CASE OF ACUTE GLANDERS IN THE HUMAN SUBJECT: WITH REMARKS.

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THAT the peculiar malady called glanders is communicable from brutes to the human species, is now a completely established fact in pathology. Such instances, however, having been hitherto very rare, the relation of each case of fresh occurrence, and of the facts and circumstances connected therewith (illustrating either the essential characteristics of the disease itself, the mode and conditions of its contagion, or its appropriate and successful treatment), would seem to merit the attention of the medical profession. Emboldened, therefore, by this consideration, I venture to offer the following brief epitome of a case which fell under my observation during the past summer; with such remarks on its peculiar features, and the proofs of certain facts which I humbly opine it offers, as suggest themselves to me, and appear necessary to its elucidation. The plain statement of the case is as follows.

CASE. On July 15th, 1853, the wife of W. F., aged 47, clog-maker, requested my attendance on her husband, whom she described as suffering from sore-throat and sore-mouth. Supposing it a case of common cynanche tonsillaris, I sent him a gargle of alum with honey, and an aperient powder. The next day I saw him. His symptoms were—profuse salivation (the saliva, in fact, pouring from his mouth, which was constantly open); the tongue was slightly swollen, and loaded with a brown mucus; the lining membrane of the mouth and fauces was foul and unhealthy; the salivary glands were somewhat enlarged. His pulse was quick and feeble, and he complained of want of sleep. There was no swelling of the tonsils, or of the arch of the fauces. In fact, he appeared to have been salivated with mercury, with two exceptions to the ordinary symptoms of that morbid condition; viz., 1st, the foetor of the breath, which was great, was not that of mercurial ptyalism; and, 2nd, the gums were not much swollen, nor were the teeth loose. Deeming, however, these deviations from the usual routine of symptoms more curious than important; and having met with a case in the country some years previously, wherein the same absence of the presumed diagnostics of mercurial salivation was observable, I judged it a case of this kind; and this opinion was apparently strengthened by the statement of the patient himself, that, feeling himself unwell a few days before, he had taken some pills obtained from a quack in the neighbourhood. I recommended him to use his gargle, as a wash for the mouth, diligently.

July 17th. He was much worse. The salivation was more profuse; and there was much anxiety and general distress. He complained of headache, giddiness, and continued restlessness. The pulse was 120, feeble and precipitous. As the gargle did not seem to be of any service, and the bowels were unrelieved, I gave him another aperient, ordered him a warm gargle of chlorinated soda, and recommended a little wine at intervals, or brandy and water. With this advice, however (having been a teetotaler for twelve years), he declined to comply.

July 18th. At my morning visit, I found him much worse. None of the local symptoms were ameliorated; and the constitutional disturbance had greatly increased. His difficulty of speech was such as to render his articulation almost unintelligible. He had been slightly delirious during the night, and said he should die. The case, I confess, now puzzled me not a little; I could not account for such severe and protracted disturbance of the circulation and nervous system, and such remarkable resistance to local remedies. On the afternoon of the same day, at the patient's own request, he was seen by Dr. Frederick W. Mackenzie. On hearing my account of the case, and from the similarity it seemed to present to others which he had previously seen, he immediately suspected it to be acute glanders; and he was confirmed in this opinion upon visiting the patient

with me. Upon questioning him, the following history was elicited; the patient, however, not suspecting, and scarcely crediting, that it had anything to do with his illness.

About ten days previously, after breakfasting at 6 o'clock, he walked with a heavy load of clogs, etc., to Paddington (a distance of more than two miles), walked about there a good deal, and had nothing to eat or drink until between ten and eleven; when, on his way home, he called at some livery stables, to see a friend who was employed therein. While there, he noticed a glandered horse, and felt faint and sickened by the effluvia proceeding from the animal. He remained a short time (perhaps, twenty minutes), and then returned home, and had thought no more of the occurrence. The next day he felt soreness of the mouth and throat, with slight salivation, which increased daily, up to the day on which he applied to me for advice.

Dr. Mackenzie immediately advised the following:—ten grains of sesquicarbonate of ammonia, with five drops of tincture of opium, and one drop of creasote, to be taken every two hours.

I saw him again the same evening. He had taken two doses of the mixture, but declined continuing it, on account of the creasote. I therefore advised wine to be given freely during the night.

July 19th. We found him slightly improved. There had been during the night a slight viscid tenacious discharge from one nostril; and on examination, a scab was discernible, evincing tendency to ulceration of the Schneiderian membrane, which was also strongly injected. He was ordered to continue the mixture without the creasote, and to take beef-tea and wine.

