

Pathological specimens of the kidney examined by Richard Bright

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Richard Bright achieved his deserved place in the annals of medical history largely through his descriptions of chronic renal diseases which collectively came to be known as "Bright's disease." It is therefore remarkable that the entire body of literature relating to renal disease generated by Bright contains only five plates illustrating the diseased kidneys of eight of his patients examined at post mortem. These illustrations which appeared in the first volume of *Reports of medical cases selected with a view of illustrating the symptoms and cure of diseases by a reference to morbid anatomy* [1] in 1827, are masterpieces of medical illustration. Although, to be sure, Bright possessed a more than ample ability to describe what he saw with great accuracy and attention to detail, his descriptions abound with attention to color. As Peitzman has phrased it, "He seems to strain his effort to transmit verbally the lines and tone he saw in the fresh necropsy specimens [2]." Bright saw "small whitish or yellow granules projecting with red intervening spaces" and thinned cortical regions "of a grayish drab mixed with purple." We know that Bright himself was a consummate artist, for the impressive engravings which appear in his first book "Travels from Vienna through lower Hungary" [3] each bears the small caption "sketched by R. B."

Not content with his own talents as an illustrator, Bright employed the talents of one Frederick Richard Say (died 1860), a portrait painter of distinction [4] who painted the portrait of Richard Bright which now hangs in the Royal College of Physicians of London [5]. (Say's father, William, engraved the plates for the illustrations in the *Reports of medical cases* which were then hand-colored, probably by a skilled artist.) In order to achieve the most poignant reproductions of his post-mortem material, Bright was probably required to bring Say to the autopsy room whenever a specimen of interest arose. Say presumably produced a water color image of the specimen on the spot which was subsequently copied by the engraver.

Not more than 250 copies of the first volume of the *Reports of medical cases* were sold; the book was extremely costly owing to the high quality of paper used, the large size of the volume and the hand coloring of the plates. The ledgers of the publisher (Longman), show that the remaining stock was destroyed in a fire of 1861 [2]. The rarity of the volume and the high quality of the publication have made it a highly desirable item for libraries

and collectors. Thus the beautiful illustrations, over which Bright supervised so meticulously, have been seen by very few.

The February 6, 1967 issue of the *Journal of the American Medical Association* carried on its cover two illustrations of pathological specimens painted by F. R. Say [6]. One is of a diseased kidney; both were given to the Royal College of Physicians of London by Dr. G. C. Bright, son of Richard Bright, in June 1889. The collection of drawings, which is still housed in the College library, is a large one. Among them are nine drawings of kidneys or sections of kidneys; all except two bear the signature of F. R. Say. Except for the one which was published in 1967 (Fig. 2), none have been published before. Four of the illustrations are accompanied by descriptions of the relevant post mortem features in the handwriting of Richard Bright, who refers to certain of the drawings in these manuscripts. The quality and historical importance of these illustrations warrants their publication for a wider audience, for the only illustrations of kidney disease in existence are copies of the original plates which appeared in *Reports of medical cases* [7, 8].

The descriptions of four autopsy examinations follow. Each is accompanied by a single illustration of the affected kidney. In addition there are five illustrations of the kidney which bear no handwritten notes; in two cases a notation indicates the description of the disease whereas others are reproduced with only limited speculation as to their significance. (The manuscript and figure numbers are those carried by the original documents in the Royal College of Physicians Library.) Since Bright's notes were, no doubt, hastily scribbled, the correct punctuation has been inserted. Asterisks (*) denote words which are illegible.

Manuscript 974/62nab Plate 974/62A (Fig. 1)

