stops. Not only the amount of secretion, but its richness in enzymes also varies greatly with the time after food; for example, there is less emulsifying enzyme about six hours after a rich meal, than at any period. From the minimum it gradually increases up to forty hours. These are the figures, at least, which physiologists have arrived at by experimenting on animals. It also appears that, while the gland is active, the inner zone of the pancreatic cells diminishes, but the outer zone increases, as if the former was drawn upon for the secretion, and the latter recouped the cell from the materials supplied by the blood. The granules of the inner zone, formed out of the protoplasm of the cell, are deposited round the lumen of the alveolus, and, when the gland is active, pass into the secretion. Thus the inner zone decreases during activity, but as secretion diminishes it supplies itself again from its fellow, and that from the blood.

The reason for dwelling on the variable rate of secretion is that it is apt to be forgotten when we attempt to influence it, or to supply its place; and yet success in such an attempt must be largely influenced by bearing the facts in mind. That we may stimulate the pancreas by ether, was shown by Claude Bernard, and the fact was utilised by Dr. Balthazar Foster. Let me add that we may employ for the same purpose acetic ether, and I think, but have less evidence to support me, chloroform. With regard to supplementing the secretion by the exhibition of artificially prepared or preserved enzymes, it is also necessary to observe that times, as well as modes, of administration, may have a most important influence over our results.

THE STANDARD OF SANITY.

By WILLIAM R. HUGGARD, M.A., M.D., M.R.C.P. Lond.

WHAT is meant by insanity? As the writer, in a recent paper ("Definitions of Insanity," *Journal of Mental Science*, January, 1884) has shown, insanity is a legal or social, rather than a medical, term; and even that disease is present, cannot be affirmed in every case. From this point of view, insanity is any mental defect that renders a person unable (and not capable of being made able by punishment) to conform to the requirements of society.

The popular view, then, that insanity is something definite and absolute, must be looked on as a fallacy of suppressed correlative. Insanity is not something fixed and definite; it is relative to the requirements of society—the standard of sanity in the class the person belongs to. Societies differ in their requirements. Primitive societies do not require as much control on the one hand, or as much intelligence on the other hand, as more civilised communities do. The Damara or the Prairie Indian is allowed to do a number of things from which an Englishman must refrain. A Fijian regards murder as a claim to glory; and, if he feel a homicidal impulse, he is not required by his society to check his inclination. Thieving is a virtue amongst the Patagonians and Comanches. Chastity would be considered a vice by the Creeks, the Chinooks, and the Andamans. The intellectual requirements differ also. Many of the inmates of our idiot-establishments have as much intelligence as the average Tasmanian, Fuegian, or Veddah; and, as to delusions, the Fijian has fifty beliefs more absurd than the lunatic, who in this country is shut up because he thinks that the Princess Beatrice, reciprocating his affection, means to marry him, and carry out a great moral revolution, and that all who oppose this programme must be punished and utterly destroyed.

It may be said that the difference between the delusion or the overpowering impulse in the Fijian and in the insane Englishman is that, in the savage, the mental characters are due to education and surroundings; while, in the lunatic, they are due to disease. In a two-fold manner, however, would this explanation fail. On the one hand, even if in the Fijian there were disease, the question of insanity could not arise in regard to a matter considered by his society to be one of indifference. It would be absurd to talk of homicidal mania, of nymphomania, and of kleptomania, as forms of insanity, where murder, promiscuous intercourse, and stealing are not condemned. On the other hand, the assumption that insanity is always due to disease is, not merely an unproved, but an improbable supposition. There must, of course, be some defect of organisation; but there is every reason to think that, in many cases, the defect is of the nature of a congenital lack of balance between structures themselves healthy; and that many cases of insanity might properly be regarded as a kind of "throw-back" to a type of organisation now common only amongst the lower races of mankind.

What is the standard of sanity in this country—what are the requirements of society? Opinions differ. Some think that anyone who, by reason of mental defect, is a detriment to the public welfare, should be

under efficient supervision and control, though not necessarily in an asylum. Others think that only homicidal or suicidal lunatics should be confined. In the case of Nottidge v. Ripley and Nottidge in 1849, the Lord Chief Baron was of opinion that no one should be confined in an asylum unless he were dangerous to himself or to others; and even at the present day this opinion is not uncommon. Indeed, I have recently heard a lawyer emphatically assert that no one should be put in an asylum, unless he would commit murder if at large.