July 20th. He was much improved. He had had some sleep during the night, and felt hungry. The tongue was beginning to clean. The ammonia was ordered to be continued every four hours. Dr. Mackenzie resigned the case to my care.

From this date, he steadily improved, but remained in a very weak and prostrated state for some weeks, showing the powerful shock sustained by the nervous system. I decreased gradually the dose of ammonia, both in quantity and frequency of administration, and combined with it citrate of iron.

About a fortnight from the period of his having recovered so far as to be able to go abroad, he complained to me of what he termed rheumatic pains in the limbs, and painful swellings in various parts. On examination, I found some swelling and tenderness of the lymphatic glands in the right axilla, both inguinal regions, and left popliteal space. These, however, gradually disappeared as he regained constitutional strength.

REMARKS. A careful consideration of the foregoing case suggests some remarks, which may be classed under five interesting points, viz.:

- I. Diagnosis of Glanders.
- II. Mode of Communication.
- III. Predisposing Causes.
- IV. Peculiarity of the Symptoms; and
- V. Treatment.

I. DIAGNOSIS. The diagnosis of this terrible malady may often seem difficult, as is proved by the history of the various cases on record. The chief landmarks for our guidance appear to be—*first*, the history of the case when that can be procured, as shewing the accession of the symptoms about twenty-four hours only after exposure to the influence of the virus; *secondly*, the localisation of the symptoms themselves, *i.e.*, their being limited to the salivary glands, tongue, and pituitary membrane; *thirdly*, the peculiar symptom of a thick and sanious discharge from the nares; *fourthly*, the tremendous disturbance of the nervous system, so unusual in ordinary cases of salivation, and out of proportion to the local distress; *fifthly*, peculiarity of the foetor; and *sixthly*, obstinate resistance of the disease to ordinary remedies, and its rapid yielding to diffusible stimulants in large doses. In most of the cases upon record, swelling and redness of the face, generally with the ap-

pearance of phlyzaceous pustules on the skin, and redness of the conjunctivæ, have been noticed; and, of course, when present, must greatly aid in the diagnosis. But it is probable, I think, that their absence in the case of my patient may justly be attributed to the fortunate recognition of the malady by Dr. Mackenzie in a comparatively early stage, and its being consequently combated by appropriate remedies; and that had it been suffered to run its course unchecked, it would in its termination have been attended with the additional symptoms above named. Besides, from a consideration of the manner of communication of the morbid agent in this particular case (the next point for our observation), it may fairly be argued that the patient had imbibed (so to speak) only a small dose of the poison.

II. MODE OF COMMUNICATION. This is a most important subject for our consideration with regard to the necessary prophylactic measures. It is, indeed, chiefly with reference to this matter that I venture to judge this case worthy your hearing; as I conceive it goes far to establish a highly important position. Until the publication of Dr. Mackenzie's interesting case in the *London Journal of Medicine* for September, 1851, no clear idea seems to have been entertained by writers on the subject, that the virus of glanders was communicable from the brute to the human system, otherwise than by the actual application of poisonous secretions of the affected parts of the animal to an abraded mucous or cutaneous surface; although, in several recorded cases, and in more than one of those of which a valuable abstract is given in the *ASSOCIATION MEDICAL JOURNAL*, No. XXIX, it appears that it was quite impossible to trace the source of the affection to direct inoculation; or, indeed, to account in any way for its accession. In Dr. Mackenzie's case, above alluded to, that gentleman states, "the patient assured me that he had no scratch or abrasion whatever of any surface"; and he suggests, therefore, that the disease was communicated to the patient, either by the application of the poison to a whole unabraded surface, or through the medium of the atmosphere, *i.e.*, by infection, *ergo* (he argues), direct contagion (inoculation) is not essential to the communication of the disease. This important principle, thus advocated by Dr. Mackenzie, was not recognised by Dr. Elliotson. Dr. R. Williams, in his elaborate treatise on the poison of farcinoma, gives no hint of his suspicion of its communication, otherwise than by contact.

