fects in the attachments of the hollow and solid abdominal viscera which have been increased by the acquired habits of posture, but her condition today is so much better than formerly that she considers herself practically, with certain limitations, a well woman. We hope that as the improvement in the anatomical readjustment continues these limitations will get less.

FIG. 9. A not uncommon type.

FIG. 10. The same type four months later.

Consider now in this case a few of the points of anatomical adjustment which must be present when the shape of the abdominal cavity is as much changed as it is here. Notice that the ribs instead of being nearly horizontal and rounded are much more nearly straight downward and are flat and almost concave. The eleventh and twelfth ribs are also very straight downward and being so are often a serious difficulty in operating on a kidney. In this picture, see Fig. 9, notice how thin and narrow are the loins of the patient. There was practically no resistance here to bimanual palpation. The depth of the lower chest or upper abdominal cavity as you can see, is tremendously narrowed, so that at times one can almost see the great vessels and spinal column. What must this narrowing mean? It must mean that the space for the liver being narrowed by the crowding in of the ribs, the liver itself is crowded upon and the pressure upon it is downward and backward. This means that the right kidney is pressed upon by the posterior lobe of the liver and it in turn is crowded downward into its bed of fat. There is not time to go into the possibilities of interferences in the functions of the kidney which may come from this pressure nor to consider what effect this crowding may have on all of the great blood vessels and the sympathetic nervous system, the solar plexus, which controls these vessels and which are immediately in this region.

It is enough to say that we as orthopedic men believe the possibilities of impairment of function which may come from the faulty mechanical use of the body as a whole are so many and so important that a consideration of and an attempt to correct these faulty postures will be of the greatest help to other specialists in meeting some of their difficult problems.

THE ROENTGEN DETERMINATION OF CERTAIN RENAL AND URETERIC VARIATIONS AND DISORDERS.*

By PERCY BROWN, M.D., BOSTON.

THE rate of progress attained by roentgen-rays, as a diagnostic agent, with respect to such regions as the biliary reservoir or the alimentary apparatus, eclipses, perhaps, its advance in situations where the urinary functions are concerned. This is not to say, however, that there has been no degree of development in the urologic application of roentgenology; quite the reverse, indeed, which fact modern pyelography is alone enough to exemplify. It has been but few years since we were obliged to search, step by step, as with a divining-rod, the entire urinary field, from suprarenal to symphysis, in the hope of some visible manifestation of urinary lithia-

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sis, formerly the one pathologic spring to be discovered by this method. From then on an advance has been made, not so rapid, as has been said, nor yet so spectacular as in other anatomical stamping-grounds. Our progress, by its very subtlety, may well arouse us today to the surprising realization of what is actually ours in the way of diagnostic accomplishments. The blind divining-rod has given place to a broad and clear simultaneous record of both kidneys in their true relation to their adnexa and to each other; likewise, the entire course of both ureters from renal pelvis to bony pelvis can be swept in a glance of the eye. The urinary bladder is now a reservoir of information as well as of excretory material. All these forward steps have been made more firm and sure with the aid of the cystoscopic art, by means of which soft and delicate structures, otherwise hidden, can be brought to view with the temporary help of substances atomically heavy and thus roentgenologically dense.

Complete voluntary control, even over a structure amenable to it, is oftentimes difficult, but by pursuing our diagnostic record-making with a physical force increased in vigor and in power, we are no longer in need of shouldering our patient with the responsibility of protracted immobility.

One of the profound influences which roentgen-rays are bound to exert in the future shall be their influence upon our anatomic understanding and specially upon the teaching of anatomy. This is exemplified in a desertion, on the part of the modern clinician as well as the anatomist, from the original conception of the shape of the human stomach. It has been found that the stomach of daily life and the stomach of the dissecting-room are two different things. We believe that this is so with respect to the kidney, although to a lesser degree. Allowing for the phenomenon of optical distortion, we believe that we can better determine the shape and size of the renal viscera as they exist in the *living* than can be done in the dissecting-room at varying intervals after death. We feel that many kidneys have been measured and recorded, in the dissecting-room, as presenting anatomical anomalies in size which owe their dimensional variation to previous pathological change only to be determined microscopically, perhaps. The converse is as true, of course.