Lazarus, February 1833

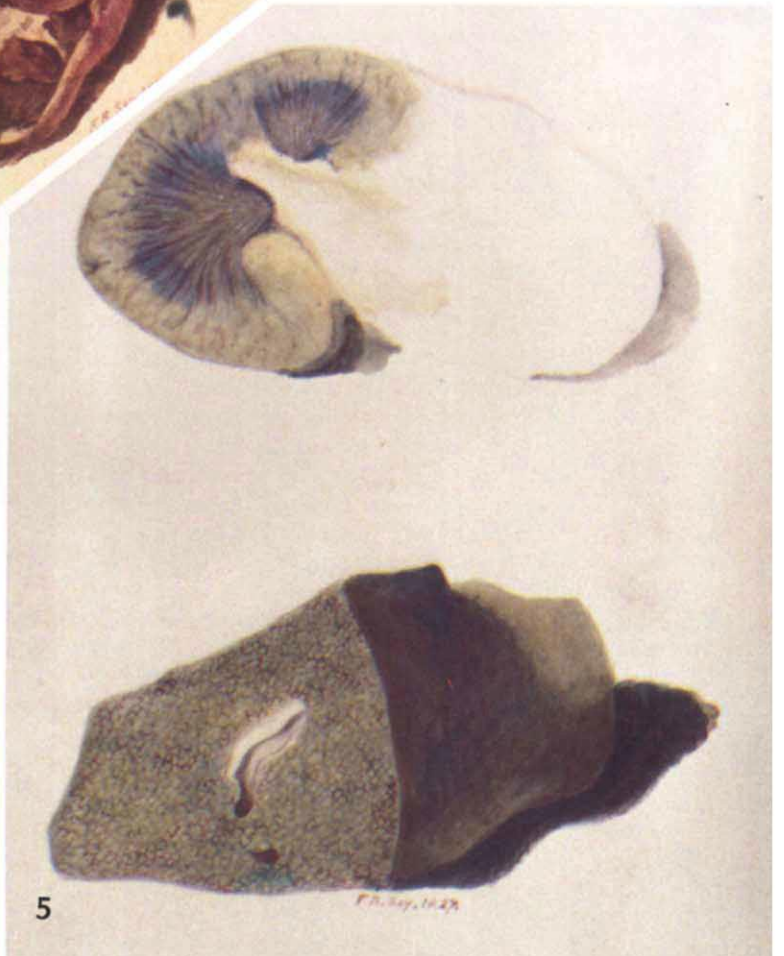
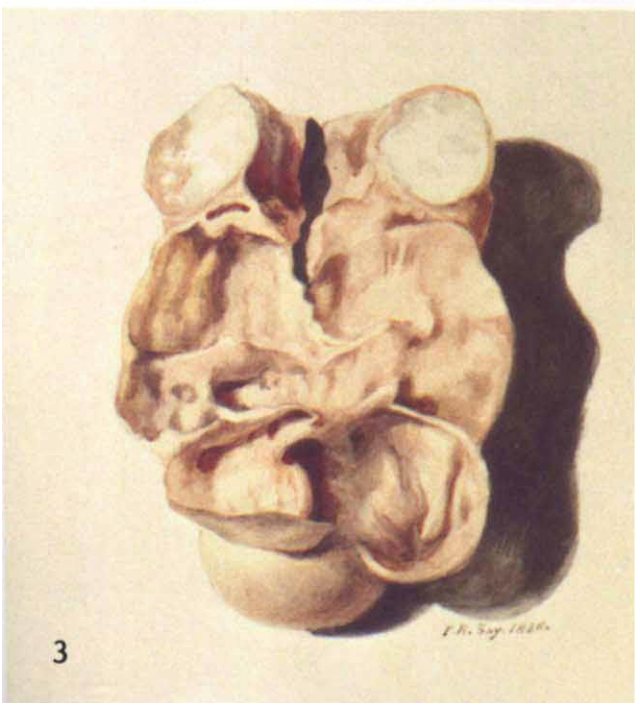
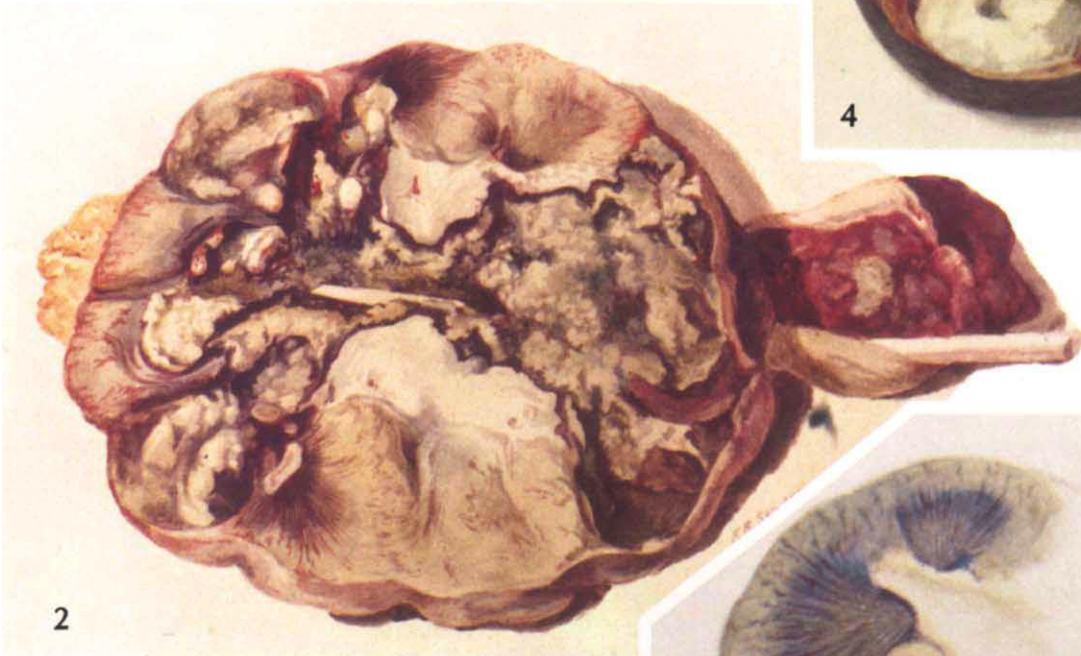
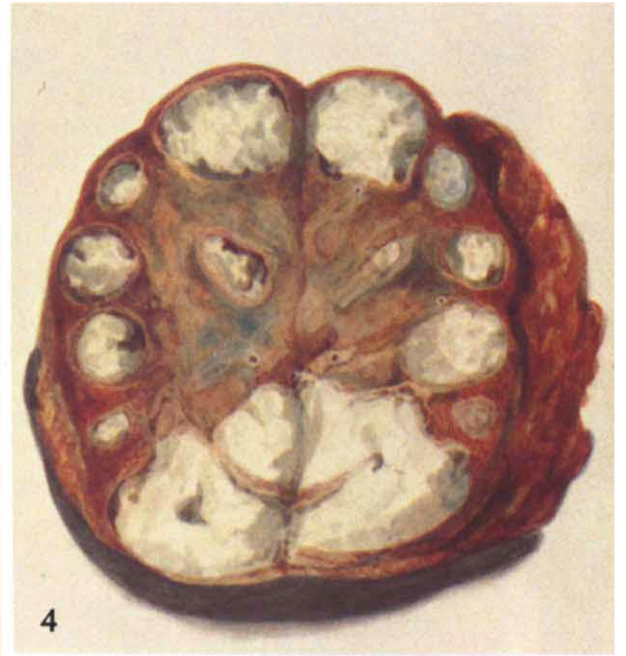
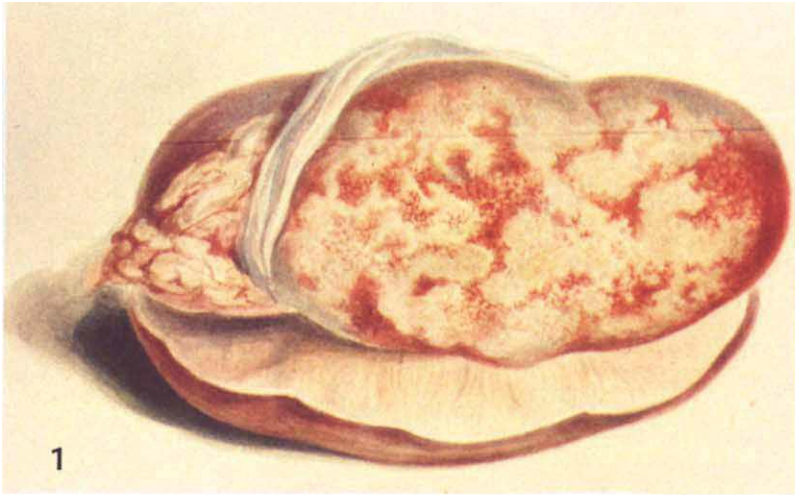
Large bloated man, very anasarous particularly in lower extremities. The right side of chest full of serum which was crossed in various directions by thin transparent bands of coagulable lymph. The lung on that side compressed so as to contain no air but its structure did not appear changed. A small quantity of serum in left cavity.