Dr. Eck, of Berlin, thus expresses himself:—"Though the glanderous nasal discharge is recognised as the chief vehicle of infection, yet it can hardly be doubted that the contagion may exist in the other excretions; nay, that occasionally, as in damp stalls, infection may take place without any observable contact; *probably, through the medium of inspired air.*"* This opinion appears to have been shared by Rayer, who says: "There are cases where no local results of inoculation are observed, the first symptoms being those of a general infection of the system."† Still, this view is not generally adopted, as is evident from the following observation of Dr. Copland: "Whether or not it (the glanderous matter) is capable of producing the disease by being applied to the unabraded mucous surface, or by merely contaminating the air breathed by the unaffected, is *certainly not proved* as respects the human subject."‡

The case of my patient lends a strong confirmation to Dr. Mackenzie's views of the possibility of infection. In his case there existed still a doubt, as the matter might have come in contact with and been absorbed by an entire mucous surface; but in my case, this certainly did not occur. The facts bearing on this point, which I afterwards gleaned from the patient, are these:—On entering the stable to see his friend, he did not approach any of the horses, but passed on to an upper department (which formed a slope or inclined plane), separated at its extremity, at the head of the building, by a depth of six feet from the animals themselves, in the lower or ground department—

the edge being protected by a rail, over which he leaned whilst conversing with the stableman. He was thus at a distance of six feet from the glandered horse, the foetid breath of which he doubtless inhaled as he leaned his head over the rail; inasmuch as he states he felt sickened thereat. Moreover, he was positive the animal did not sneeze during the time of his visit. It appears then from this evidence pretty clear that—

a. The atmosphere was the medium of communication; and

b. The distance of safety exceeds six feet.

The circumstance of this mode of communication of the morbid agent entirely explains the apparent anomaly of the absence of glandular swellings, abscesses, etc., usually observed in cases of equinia. When the poison is introduced through an abrasion or wound in any part, it naturally follows the course of the absorbents; and thus the local symptoms precede the constitutional. The reverse, of course, must occur where the disease (as in the present instance) is caught by infection.

Since the recovery of my patient, my friend Dr. S. Edwards has mentioned to me a somewhat similar case, which occurred some years ago in Edinburgh, of a man who was attacked with all the worst constitutional symptoms of acute glanders, shortly after he had passed some time in the neighbourhood of horses so diseased, but had taken especial care not to approach any of them. The man died.

Among the cases reported in the number of the *ASSOCIATION JOURNAL*, already mentioned, there is one extracted from the *Gazette des Hôpitaux*, Dec. 14th, 1852, of a man who died of acute glanders; and the only proven fact in the history was, that he had lain in a room over a stable, but had not entered the stable itself, nor come in contact with the animals.

Dr. Mackenzie threw out to me the suggestion, that the obstinate affections of the throat and fauces, ulceration of the palate, destruction of the nasal bones, etc., which we often see occurring in the persons of ostlers, stablemen, jockeys, etc., and which are generally attributed to syphilis (an opinion which, by the bye, the sexually dissolute lives of this class of persons would tend strongly to confirm), may sometimes be due to the infection of the poison of glanders; and that, in fact, such cases are instances of chronic equinia, running a slow but destructive course. This idea appears worthy our consideration; and the following case (also from the *ASSOCIATION JOURNAL* of the same date) lends weight to it. It is related by Dr. Tessier, of Lyons. A woman was admitted into the Hôtel Dieu at Lyons, presenting obscure but alarming symptoms, which, just before her death, were suspected to depend on the contagion of glanders. It was stated, however, she had had syphilis two years previously. The *post mortem* revealed twenty-seven abscesses, two of them gangrenous; the pituitary membrane presented granular erosions infiltrated with pus, although there had been no discharge from the nostrils during her illness; the glands of the intestines were healthy, and the sexual organs showed no traces of having been affected with syphilis. The woman said she had never come into contact with horses, and had no transactions with grooms or coachmen.

III. PREDISPOSITION. Dr. R. Williams says, "the farcinomatus poison, like many other animal poisons, does not infect all who may be in contact with it, but requires some peculiarity in the constitution, or other predisposing circumstances, to produce the disease. In general, the parties who have contracted glanders, have been of intemperate habits, or of indifferent health, at the time of their falling ill of the disease." My case is, I conceive, corroborative of this opinion. It would appear (as indeed is consistent with facts connected with the absorption of various miasmata) that a certain amount of vital exhaustion or prostration is necessary to, or at least strongly favours, the development of the disease. The patient had breakfasted early, and during a morning remarkable for its sultry, oppressive heat, walked until quite fatigued, and was also wearied by a heavy burden; he had no food for six hours, and his

* British and Foreign Med. Review, vol. vi, p. 118.