It is indeed fortunate that the kidney, although to be classified as a soft organ, is, by virtue of its relations and physiological functions, to be roentgenologically isolated. The ease with which this can be done depends on several conditions. Certain of these conditions can be rendered favorable at once and, therefore, can be better described under a head of technic. Other conditions are, of course, inevitable, favorable or otherwise. The renal viscera most difficult to portray by x-rays, is, strangely enough, the "lean kidney," as it may be called. The kidney which is the possessor of a rich *capsula adiposa*

is much more likely clearly to be outlined. This is altogether fortunate, for the subject who generally envelops his kidneys with fat is apt generously to deposit an ever present surplus of it in his abdominal wall—a fact most depressing to him who attempts to investigate the urinary tract by the aid of x-rays! The original ordaining that the kidneys should lie in the retroperitoneum is likewise fortunate, for the perirenal neighborhood can thus be approximated with relative intimacy to our screen or to our diagnostic plate, in the course of our examination. In this way, the element of shadow-distortion, always present in some degree, can practically be disregarded.

The information obtained as to the size of a kidney from measurements of its shadow, corresponds closely with that obtained from measurements made *in situ* or *post mortem*. Quain gives as the normal measurements of the kidneys: ten centimeters in length, six centimeters in breadth and three-plus centimeters in thickness. We have recently measured one hundred kidneys taken at random from cases in which there was no reason to assume the existence of renal disorder.

	LENGTH.	WIDTH.
In 11 cases	12.5 to 13.2 cm.	8.0 to 8.5 cm.
In 16 cases	10.3 to 10.8 cm.	6.7 to 7.1 cm.
In 54 cases	9.8 to 10.7 cm.	6.0 to 6.5 cm.
In 19 cases	8.2 to 9.7 cm.	5.4 to 6.3 cm.
100		

In over half of these kidneys, the interpolar measurements are found to vary from near ten to near eleven centimeters and the distance from renal pelvis to outer cortex to vary from six to six and one-half centimeters. Considering the fact that we are measuring so-called shadows, the figures are in surprising accord with those of the anatomists. All our measurements were made from records which were produced with the retroperitoneum under compression; thus, the renal viscera were as closely as possible approximated to the screen or to the diagnostic plate. We are convinced that there is no appreciable change in shape or in contour of the kidney under compression. In our experience, to obtain an accurate record of the thickness of the kidney is a matter of the greatest difficulty. By stereoscopy alone is an approximate idea obtained, and this amounts to a mental impression only. The dimension of thickness is to such an extent out of proportion to that of length and breadth, that such stereoscopic impression is unsatisfactory. The point is one of anatomical interest rather than clinical.

Roentgen-delineation of the urinary tract, by virtue of tissue-consistency, becomes impossible, in health, beyond the contour of the renal substance. The further aid of Art is required to reveal the outlines, *in situ*, of pelvis and ureter. Art, and real art, is involved, because not merely the presence of colloidal silver suffices; it must

be present in such an amount as to portray pelvis or ureter free from the influence of distention. It is natural to assume, even if our knowledge were lacking, that normal pelvic or ureteric mural tissue is less distensible and possesses more tone than if diseased. Patients differ, however, in degree of physical sensibility and especially with the method of forceful injection (as opposed to that by gravity) it is easy to over-distend even the remote calices. The writer continues to marvel at the skill displayed by some cystoscopists in controlling the limitation of this injective force.

The ureter in health can be portrayed by one of three methods; by colloidal injection, by the radiographic catheter (so-called in reality and in romance) and by the intraluminal insertion of foreign material of high atomic weight. Each of these methods has its shortcomings. The presence of colloidal silver within ureter, pelvis or calix under undue pressure is a cause of inaccurate interpretation; the modern radiographic catheter is an improvement over its predecessors, but even a delicate catheter may force, into a false position, a ureter the kinking of which it is the heart's desire to observe; material introduced by catheter, such as leaden fuse-wire either possesses the fault of the catheter if too coarse, or is difficult to introduce and to extract if too fine. The writer feels, however, if catheter and fuse-wire can properly be combined as to their individual excellencies of pliability, that such a combination is an ideal arrangement. If really fine lead fuse-wire can be employed successfully, its power to produce a shadow of rare clearness is unquestioned.