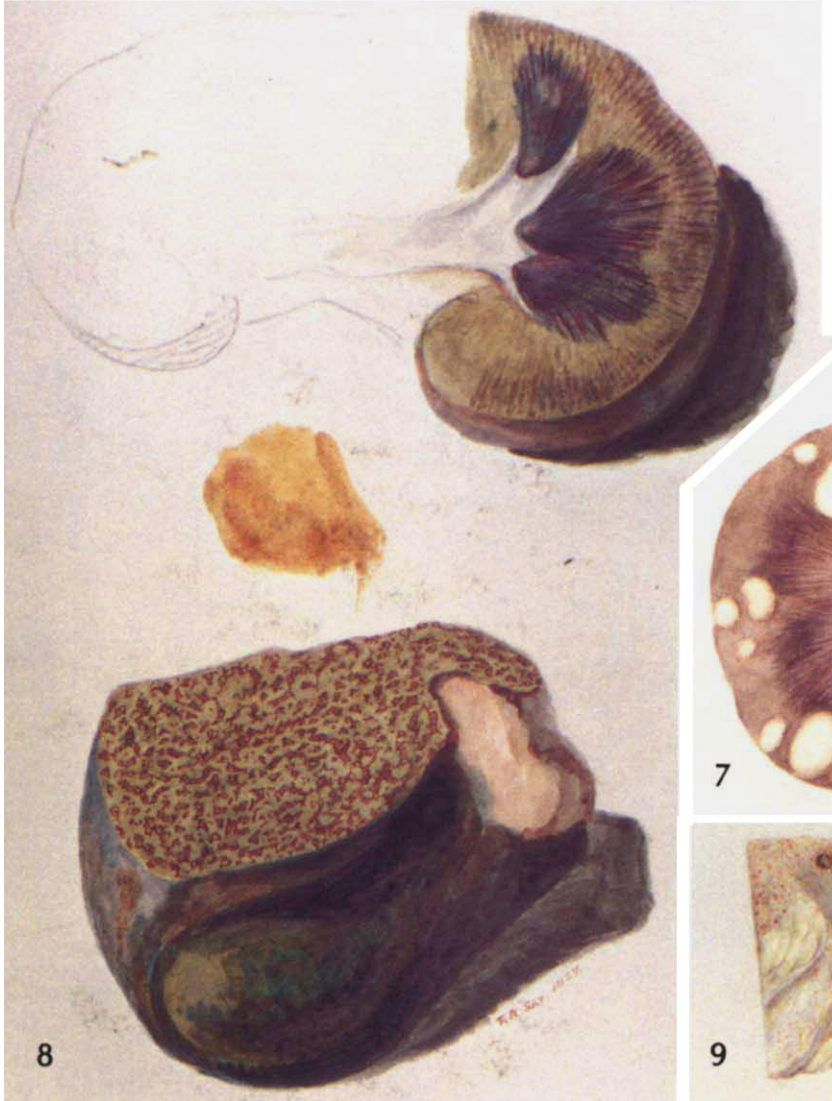
The heart very large in all its dimensions with all its cavities in a state of hypertrophy. The valves nearly healthy but a little thickened. The aorta and its arch dilated but * * at most, but a little patch or two of cartilaginous matter.