† Rayer on Glanders.

‡ Copland's Dictionary, article "Glanders".

stomach was consequently empty at the time of his being exposed to the chances of infection. The electrical condition of the atmosphere has, doubtless, much influence over the absorption of this or any other aerial poison. It may perhaps be supposed by some, that the fact of his being a testotaller favourably predisposed him to the reception of the virus; but my own judgment and experience would be decidedly at variance with such an opinion. I have always found that total abstainers generally possess far more vigorous constitutions, far greater stamina, and consequently far greater powers of resistance to the reception of atmospheric poisons, than other persons accustomed to even the moderate use of alcoholic beverages. But perhaps you will deem this beside the question.

IV. PECULIARITY OF THE SYMPTOMS. The sudden accession and somewhat peculiar character of the symptoms in this case, when carefully borne in remembrance, would direct our attention to them occurring in future instances, and excite suspicion as to their origin and real nature. Here we have a man, twenty-four hours only after being exposed to infection from a diseased animal, attacked with a train of symptoms which, although strongly resembling excessive mercurial salivation, yet presented some points of dissimilarity. The absence of the mercurial fœtor, of loosening of the teeth, the great swelling of the sublingual glands, the general sloughy condition of the lining membrane of the mouth and fauces, the prodigious amount of saliva secreted, the viscid discharge from the nostril, and above all the excessive affection of the nervous system (very similar to that observed in delirium tremens, as was noticed by Dr. Ballard), indicated by obstinate watchfulness and a tremulous rapid pulse; and the resistance of these symptoms to ordinary treatment, are sufficient, I imagine, to point out a marked departure from common cases of malignant sore-throat, stomatitis, or mercurial ptyalism.

V. TREATMENT. This terrible malady having generally proved fatal, its successful treatment cannot but be considered as possessing a strong claim on our interest and attention. Only one case in fifteen of acute glanders recovered of those alluded to in Dr. Williams's treatise already quoted. Dr. Elliotson says, "all attempts to cure the acute form of the disease have hitherto failed"; and he gives the details of four cases, all of which proved fatal. The treatment he adopted was of a mixed and doubtful character, consisting of the administration of sedatives and wine. Rayer advises purgings and large doses of acetate of ammonia,—which is a favourite remedy with veterinary surgeons,—with local antiseptics, such as turpentine, creasote, etc. But all these remedial measures appear to have proved equally fruitless in acute equinia; in the chronic form of the disease, the topical application of the more powerful antiseptics has been happily attended with greater success. In the cases of chronic glanders treated by Dr. Elliotson, the employment of a solution of creasote, injected into the nostrils, was attended with complete success. All the cases of acute glanders collected and detailed in the number of the ASSOCIATION JOURNAL mentioned above proved fatal, with the exception of two under the care of Dr. Mackenzie, to which I shall presently more particularly refer. Dr. Cockburn's case, reported in the ASSOCIATION JOURNAL, No. XII, terminated fatally, in spite of the most active and energetic remedies; these consisted chiefly of sedatives and hydrochloric acid internally, with poultices locally to the gangrenous pustules.

The treatment adopted successfully in the case of my patient, recommended by Dr. Mackenzie, is identical with that pursued by him, with the like satisfactory results, in the two cases above alluded to, which were exclusively under his care. The emetic of ipecacuanha, and the incising the Whartonian ducts,—two other remedial measures adopted by Dr. Mackenzie in previous instances,—were not put in force with regard to my patient, as not being required by the exigencies of the case. And I am of opinion, that the thanks of the profession are justly due to this gentleman for suggesting not so much, perhaps, the chief remedy

itself (as we find mention of its *unsuccessful* exhibition by other writers), as the *proper mode* of its administration, so as to secure its full curative effects. In the report of his first case, which I spoke of in the commencement, Dr. Mackenzie says: "Ammonia is reported to have been given in glanders, but without success; and the same remark has been made with reference to its exhibition in scarlet fever. But it is not so much to the medicine as to the method of giving it, that we are, I apprehend, to look for beneficial results". I am sure you will all allow this to be a sound and correct position, and is, indeed, more or less applicable to the administration of all active medicines, more especially in acute diseases. But this argument undoubtedly applies with greatest force to the treatment of a disease running a rapid and destructive course, and dependant in its origin on the presence of a septic poison, introduced into the system from without.