Both the roentgenologist and the surgeon should become familiar with the roentgen picture of the normal kidneys *in situ*. The position of each is generally, but not invariably, in accordance with anatomical description. The lower position of the right viscus is constant in a large percentage. It is sometimes higher, however, in the supine posture; if so, the writer is inclined to believe that the situation becomes abnormal on the ground of hypermobility. The normal kidney, either right or left, should never be examined alone, but in company with its fellow, for the reason that slight changes in size can thus alone be determined, since individual anatomic variation exists in the urinary tract, as elsewhere.

The element of visceral abnormality in which the roentgen rays have proven to be a diagnostic factor, may be divided, in this field, into

(a) Enlargements of the renal viscus, with but secondary reference to its pelvis.

(b) Dilatations of the renal pelvis, with no especial reference to the general interstitial tissue.

(c) A combination of renal enlargement and pelvic dilatation.

The specific causes of such abnormal phenomena are usually seen by the roentgenologist as:

1. Hypertrophies from compensatory change.

2. Hypertrophies and dilatations from hydronephrotic change.

3. Hypertrophies and dilatations from change due to malignancy, such as the hypernephromata, etc.

4. Hypertrophies, with or without degeneration, from changes pyo-nephrotic or cystic.

Relative or absolute change in visceral position (as obtained by shadow) may occur in any of these aberrations. Simple ptosis, with or without hypernephrotic change and ureteric functional embarrassment, offers to roentgenology a fertile field and a difficult one as well.

It is generally extremely hard, without accessory or secondary knowledge, to determine roentgenologically between a hypertrophy due to compensatory change or an enlargement due to hydrostatic pressure or to primary disease. Merely to declare this fact is not enough. It remains for the devotee of the method to reiterate; first, the necessity for coöperation on the part of the cystoscopist and the roentgen-worker; and, secondly, the absolute necessity for the simultaneous examination of both renal fields, as well as of both ureteric fields. On the one hand, the revelations obtained from a collargolized ureter may indicate immediately a hydrostatic cause for the renal hypertrophy. On the other hand, the unexpected discovery of a degenerated or totally absent kidney on one side may determine the compensatory cause of the renal hypertrophy.

Undue enlargements of either renal shadow should always stimulate further investigations, both below and opposite.

Next to the interest which such hypertrophies arouse is that to be elicited by the renal pelvis. In such instances, the aid of cystoscopy is an absolute necessity and the skill of the cystoscopist largely governs the positive or negative findings. On his part, the cystoscopist is equally dependent upon the roentgen procedure; he may know, by measurement, that the kidney will hold a greatly increased amount of fluid, but he has naturally a keen interest as to where it goes and where it is contained. There are many kidneys of reasonable size and with generous calyceine distribution and, on the other hand, there are many renal pelvises of enormous size but having in relation but little calyceine extension. The situation may be likened to the accessory nasal sinuses of diminutive extent, *per se*, but with prodigious supraorbital extension. These cases are often vexatious as clinical problems.

That the course of the ureter is largely influenced by the effect of the supraimposed kidney is well known. Properly to determine the question of kink, therefore, as a possible cause of Deitl's crises and the like, to say nothing of renal back-pressure, the erect posture as well as the supine (or prone) is necessary. Under these circumstances, the changes in the courses of some ureters is surprising. Often the element

of distention proximal to the kink will become apparent only when the kidney sags under the full influence of gravitation. Ureteric lumina which are so distended as to be unaffected by posture offer simpler problems, of course.

