in the end of May. No good effect whatever was apparent, but once about this period the patient suffered from the severest attack of depression which he has had since his admission nearly two and a half years ago; in fact, he was for the time practically a melancholiac, weak and miserable, and hysterically emotional. At this time the fits stopped completely for some days.

It is just possible that the rise of blood-pressure—if such there was—produced by the drug may have increased the usual tendency to depression in this patient, in whom, it may be remarked, I afterwards found the blood-pressure to be abnormally high (about 135 mm. on September 20th); but I do not assign any importance to this case, which is only mentioned for what it may be worth. So far as it goes, however, it does not support the claims made on behalf of the drug as being useful in epilepsy.

Thus it will be seen that in four of my cases, as in one of Easterbrook's, a certain improvement followed or accompanied exhibition of suprarenal gland, which in three cases was given for a considerable time, though a certain amount of improvement appeared early. All these were cases of mania. Of those in which no good result appeared, one was a case of mania with stupor and a high blood-pressure, which fell on recovery, the recovery being effected under the agency of a drug one of the actions of which is to reduce blood-pressure; one was a case with a tendency to depression, and probably high blood-pressure, while in the third the drug was given for only two days. Easterbrook's unsuccessful cases were all melancholiacs.

In at least two of the cases which appeared to derive benefit from the drug, blood-pressure was high, but this was found to be habitual with the individual, and not con-

nected with the mental state, so that, I may repeat, high blood-pressure is not *per se* a contra-indication. With this reservation, however, it appears that an abnormally low pressure points decidedly to the desirability of giving suprarenal a trial, as that substance seems to produce whatever effect may be due to it in mental disease mainly by the tendency to raise the blood-pressure, which I think we are entitled to ascribe to it, even when given by the mouth. The reduction in the output of urea, which as I have found does not always take place, is at best so small that I hardly think much of the effect can be due to diminished metabolism, though this would, as far as it goes, probably tend in the same direction.

Although the pharmacology of the drug cannot be said to rest on a secure basis, while the number of cases in which it has been tried are far from sufficient to determine its therapeutic value, it may be useful to bring together the results of this inquiry in the form of a few definite conclusions, or rather, suggestions :—

(1) The chief physiological action of extracts of the suprarenal gland is increase of arterial pressure, but they also produce a tonic effect upon the heart, and on muscle generally, and possibly some diminution of metabolism.

(2) Owing to the transitory nature of the effects produced by intra-venous injection of the extract, suprarenal must be given by the mouth if any prolonged action is to be obtained.

It may be noted that I have not found digestion impaired by moderate doses.

(3) Both for *a priori* reasons and as a matter of experience, it appears to be indicated in conditions of excitement and exaltation, in which state the blood-pressure is usually found to be lowered.

(4) Administration for a certain length of time will probably be found necessary in most cases, in order to produce any very marked effect, at least where excitement is violent.

(5) Although the state of the blood-pressure, as a rule, forms a convenient indication for its use, high pressure does not absolutely contra-indicate it, if there is some reason to think that it is not associated with the mental state, as an abnormally high pressure may still be lower than the average of an individual case.

(6) Suprarenal extract seems unlikely to be of benefit in cases of melancholia and where there is much stupor.

(7) It therefore seems probable on the whole that the form of insanity in which it will be found most useful is acute mania of fairly recent origin uncomplicated by stupor.

These conclusions, until confirmed or disproved by further observation, must be regarded merely as tentative; but I hope I have said enough to induce others who have wider opportunities of clinical investigation than are afforded by the limited numbers of a private institution to make trial of what I cannot but think seems likely to prove a useful addition to our means of treatment.

(<sup>1</sup>) Read (in very slightly different form) before the general meeting of the Medico-Psychological Association at Cork, July 26th, 1901.—(<sup>2</sup>) Takamine found that '5 gramme of adrenalin was sufficient to produce a distinct effect when injected into the vein of an adult man.—(<sup>3</sup>) It may be noted that the morning pressures of the first and third subjects were lower during the treatment than on the day before, and lowest on the last day; in the first the morning pressure fell still further after stopping the drug, but in the third it rose. The evening pressures of the first and third continued higher than the morning, and than the normal evening pressure, for some days after the treatment, but had resumed their normal relation in about a week. The evidence of action is therefore chiefly the tendency to raise the evening pressure which was upon the whole manifested.—(<sup>4</sup>) The increase was more distinct in the urea than in the phosphates. The output of urea was lower on the last day of treatment, but still higher than normal.—(<sup>5</sup>) Other preparations which might be given by the mouth are the dried medulla of the suprarenal gland in the form of powder, prepared by Messrs. Willows, Francis, Butler, and Thompson; and Adrenalin, prepared commercially by Messrs. Parke, Davis, and Co. Of these I have no personal experience. I understand that the latter firm also prepares a powder of the dried gland.

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#### DISCUSSION

At the Annual Meeting of the Medico-Psychological Association, Cork, 1901.

DR. CLOUSTON.—The cases in which Dr. Dawson seemed to get the best results were those which usually did well in the ordinary, natural, clinical history of the malady. Although we do not use suprarenal extract at Morningside, I was glad to hear the results given by Dr. Dawson with regard to the action of thyroid extract, viz., that its effects are miraculous in some patients.