In such conditions, and especially in cases of equinia, the indication I apprehend to be,—to sustain the vital force in its conflict with the destructive chemical processes going on in certain tissues. And this can only be done by a stimulant, powerful in its nature, rapidly diffusible, and administered in such a manner as to keep up its full effect on the constitution. Ammonia, given in large doses, in a concentrated form, and at very short intervals, appears the agent best calculated to fulfil these requirements. Dr. Mackenzie, in his own cases, gave it every hour; in my own case, it was not judged necessary to give it more frequently than at intervals of two hours. Of course, this point must be left to the discretion of the practitioner in each particular case.

Dr. Mackenzie says: "This remedy and mode of exhibiting it, were suggested by the good effects which I had seen it produce when so given in malignant scarlet fever." And he quotes at length from Mr. Wilkinson's work on the disease in question, in allusion to the employment of the remedy by Dr. Peart, by whom it was originally recommended; and also his (Mr. Wilkinson's) experience of its good effects; also from Mr. Ricardo, of Bow, who used the remedy largely in the treatment of scarlatina maligna, and with the greatest success. So far as my limited experience goes, it decidedly confirms the views and statements of these writers. During the last three years, I have been in the habit of treating almost all cases of putrid sore-throat, scarlatina, and gangrenous erysipelas, accompanied with severe constitutional irritation, with ammonia in a concentrated form: and since so doing have lost but one patient, and that one could not be got to swallow the medicine. In fact, my confidence in the remedy is such, that I never despair of the recovery of any case of this kind, provided the swelling of the glands under the jaw has not proceeded to such an extent, as to preclude the possibility of swallowing at all, but address myself to the treatment with confidence instead of despair.

Much stress has been laid by writers in general on the value of antiseptics in treating this class of maladies; of course their local application is rational and sanctioned by experience, but will by no means suffice for the cure. In the case of my own patient, for instance, powerful gargles of chloride of soda appeared to be of little service; but I have no faith whatever in the internal administration of remedial agents of this nature, either in glanders or scarlatina. To the employment of creasote (which is, perhaps, the most powerful of the whole class), the offensive odour and burning nauseous taste of that drug offer an insuperable objection in all cases affecting children; and, I may add, that another powerful antiseptic, acetic acid, which was highly recommended a few years since in cases of scarlatina maligna, has proved a failure, and, I believe, is now pretty well discarded by the profession. The principal object of the exhibition of constitutional remedies in typhoid conditions of the system, whether that condition be the result of the absorption of glanders poison, scarlatina virus, or other materies morbi, appears, I imagine, to be clearly indicated, viz., to rouse the sinking powers, and sustain the vital forces, by the exhibition of appropriate stimulants given

methodically and effectually: and not, as is too frequently the case, in such a manner that the cure is always beginning, and never progressing. In conclusion, permit me to throw out the suggestion: Does not the remedy which I have been advocating (namely, carbonate of ammonia in large doses) promise to be more efficacious, than any hitherto tried in instances of poisoning by dissection wounds: at all events, does it not merit a fair and proper trial in future cases?

Kensall Town, London, March, 1854.

BIBLIOGRAPHICAL NOTICES.

ELEMENTS OF PSYCHOLOGICAL MEDICINE: an Introduction to the Study of Insanity, adapted for Students and Junior Practitioners. By DANIEL NOBLE, M.D., F.R.C.S., Medical Officer to the Clifton Hall Retreat, and Lecturer on Psychological Medicine at the Chatham Street School of Medicine, Manchester. pp. 340. London: 1853.

THERE is, perhaps, no department of medical science which more forcibly points out the disadvantages of exclusive special practice, than that which relates to insanity. An adequate acquaintance with the subject is, for the most part, confined to a few, who make it the business of their lives. On these, indeed, the speciality of the study acts injuriously, by giving a false colour to whatever disease they may meet with; but it is especially injurious to the medical man in general practice, both in preventing him from obtaining even a commonly necessary knowledge of the subject, and in leading him to imagine insanity to be something beyond his province. There are, indeed, some students and young practitioners who, aware of the importance of the subject, feel it a matter of duty to attend a course of lectures at Hanwell or Bethlem; but still, from the limited opportunities which exist, there is great ignorance on the subject of mental disease. The following expressions of Dr. NOBLE are scarcely too strong:—

"Lunatic asylums in this country, whether public or private, are but rarely accessible for the purposes of clinical study. The difficulty of obviating this circumstance would appear to be regarded as insuperable by our colleges and universities, since no provision of any kind is made by them for educating the future physician and surgeon in a practical knowledge of insanity. Hence medical men who possess adequate information upon this branch of the profession are necessarily self-educated to a great extent. The superintendent of an asylum has at times to receive his first practical lessons in his own hospital; and occasionally, I believe, the first book on insanity that is read is taken up after the charge of insane patients has been assumed. Indeed, the fact is but little overstated when it is said, that many practitioners have no acquaintance at all with either the theory or the practice of psychological medicine." (Preface, pp. vi-vii.)

