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The Renal Lesion in Epidemic Hemorrhagic Fever

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Research Article

PLATE IIIC. TERMINAL MEDULLARY PORTION OF PROXIMAL CONVOLUTION LYING IN THE ZONE OF HEMORRHAGE

The entire extent of the tubule is almost continuously necrotic.

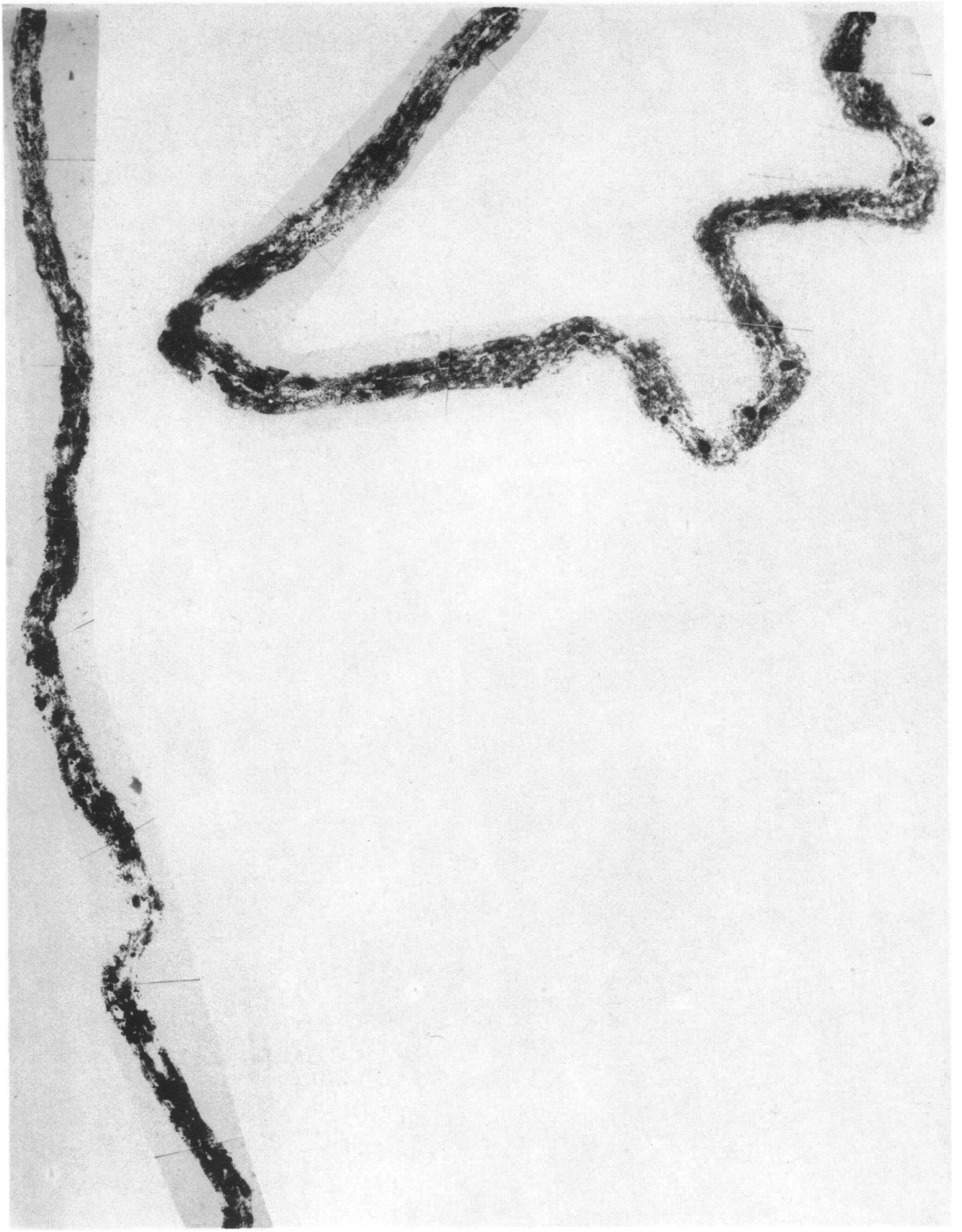


PLATE IIID

The terminal medullary segment fades into a wisp of necrotic tubule.