To revert, for a moment, to the renal field, it should be mentioned that occasionally there are instances where the entire viscus may be outlined sufficiently well by nature, or rather by the vagaries of nature, to an extent that similar efforts upon our part are not necessary. Many kidneys, particularly of a degenerative type, may present limy deposits within the interstitial mass as well as the parenchyma. These changes, as observed by the roentgenologist occur most often, it is believed, in cases where the kidney presents a tuberculous degeneration.

Definitely to mention in detail the question of technic in the proper roentgen-delineation of the urinary tract is but to repeat the substance of many assertions on the part of the writer heretofore. Likewise, such an exposition would be as misplaced as an attempt to interest a group of roentgenologists as to the various excellencies of the many types of cystoscope. The writer feels, however, this: the urologist is bound the more deeply to respect a method when he is the recipient of the benefit of all its possibilities. The roentgen-examination of a renal or ureteric situation is incomplete when it does not end by portraying, for the sake of the urologist and the patient, the simultaneous delineation of both kidneys and their immediate appendages. The same may be said with regard to the lower ureteric and the vesical regions. By virtue of the element of distortion engendered, it is unsatisfactory to attempt to reveal the entire urinary tract at one examination, at least in a way pictorial, unless the patient happens to be of unusually diminutive stature. The urologist has a right to demand the results of an examination which has been of this extent and nature. The question of diagnosis, in a renal situation at least, is totally incomplete without simultaneous knowledge of the condition of affairs obtained in its fellow.

As one looks back upon the progress, during the last five years, of the combined services to medicine rendered by what may be termed roentgen-urology, one cannot help but look forward, possibly an equal period of time, with nothing but the greatest degree of hope and anticipation. Personally, the writer feels that it is within the urinary bladder that definite advance shall be made. There are still many situations, in connection with this structure, as well as with the prostate and other of its annexa, capable of amplification and elucidation by such a method as this. The success of the future, as has been the success of the immediate past, must depend, however, upon what Hunter Selby, late roentgenologist to the Mayo Clinic, has done so much to emphasize, namely: *collaboration* between surgeon, cystoscopist and roentgen-worker. If the surgeon pursues his own

cystoscopy, so much the better, for the relation will be, therefore, the more intimate. Any roentgenologist of experience is, as has been said, deeply impressed with the degree of technical skill required successfully to pursue the art of cystoscopy. It behooves him, then, so to improve his own technic that he may keep pace and step with his partner in such a fascinating and satisfying form of teamwork.

THE EARLY DIAGNOSIS AND TREATMENT OF MANIC DEPRESSION.*

BY ARTHUR HALLAM RING, M.D., ARLINGTON HEIGHTS, MASS.

THE word "insanity" has been omitted from the title, first, because all that is necessary is implied in the expression "manic depression," and secondly, because the word "insanity" is still obnoxious to many. And certainly a term that is both unnecessary and unpleasant has little left to excuse its existence.

In making an early diagnosis of manic depression, first secure from near-relatives as complete a history as possible of the family, not only in regard to the disease *per se* but also as to oddities, idiosyncrasies, and habits. It is most interesting to see how history repeats itself with but trifling variations, dependent probably upon environment. Davenport says that "studies of the families of epileptics, dementia precoxes and manic depressives reveal the fact that they belong to strains of mental weakness." Unlike the one-horse shay, we all have by heredity some tissue that is less resistant than the others. In manic depression I believe that this lowered resistance does not show itself so much in neuropathic (psychic) temperament seen so constantly in dementia precox as it does in a neuropathic (somatic) sympathetic constitution, that is, in rapid changes in weight, skin abnormalities, erratic digestion, erotic disturbances which suggest an unstable nutritional and defensive ability of the blood stream, and an irritable, sympathetic, nervous mechanism.

If one adds to this hereditary background the story of the patient's personal tendencies and traits, it will be found that while he may have been considered either sickly or perfectly well by his family, he will usually show marked nutritional vacillations. He has been subject to flatulence, constipation and capricious eating as a child; was over-fat or more commonly thin and lank and had some postural error. He was moody or elated, and had periods of stagnation or acceleration of thought. None of these were sufficient to attract attention and indeed are more or less common to many of us, which is only another way of saying that under deter-

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