If this view be right, the majority of the lunatics in this country are unjustly detained; for more than two-thirds of the entire number, it may be confidently asserted, are not dangerous either to themselves or to others. Is there, however, for this reason, no justification for detaining them under care and treatment? What would happen if asylums were cleared of all but dangerous lunatics—lunatics likely to do violence against themselves or against others? The damage to society from the insanity so turned loose would be threefold: first, the damage to individual members of society directly, in squandered property, in libelled character, and in ruined peace; secondly, the detriment to the patient himself in lessened comfort from less suitable surroundings, in diminished chance of recovery, in pecuniary ruin, or in premature death; thirdly, and lastly, the damage inflicted on society generally by the lowering of the standard of sanity. A word on each of these points demands a moment or two. Society, through its members, would suffer directly, in property squandered, in character and reputation libelled, and in domestic peace ruined. The chronic maniac who considers himself an emperor, and the demented lunatic who has a scheme for crossing the Channel on India-rubber bands, would beggar their families in attempting to support their own dignity or to benefit their race. Reputations would be blackened by foul and obscene aspersions, the offspring of delusions. The devoted and faithful wife would be accused of poisoning and of infidelity. In many a family, domestic peace would be forever shattered by the return of an insane member before his malady had passed away. The clouds that might be dissipated by asylum-treatment become blacker and heavier by a too speedy return to the place of their origin.

In one or other of several ways the lunatic himself would suffer by being driven from his asylum. He would suffer in diminished comfort from less suitable surroundings, in lessened chance of recovery, in pecuniary ruin, or in premature death. The fate of a hopelessly insane person, shut up for life in an asylum, is frequently spoken of as a living death. The fate is, in truth, a sad one; but the sadness lies in the malady that afflicts the patient; not in the surroundings necessitated thereby. Most lunatics (including idiots and imbeciles) would find themselves in a much less congenial atmosphere outside the asylum-walls than within. Asylum-life is an artificially made world or society, specially contrived to avoid the disagreeable jars that madness would entail upon those who should display it in the outer world. But suppose the case is curable, the illness may be of such a nature that timely treatment would cut short the malady which otherwise would drift on to hopeless dementia; or, it might be that, though not sent to an asylum, the patient might recover his reason, only to find that in his insanity he had beggared himself, besides blasting his reputation. Numbers would of course perish when deprived of the protection required by their infirmity.

Such would be some of the direct effects of clearing out from asylums all patients not directly dangerous. The indirect effects would be more widespread and more disastrous. In addition to the beggary and premature death of persons unable to take care of themselves, and the unhappiness, disquietude, and ruin, inflicted on others, we should have, indirectly, murders, suicides, drunkenness, and other crimes, arising on the one hand from the feeble self-control, and on the other hand from the greater friction. Moreover, the insane are frequently so obscene in thought and in act, that if at large, they would inevitably render themselves amenable to the penal laws. But punishment will not hold madness in check; and the sane would be goaded by the annoyance they suffered from their neighbours to take the law into their own hands. Private revenge would take the place of public justice. The national character would undergo a degradation wider and deeper than a superficial view would lead one to suppose; and we should have a return of the social disorder that characterised this country in by-gone centuries.

What, then, is the principle whereby to determine the standard of sanity? The protection of the public and the protection of the insane. The protection of the public means, not merely protection from bodily violence, but the protection of all that makes life worth living. The protection of the insane means, that they shall not be subjected to any restrictions but what are necessary for their own good, or for the public safety.

To recapitulate, sanity is commonly judged by an erroneous standard, the standard of mental health; whereas it ought to be judged by the standard of social capability. On the one hand, many persons not in good mental health are far from being insane; and, on the other hand, there are many persons who are normally so much below the average in mental function, that they cannot be regarded either as able to take care of themselves in a country like this, or as devoid of danger to the public.

FURTHER COMMUNICATION ON THE FUNCTION OF THE RECURRENT LARYNGEAL NERVE WITH REGARD TO THE THYROID BODY.

By W. HALE WHITE, M.D.,
Assistant-Physician to Guy's Hospital.

IN THE BRITISH MEDICAL JOURNAL for August 22nd of the current year, page 342, I published a paper on Atrophy of the Thyroid Body following pressure on the Recurrent Laryngeal Nerve. In this paper, two cases that had occurred at Guy's Hospital were recorded; in both of them, there was an aneurysm pressing on the left recurrent laryngeal nerve, and in both of them the thyroid body was extremely atrophied. The chief features of this atrophy were the small size and weight of the organ, and its fibrous appearance. The microscope showed that the vesicles were much smaller than natural, their contents were broken up into irregular masses, and the epithelial lining was in many cases destroyed; there was considerable increase in the amount of fibrous tissue, for, in some parts of the section, very little else but fibrous tissue could be seen; there also appeared to be some obstruction to the lymphatics, for the perivesicular lymphatic spaces were much engorged.