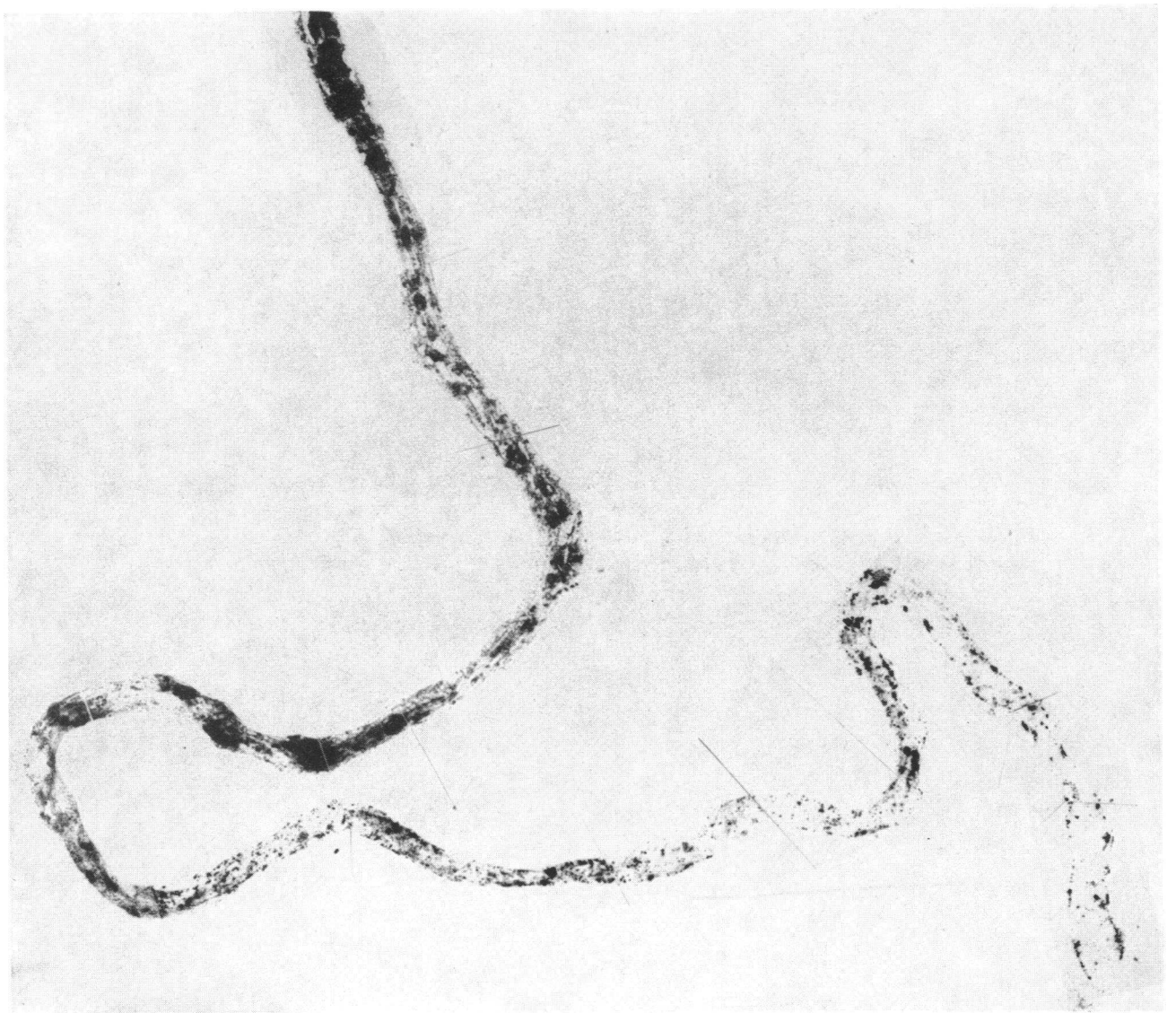


PLATE IV. A LOOP OF HENLE FROM THE SAME CASE LYING IN THE SUBCORTICAL ZONE OF HEMORRHAGE

Scattered through the length of fairly intact tubule are seen the tubulorhexic lesions of renal ischemia. At *a*, the bend of the loop, the lumen is filled with solid material. Original magnification of 100 × is here reduced to 40 ×.