Dr. HAVELock.—What I admire about Dr. Dawson's paper is the extraordinary caution with which he expresses his opinion as to the effect of these drugs. There is nothing so discouraging to some of us as to find men rushing blindly after new drugs, prescribing them for curable cases; and when the patients recover, calmly putting the credit of the cure to the drugs so used. That is most reprehensible. We tried the thyroid treatment some years ago in Montrose Asylum, but I am not a believer in its efficacy except in myxœdema. I think that many cases recover under thyroid treatment—in spite of it rather than because of it. I would not care to give thyroid extract to any patient in whom I could see a reasonable chance of recovery; and, in mental diseases, when are we to say that a case is incurable? A case of melancholia may go on for years, and then may suddenly recover. I have often been thankful that I was not led into the fallacy of subjecting patients to this experimental treatment. We often see cases that surprise us by unexpected recovery; and if I had been giving such drugs I would have come to the conclusion that the cure was the result of the medication. If you draw conclusions, you should draw them with great reserve. About five years ago I did try suprarenal extract in melancholia, but as to the case cited by Dr. Dawson, I think that, too, is a little fallacious. The blood-pressure is always varying; it is sometimes very high, and one would be very glad if there were a drug that would safely lower it.

Dr. NOLAN.—For the last two years I have been prescribing the drugs mentioned by Dr. Dawson, and conclude that the results are upon the whole satisfactory. Convalescent cases of acute mania in adolescents often pass through a state of stupor, and then the thyroid extract is excellent, and usually leads to recovery. If we adopt the attitude of the last speaker, and fail to put the patients under a new drug when we have reason to think it will be beneficial, we shall have to stay our hands, and never try new treatment. I think that where the thyroid extract fails is when courage fails to proceed with it.

Dr. CLOUSTON.—Although I am out of order, I am ambitious to make a convert of Dr. Havelock. I had a patient (G. R.), admitted for the third time, suffering from mania, accompanied by some stupor; apparent dementia supervened on all occasions. There was no improvement whatever after each admission, but when we gave thyroid extract she got out of bed a sane woman, and when she was discharged her relations opened their eyes with wonder. The last miracle was performed last week. I adopted Dr. Havelock's plan not to do anything premature; we allowed this patient six months to build up her strength. I put that before Dr. Havelock, hoping that he will take it to heart.

Dr. DRAPES referred to the case of a young lady in apparently hopeless dementia, with bedsores. Before taking to bed she used to stand like a statue, and almost lost the use of her legs. After three or four days of thyroid treatment she began to improve, and made a rapid recovery. Another woman had to be hand-fed; after a fortnight of thyroid treatment she began to feed herself. I have had no similar experience of suprarenal extract.

The PRESIDENT.—I must, to some extent, agree with Dr. Havelock. Conclusions are sometimes drawn too summarily and too hastily regarding drugs, but that is no reason why we should not try them. We must not say that they have done good until that is absolutely proved. Two cases come to my memory. One was treated to recovery from myxœdema, and was discharged six months ago. Another suffered from melancholic stupor. I formed an unfavourable opinion of her on admission, as she had almost become a chronic case. From the day she began to get the drug she began to improve, and after six months made an excellent recovery.

Dr. EDRIDGE-GREEN referred to a patient suffering from myxœdema, cured by thyroid extract, and kept practically well for five years since discharge.

Dr. HAVELock.—We are all agreed that in myxœdema the drug is beneficial.

Dr. NOLAN—Yes, I considered that so obvious, I did not refer to it.

Dr. LONGWORTH.—Over twelve months ago I tried two cases with thyroid extract. Both were young girls aged 18 and 20; both had been in the asylum for a number of years. They refused food. After thyroid extract treatment there was distinct improvement in both within a fortnight. There was a marked reaction as regards pulse, etc., and menstruation, which had not occurred while they

were in the asylum, now returned; both were discharged just over twelve months ago, and they have remained perfectly well. Since their discharge I have seen them on two or three occasions. I have tried the same treatment on four or five other patients, and regret to be unable to report permanent improvement, although one was temporarily benefited.

Dr. DAWSON.—With regard to Dr. Havelock's remark, that new drugs should not be tried on cases curable by other means, I think that would be just as fallacious as the opposite contention. It is quite possible that a new drug may be of more value at an early stage of the disease than later, and certainly it is a matter of some moment whether we keep patients for a few months or for a few years in an asylum. The real test is the experience gained with a large number of patients. If the consensus of opinion upon the whole is favourable, that is a more trustworthy criterion of a remedy than if it were only tried in cases that are incurable. Although suprarenal extract is a powerful drug, I do not think there is any risk of doing harm by overdosing. I took it myself, and felt a little depressed perhaps; but that might mean a certain amount of gastric discomfort which is caused by large doses, discomfort which I never observed consequent on small. I think that the state of the blood-pressure is a legitimate indication for treatment in certain forms of insanity.

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*The Care of the Insane in Asylums during the Night.*

By JOHN KEAY, M.D., Medical Superintendent, District Asylum, Inverness.

THE district or county asylum patient spends nearly half his time in bed. As a rule he goes to bed at or before eight o'clock at night, and rises at six in the morning.

The question whether his hours in bed might not with advantage be shortened is not one for discussion at present. The obvious difficulty at once presents itself that such a change would involve either a lengthening of the hours on duty of the day staff, which are already too long, or additions to the staff, with a corresponding increase of expenditure.

The care of the patients, therefore, during these ten hours out of each twenty-four is a problem of such importance that its introduction to this meeting needs no apology.

It is hardly too much to say that for many a long year, speaking of Scotland at least, the great bulk of the insane in asylums were without proper nursing or effective supervision at night. When bedtime came the acute or troublesome patients were locked away in single rooms, and the others in dormitories, with a touching trust that through the care of a watchful Providence they would be found all right in the morning.

For example, so recently as seven years ago in the asylum