Liver mottled containing much blood between the acini. Spleen healthy.

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Kidneys presenting a most marked example of granulation on the surface, but peculiar in as much as between the clusters of granulations there were some portions of kidney of a more natural aspect, the granulations being raised into botryoidal elevations (* drawing).

Bladder contained about 1 oz urine which became slightly opaque by heat and threw down much * appears albuminous by return a.m.

Manuscript 974/62nab Plate 974/62B (Fig. 2)

The right kidney drawn by Say.

Great emaciation, chest narrow.

The lungs healthy except a few partial adhesions. Heart rather flaccid. Liver large descending mass to umbilicus but not very unhealthy in structure rather granulated. Viscera of abdomen fairly healthy.

Both kidneys in a state of suppuration forming irregular layer of matter and it was no easy matter to say in which the disease was most advanced—a kind of membrane, not unlike that which lines a suppurating tubercle in the lungs surround the * and on that membrane lay attached shreds of white or yellow coagulum.

The ureter much enlarged to admit the part of little finger and internally lined with a thick brown membrane nearly like that lining the kidneys. The bladder was also nearly in the same state.

The uterus contained in its substance a small hard tumour formed of concentric layers. The ovaries were in a most unhealthy state. In one was a cavity of size of a large pea. The other was nearly obliterated by the mass of fat and of thickened cellular membrane in which it was enclosed.