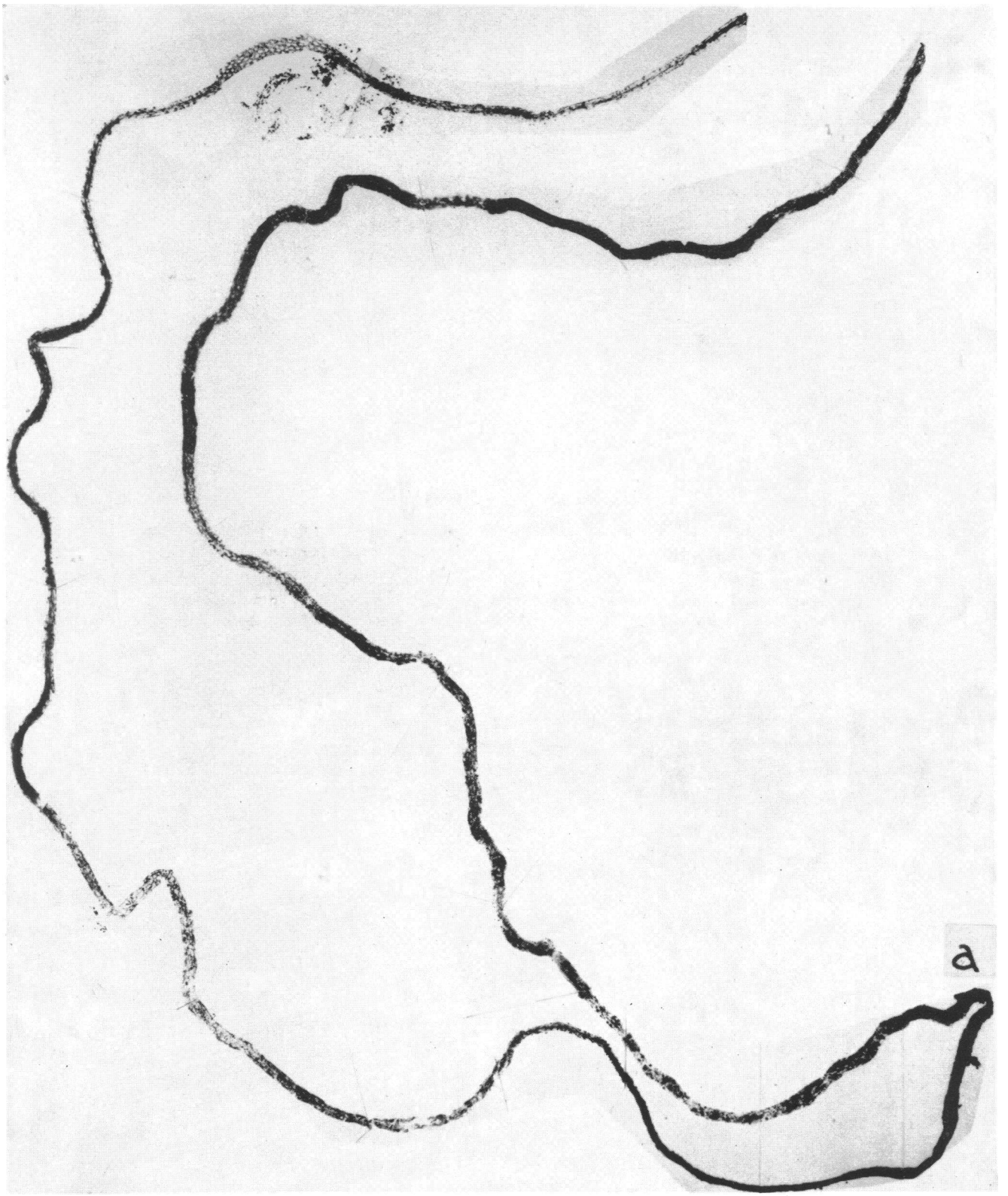

a

PLATE V. COLLECTING TUBULES OF THE SAME CASE LYING IN THE ZONE OF HEMORRHAGE IN THE OUTER STRIPE OF THE OUTER ZONE OF THE MEDULLA

All show extensive segments of complete tubular necrosis which, with their black stained content of coagulated debris, produces a marked irregularity in tubular outline. At left, the luminal content is a solid cast, to the right, scattered debris and desquamated cells are visible. Original magnification of 100 × is here reduced to 40 and 20 ×.

