in walking by night, and disordered action of feet in walking by day.

Three years later (two years before death), pain decreasing and localized contractions beginning in abdomen, thighs and penis; hæmoptysis.

One year later, straddling gait and inability to walk straight across room; general wasting.

Seven months before death, seminal emission; two and a half months ago, cough, changed voice, and stupor in evening; in another fortnight, night sweats; the next week, serious disease of right lung, prostration, deafness (breaking in at last upon steady occupation); in three weeks more, similar diseased action evident in left lung, steady increase of all symptoms till, in four weeks more, death occurs.

Equally characteristic are the changes of structure in the spinal marrow, as described by Dr. Edes, viz., substitution of connective tissue for the normal nerve tubes in the posterior columns and the posterior nerve roots; the partial disintegration of tissue and existence of exudation corpuscles.

These changes affected the posterior columns, &c., along the entire length of the specimen sent to Dr. Edes (viz., some eight inches of the lower portion).

The characteristic symptoms of the first stage of progressive locomotor ataxy (viz., a uniformly rapid pulse, disturbances of vision, and the shooting, shifting, intermittent pains) are plainly marked; and it is some four years before the second stage (as indicated by disorder in the coördinating power and the necessity of supplementing it by eyesight) declares itself. If failure of coördination in the arms is the distinguishing mark of the third stage, our patient never reached it; but I submit that the deafness, the impairment of deglutition, and the very peculiar lung lesions, may be referred to the same histological changes as the more familiar symptoms, and I very much regret that portions of the encephalon and the medulla were not sent to Dr. Edes.

The recovery (nearly, if not quite complete) from the grave disorders of vision with which the disease began to show itself; the absence of either diminution or exaggeration of sexual appetite; the deafness, and the clearness of the urine after so many years of bladder trouble, are points in which this case seems to differ from the ordinary course of progressive locomotor ataxy.

CASE OF URETHRAL CALCULUS.

By EPHRAIM CUTTER, M.D., Boston.

IN July, 1868, I was called to see a boy, 10 years old, who had been suffering from difficulty with his urine for four years and more. His clothes were wet with involuntary discharges night and day. At times he would be seized with paroxysms of agonizing pain, during which he would run about the apartment, unable to keep still. During his difficulties he had the benefit of various physicians, regular and otherwise, but with no relief. One of the most distinguished practitioners in this country examined his urethra with an elastic bougie, and detected a "false passage." He advised no surgical interference, but referred him for treatment to his local physicians. I found a large, globular, dense, painful, fluctuating swelling filling the lower abdomen up to the umbilicus. Dribbling of the urine, constant desire to micturate, pain in the glans penis, great general uneasiness and distress. I diagnosticated a distended bladder, and endeavored to pass an elastic catheter and failed. Then a No. 1 vesical sound was introduced; this had entered only a little way when it struck a hard body, with a metallic click, which proved to be a calculus impacted in the urethra. The point of impaction was at the scrotal part of the urethra. Beneath the fingers it felt dense and unyielding. As the indications were urgent to relieve the distention of the bladder, I succeeded in catheterizing it, passing the instrument by the stone. It was noticeable how the contractility of the bladder had been destroyed by the four years' stretching. It was necessary to press on the bladder through the abdomen before the contents would escape through the catheter, and then the walls of the bladder felt as if they were certainly half an inch in thickness.

At a subsequent visit ether was administered, and a forceps, such as is used for extracting polypi of the ear, was passed down on to the stone and firmly fixed. The calculus was then withdrawn to the urethral outlet with some stretching and care. An incision made through the frænum, lengthwise, afforded an exit for the calculus with but little hæmorrhage. It proved to be uric acid, oval, the size of a large pea.

There was but little subsequent difficulty. By pressing on the abdomen with the hand, he could evacuate his bladder with ease. The cut healed perfectly and speedily. The contractility of the organ increased as time

elapsed, so that at present there is no trouble.

The strong point in this case is the importance of using metallic materials in carrying the sense of touch into the deep cavities. Had the physician named employed his metallic bougie he would have made a correct diagnosis and instituted proper treatment, with speedy relief to the patient. One should not, therefore, wholly rely on the evidence afforded by a non-metallic bougie in physical exploration of the urethra. I hope this point will be strongly and indelibly impressed on the reader.

Selected Papers.

CLINICAL ILLUSTRATIONS OF THE ANALOGY BETWEEN THE PROCESSES OF HEALTH AND OF DISEASE.

By JAMES RUSSELL, M.D., F.R.C.P., Physician to the Birmingham General Hospital.

THE inquiry which is connected with the subject of my present paper has much interest in relation not only to disease, but also to the processes of health; any light which it may throw upon morbid action will also be reflected upon the ordinary phenomena of normal nutrition. Disease is "nothing which the mind can grasp in the form of a distinct entity added to the human frame, but rather a deranged condition of the animal machinery;" hence it is of importance to compare the phenomena of health with those of disease, in order to learn wherein consists the derangement of the machinery of healthy nutrition, and what is the ultimate condition in which such derangement originates.

Now, upon these two branches of the subject our information is not always equally precise, and we must guard ourselves against being led by the knowledge we may possess upon the one to overlook our ignorance of the other. The class of epilepsies from which I shall take the illustrations I am about to adduce afford a very pertinent exemplification of the justice of this statement. Our knowledge respecting the action of the nerves in regulating the capacity of the minute arteries has opened a wide field of investigation, in which observations upon health and disease have mutually assisted each other; but in applying this information we have still to remember that in the phenomena of vascular action we are dealing only with secondary operations, and do not come down upon the

ultimate changes upon which the specialties of vascular action depend. Thus in epilepsy we can explain the various phenomena which characterize the ordinary fit, by variations in the cerebral circulation, but in assigning such an explanation we by no means give an answer to the question, what are the ultimate changes in the central organs which are concerned in causing the fit? We only push the inquiry one step backward from the brain at large to that portion of the nervous centres in which the vascular nerves originate; the question still remains one as to the condition of nerve-tissue. It is on this account that the term epilepsy is so indefinite in its application; that it only indicates a particular state of nervous matter brought about by different kinds of lesion, with the nature of which we are but imperfectly acquainted. Such is the direction in which our inquiries have to look in order to give precision to our thought upon this class of maladies.

In this particular, however, our position in regard to morbid action is closely paralleled with that which we hold with reference to the processes of health, and here also the example I have just adduced finds a striking analogy with those normal processes which I shall have to adduce for the purposes of comparison. In the essays on sleep and its allied states to which I am about to refer, the authors, whilst satisfactorily alleging various states of the cerebral circulation in explanation of the phenomena they describe, yet find it necessary to extend their inquiry to that condition of the nervous centres in which such changes of vascular action take their rise.

One practical result of the greatest moment is derivable from this view of the subject; it exalts the necessity of keeping constantly in view the influence exerted upon the tissue of an organ by the function it performs, and of regulating such function, as the essential condition for preserving health. In no class of organs is this principle of greater importance than in the case of the central organs of the nervous system; perhaps in none is it less appreciated by the vulgar. It is too much imagined that a healthy state of the brain may be secured by regulating its physical nourishment. It is less generally recognized, at least so far as practice is concerned, that the proper regulation of its function is an agency of still greater power, though more difficult of attainment.

The illustrations I am about to adduce are derived from epileptic disease, and the condition of health with which I bring them