Manuscript 974/72na Plate 974/72A (Fig. 3) and Plate 974/72B (Fig. 4)

Jan. 12, 1820—Phosphate of lime in kidney (drawing).

Saw at Dr. Babington's¹ the kidneys and part of the bladder from a woman * 18 who had been affected with kidney difficulties when she was a child and had latterly suffered the most incessant vomiting the U. having its * * of * sediment.

The —² kidney was exceedingly small and larger than a small egg. It was completely covered with a bag composed of several cells of membranous consistence. It had been found filled with a fluid (probably urine) and one cyst was still filled with it. It was clear of a light urine colour and very little urinous character, coagulating slightly by application of heat. One cyst was filled completely with a white paste like substance (drawing) (Fig. 3).

The ureter was very small and impervious to a blow pipe or to the air blown with it.

The —² kidney was rather larger than natural, of a rounded, thickened form and hard resisting feel. Of a light yellowish drab colour externally showing a slightly lobulated shape and a few small tubercular bodies of size of a small pea in its substance. The tunic adhered rather closely. On making a longitudinal incision the whole cortical part appeared of the same yellow colour as externally pervaded by a few white and yellow tubercles and showing some irregular vascularities. The tubular portions were nearly absorbed, the infundibulum having enlarged almost to the surface of the kidney and being full of sandy concretions with * * gravel of phosphate of lime. The membrane lining the infundibulum was greatly thickened and of an irregular scabrous surface, the sand filling the irregularities. Outside of this thickened membrane was a zone of red, and though the membrane at this part did

not seem inflamed, yet at other parts at some of the openings of the infundibulum into the body of the pelvis, as well as in the pelvis itself, was a very vivid blush of inflammation and near to some of the infundibulum the mucous glands were seen enlarged and transparent like those of intestines when irritated (drawing)³ (Fig. 4).

The ureter on this side large and pervious. The whole bladder of a scarlet colour with vascularity amid which the mucous follicles were seen forming white dots.

Plate 974/77A (Fig. 5)

There is no text accompanying this plate. However a note on the margin of the plate reads: "Mary Davis Anasarca. See Medical Reports Vol p. 69 last two lines and p. 70 first two lines." The lines cited from the last sentence of the following paragraph in the *Reports of medical cases* [1]

Besides these three forms of disease, passing almost into each other and usually attended with decidedly coagulable urine, there are two other deranged conditions of the kidneys in which the coagulation is sometimes observable, but in a very subordinate degree, and often though observable on one day is quite lost on another. One of these morbid states consists in a preternatural softness of the organ; the other in the blocking up of the tubular structure by small portions of a white deposit bearing the appearance of small concretions.

The kidney illustrated in this plate can thus be assumed to be one which Bright felt to be diseased but which was associated with only transient coagulation or absence of coagulation of the urine. The nature of the liver disease, if any, is not clear.

Plate 974/77B (Fig. 6)

A note on the margin of this plate reads: "Willoughby Taylor. Medical Reports Vol 1, p. 90. Liver gall bladder and kidney." Indeed, this reference refers to Case XXV of *Reports of medical cases* which is accompanied by a single figure in Plate VI [1]. The figure represented is the central, left figure illustrating the liver and gall bladder shown in Figure 6. The description of this figure reads:

A portion of the right lobe of the liver of Taylor (page 90), who died with dropsical effusion. This liver had undergone a very peculiar change, the lighter parts being composed of a substance bearing considerable analogy to Cholesterine (page 106, and 108).

³This plate is numbered 974/72B and presumably should belong to manuscript 974/72nb. However, it is not compatible with the description of the left kidney described in 974/72nb in which a "calculus of considerable size and of a brown colour was lodged in the pelvis" or the right kidney which was similarly affected. Furthermore calculi are described only in the inferior portion of the kidney, the superior portions containing cavities filled with pus. No references to drawings are made. In contrast, the figure conforms with the description of the second kidney in 974/72na. (Since this figure was not signed, it may have been completed by an artist other than F. R. Say.) Although Bright indicates that the calculi were formed of phosphate of lime, their appearance more closely conforms to a contemporary description of calculi composed of a mixture of phosphate of lime and triple phosphate of magnesia and ammonia, or the fusible calculus. These were described as "whiter and more friable than any other species, resembling a mass of chalk and leaving a white dust on the fingers, . . . often acquiring a very large size and assuming the form of a spongy, friable whitish mass" [10].