But it may be said that we have several good books from which we may derive ample information on the subject. Let us hear Dr. Noble's reply.

"The many excellent works that already exist upon the subject, are generally of too high a character for initiatory study; being, for the most part, contributions to our knowledge of the subject under particular aspects, rather than treatises for conveying elementary instruction." (*Ib.* p. ix.)

To endeavour to supply the defect here pointed out, Dr. Noble delivered a course of eight elementary lectures in Manchester. At the request of his audience he has published them; and they constitute the valuable volume now before us.

Lecture First is Introductory. In it the author, after defining the object of psychological medicine, takes occasion to notice its neglect by students, and to show how un sound are the reasons of this neglect: the main reason alleged being the speciality of the study. While he shows

an evident bias towards special practice, he very justly observes, that

"There is no sensible student who, because he had no precise prospect of becoming surgeon to an ophthalmic hospital, or to the operative department of a general one, or of realising in his future career some marked advantages in departmental practice of any kind, would think it right for one moment to neglect opportunities for learning the elements and groundwork of the several branches, according as they should be afforded in the period of his academic pupilage." (p. 5.)

He then goes on to show, that a knowledge of mental pathology is demanded in ordinary practice, in forensic medicine, and in attesting the fact of insanity before removal to an asylum.

Having stated the objects of psychological medicine, the author next attempts to give a definition of the term insanity. He doubts "if any definition that can be given, will suggest to the student a clearer understanding of the subject than does the term itself"; but, for convenience, he states insanity to consist of "*chronic disorder of the brain, inducing perversion of ideas prejudicial to, or destructive of, the freedom of the will*". This, the author allows, may appear to require explanation; and so does every definition of insanity which has yet been given. And we doubt whether any better meaning of the word can be given than "unsoundness of mind": for the attempt to define a generic term involves such a rigorous analysis of its elements, that it is difficult not to overlook some of them.

But we do not blame Dr. Noble or any other writers on insanity for attempting to explain the term. They all do their best; and we are sure that Dr. Noble has done so, and we believe that his definition is better than many of a more laboured kind. There is a difficulty—for the present, an insuperable one—in the way: that, while we can employ the hand, eye, and ear, in ascertaining the presence and nature of structural disease in other organs, independently of the symptoms which it produces, we have in most cases nothing but symptoms to guide us to a knowledge of the disease affecting the brain; and even these symptoms are most erratic guides. Hence we mystify ourselves and others in the attempt to define a something, without possessing an accurate knowledge of the elements of which it is made up.

Lecture Second treats of the Physiology of the Brain and Nervous System. Dr. Noble was formerly an advocate of the doctrines of phrenology, so far as to admit of the relation of different mental faculties to individual portions of the brain; but he never had faith in the notions of some of the more ardent phrenologists, "that science and philosophy, by the aid of phrenology, would regenerate the world, or, in any extraordinary degree, contribute to social progress." He now, with honesty and candour, confesses that more extended observation has shown him the fallacy of much which he formerly believed; but he admits the general truth of the leading phenomena cited by the earlier school of phrenologists.

"For my own part, I conceive the inference to be warranted, that, in some way or another, the anterior lobe of brain maintains an especial connexion with the intellect; that the superior convolutions, in like manner, have some organic association with the higher sentiments; and that the posterior portion of the cerebral mass is peculiarly connected with the more animal propensities of our nature. But admitting these conclusions as true, I am far from believing that, even to the extent of the three regions, we have, in the size and configuration of the head, anything like an exact measure of the respective psychical capacities and inherent tendencies; for it may be certainly predicated that intimate conditions of quality, inappreciable by external signs, largely affect both functional power and activity." (pp. 44-45.)

That Dr. Noble once adopted the organology of the phrenologists as true, was due mainly—and not in his case alone—to a blind confidence in the observations and reasonings of others.

"The eminently scientific character of many of Gall's researches into the anatomy and physiology of the brain and nervous system, the decidedly philosophic spirit displayed in