Shortly after the above paper was written, there was admitted into Guy's Hospital, under the care of Dr. Goodhart, to whom I am indebted for permission to use the case, a woman suffering from cerebral tumour. It is unnecessary here to detail her symptoms; the first to appear was deafness; after this had existed for some time, it was evident that she had a considerable tumour somewhere on the right side of the base of the brain, and implicating most of the nerves at the base on that side. The affection of the eighth pair was shown most conclusively by the atrophy of the right trapezius and sterno-mastoid muscles. During life, we thought that the right lobe of the thyroid body could be felt to be less in size than the left, but after death this was found not to be the case; the deception had been caused by our not allowing sufficiently for the atrophy of the right sterno-mastoid, which rendered the gland on the right side more easy to define than on the left, and hence gave a deceptive feel of diminution in size. At the *post mortem* examination, the diagnosis was completely verified. There was a large rapidly growing glioma on the right side at the base of the brain, implicating the eighth pair. At first, I thought there was a slight difference in colour between the two lobes of the thyroid gland, but it was not of sufficient importance to be of any moment; the gland was about its natural size. The right recurrent laryngeal nerve was decidedly smaller than the left; the muscles on the right side of the larynx were atrophied. Microscopic examination showed the tumour to be a glioma, evidently of rapid growth. There was no appreciable difference between the two lobes of the thyroid gland; sections from both appeared normal, and the secretion was evidently going on actively at the time of death, because not only the vesicles, but the lymphatics, were full of the special secretion; the secreting epithelium was normal, and there was no increase of fibrous tissue. A section of the right vagus, as compared with one of the left, showed considerable sclerotic change; where it existed, it was extreme, and had completely destroyed the nerve-fibres; it was evidenced by a considerable amount of delicate fibrous tissue, with, in parts, many nuclei. This sclerotic change appeared in no way to differ from any other descending degeneration; the chief point of importance about it being that it was not complete, for several healthy nerve-fibres could be seen.

Sections were made of both recurrent laryngeal nerves. The cross section of the right was much less than that of the left. Staining with logwood made it evident that there was a considerable sclerotic change in the right nerve, whilst there was none in the left; it consisted of a delicate fibrillated tissue springing from the epineurium and endoneurium. This partial degeneration of the recurrent laryngeal nerve is seen in the accompanying figure, which shows to the left a bundle of nerve-fibres, all of which have taken the osmic acid stain well, whilst to the right is another bundle, of which rather less than

half have taken the stain, whilst the remainder is occupied by a delicate fibrillated tissue. All the sections prepared with osmic acid showed this change, and distinguished the two parts of the nerve most

Osmic acid-preparation showing two bundles of nerve-fibres from the right recurrent laryngeal nerve; that on the left shows no degeneration, that on the right shows sclerosis of more than half the bundle. Hartnack, Obj. 3, Oc. 3.

beautifully, whilst all parts of sections prepared in the same manner from the left recurrent laryngeal nerve took the osmic acid equally and perfectly; thus this mode of preparation, demonstrating partial degeneration of the left recurrent laryngeal nerve, is seen to confirm that of logwood.

We have, therefore, traced a descending degeneration from the brain, by means of the right vagus and recurrent laryngeal nerves, to the right laryngeal muscles, which have consequently atrophied; but the two halves of the thyroid body are healthy. Now, were all the fibres of the right recurrent laryngeal diseased, this case would directly contradict those published on August 22nd, for they were cases in which the left recurrent laryngeal was pressed upon, and the thyroid body was atrophied; this of course may have been a coincidence, but seemed to point to the fact that the recurrent laryngeal nerve had some trophic influence on the thyroid body. It is, indeed, just possible that the left recurrent laryngeal nerve has some influence on the thyroid body not possessed by the right, but this is extremely improbable. The fact that so many of the fibres of the right recurrent laryngeal in the case now under consideration were healthy, whilst the rest were completely sclerosed, shows that that nerve contains many fibres which do not proceed from the brain; the right vagus also contained some fibres that were not diseased, but as it was not carefully noted, at the *post mortem* examination, what part of the vagus was put aside for inspection, one cannot say where these are added. If further investigation should show that the recurrent laryngeal nerve is the trophic nerve of the gland, this case will assume great importance, for it will prove that, whilst the motor fibres for the laryngeal muscles proceed from the brain, there are trophic ones in the recurrent laryngeal nerve, namely, those which in this case are undegenerate, which have not a cerebral origin; and must, therefore, be superadded somewhere between the brain and the recurrent nerve.

CONICAL CORNEA.

By CHARLES HIGGINS, F.R.C.S. Eng.,
Ophthalmic Surgeon to Guy's Hospital.

THE operation I have always performed for conical cornea was, I believe, introduced by Mr. Bader. It consists in the removal of an elliptical portion from the apex of the cone, and is easily performed as follows.

The eye being cucainised, the lids are fixed open by a speculum, and the eyeball well steadied by fixing forceps. A thin Gräfe's extraction-knife is then passed through the cone from side to side, entering the anterior chamber, and made to cut its way out either upwards or downwards, forming a minute flap. The aqueous humour, of course, escapes. The flap is then seized with iris-forceps and cut off. The result is a sloping sided horizontal notch in the cornea. A drop of solution of eserine is then applied; both eyes are strapped up and covered with small pads of wet lint, secured by a bandage. Neither eye is opened for ten days. At the end of that time, both are examined. If the aqueous humour be retained, the eye which has not been operated on is left uncovered; but if the wound be still open, both eyes are kept bandaged until it has closed. Healing is often tedious. In the result, a small central opacity, with or without anterior synechia, remains; the cone is reduced, and vision is greatly improved. Failures are extremely rare. The following cases the last I have done, will serve as illustrations.