¹Probably Dr. William Babington (1756–1833), physician to Guy's Hospital under whom Bright worked as a student from 1810–1813 [9].

²Bright did not indicate whether he was describing the right or the left kidney, presumably because the organs had been previously removed.

a-b, a portion of the convex surface of the liver covered with its transparent peritoneum: b, the acute margin of the liver: c, the cut surface: d, the fundus of the gall-bladder, thickened and projecting.

Since Figure 6 (Plate 974/77B) includes liver, gall bladder and kidney, the description of the post mortem findings as they were published in *Reports of medical cases* [1] is of interest:

Complexion rather sallow. Cheeks and lips somewhat purple: whole body very slightly oedematous, but more particularly the legs and thighs. Abdomen swollen and fluctuating, but not tense. No effusion into the cavities of the pleura, nor above half an ounce into the cavity of the pericardium. Lungs adhered partially but very firmly to the ribs, and particularly on the left side to the diaphragm: very little of either lung had the natural crepitant structure; they were not hepatised, nor did they contain any tuberculous matter; but they were harder than in health, and appeared in some parts congested, in others much loaded with serum, which flowed freely when the substance was cut into. The trachea showed marks of venous congestion, increasing in its first bronchial divisions. The heart perfectly healthy, valves very sound. The abdomen contained seven or eight pints of clear light straw-coloured serum. The omentum, rather fatty, was drawn upward, so that it adhered near the diaphragm; and being torn from that adhesion, was capable of being spread out well. The intestines were throughout exceedingly contracted in diameter, and looked opaque and thick from contraction rather than from any disease either of the peritoneal or mucous coat; and when load open in several places no sign of peculiar vascularity was to be found in any part of the mucous membrane. The mesentery fatty rather in extreme, otherwise apparently healthy.

Liver contracted, and throughout of a morbid structure, apparently by the deposition of minute portions of a yellow matter. The surface, covered by a very fine peritoneum, quite transparent, even more thin than usual, presented a general rough granular, and therefore uneven surface, of what might be called liver-coloured red and yellowish gray. On being cut into, the same structure of a less red colour pervaded the whole. The liver was thicker and rounder than natural, and rather smaller; and on pressure broke down easily with a brittle or crisp fracture, uneven and granular. The gall-bladder opaque and thick, contained the usual quantity of bile. The common duct was pervious, but at its entry into the duodenum was contracted in a nipple-like projection, with an orifice not much larger than to admit the point of a pin. On opening the gall-bladder and letting out the deep-colored viscid bile with which it was filled, a number of small yellow bodies larger than millet seeds and soft, adhered to the villous surface of the gall-bladder, chiefly on the side where it is attached to the liver. The pancreas was rather soft, and with difficulty distinguishable from the fatty accumulation in which it was imbedded. Spleen very small, flaccid, and light-coloured, with irregular and small cartilaginous deposits on its convex surface. Kidneys rather small, perfectly natural both in consistence and in structure, but of an unusually light gray colour internally.

A specimen of the liver was examined for Bright by Dr. Bostock who summarized his findings in *Reports of medical cases*, as follows:

From the above observations I think we are warranted in concluding, that the liver which you sent me for examination contained a quantity of a substance nearly resembling cholesterine, the body which forms the basis of the biliary calculi. I do not venture to determine concerning the nature of the connexion which subsisted between this substance and the liver, but I should conjecture that it had been secreted by the arteries of this organ, and deposited in its cellular texture.

The greenish coloration of the kidney in this case is compatible with a bile-stained kidney (bile nephrosis) seen in jaundiced patients. Bright indicates elsewhere that there is no connection between the state of the liver (probably cirrhosis) and "the state of the urine which renders it coagulable by heat" as its existence in this case was disproved by experiment.

Plate 974/53D (Fig. 7)

This appears to be a kidney affected with metastatic carcinoma since the white nodules appear to be raised. Alternative, less likely possibilities include pyemic abscesses or miliary tuberculosis.

Plate 974/5A (Fig. 8)

This plate depicts the kidney only partially colored and a section of the liver including the gall bladder. The coloration suggests passive congestion of these organs.

Plate 974/5B (Fig. 9)

This appears to be an example of a section of kidney injected with fine red size to illustrate the distribution of the blood vessels. A comparable figure appears in *Reports of medical cases*, Plate II, Figure 3. Close inspection reveals the cortical glomeruli.

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Acknowledgments

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