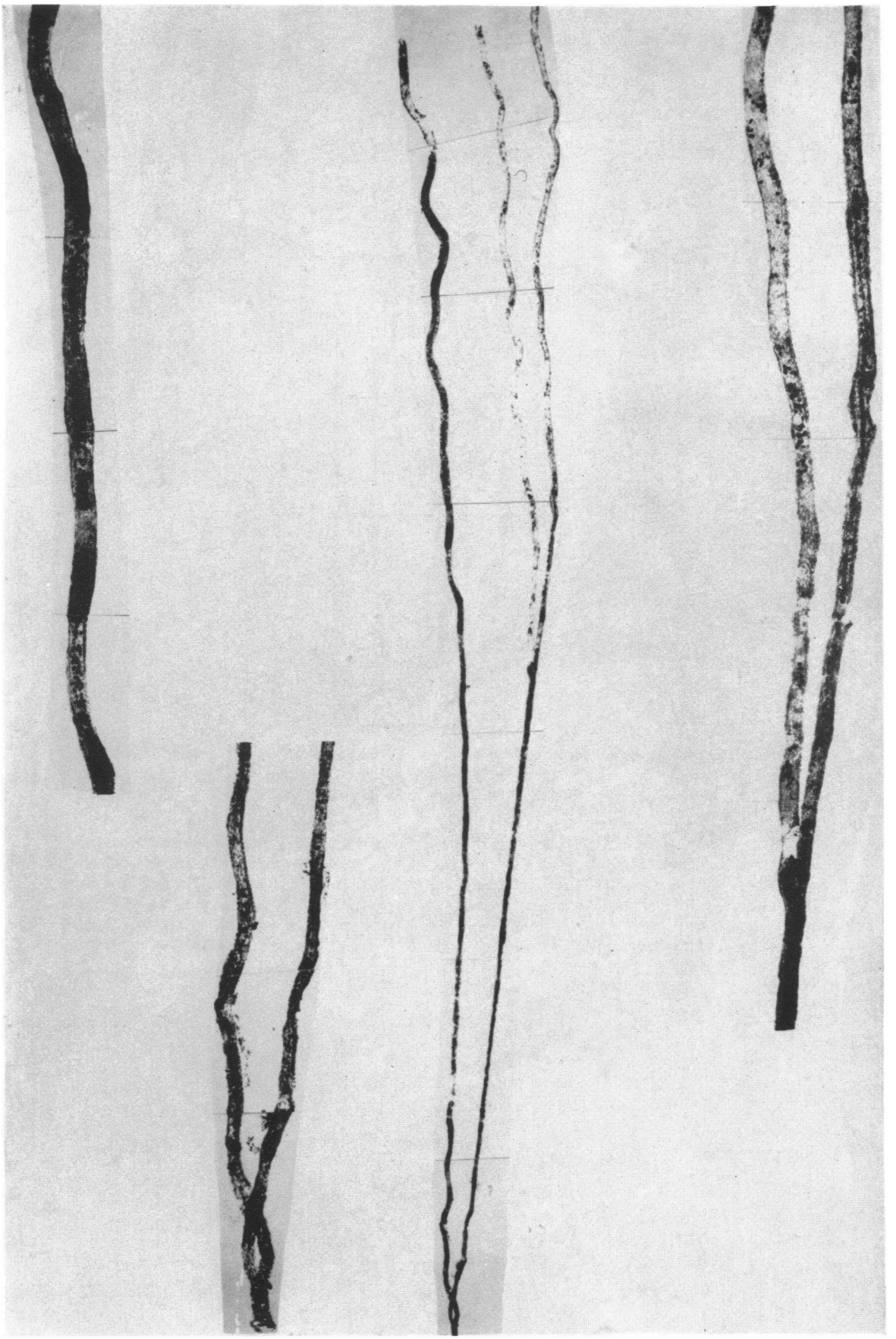
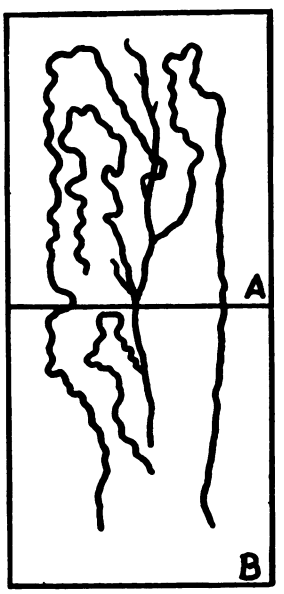


PLATE VI (A TO B)



Orientation of plates shown in outline tracing. From the same case; the formation of the peripheral collecting system by the junction of the connecting tubules of 4 nephrons; 4 others have been removed, leaving only their connecting tubules attached.

VIA. Three distal convolutions (d) filled with coagulum, which stains dense black and so obscures the tubule wall, are moderately dilated. The connecting tubules (c) are clear of obstruction, but the central collecting tubule is solid with obstructing material. Note that all these tubules, though filled with coagulum, are relatively well preserved as compared to the proximal convolution of Plate III, thus showing the typical distribution of the lesions of ischemia in all forms of Acute Renal Failure. Original magnification of 100 × is here reduced to 40 ×.

d
d
c
c
d
c
d

PLATE VIB. CONTINUATION OF TUBULES OF VIA

Note the dilatation of the ascending limbs on the left that lead to occluded distals. The collecting tubule in the center is filled with deeply stained material.

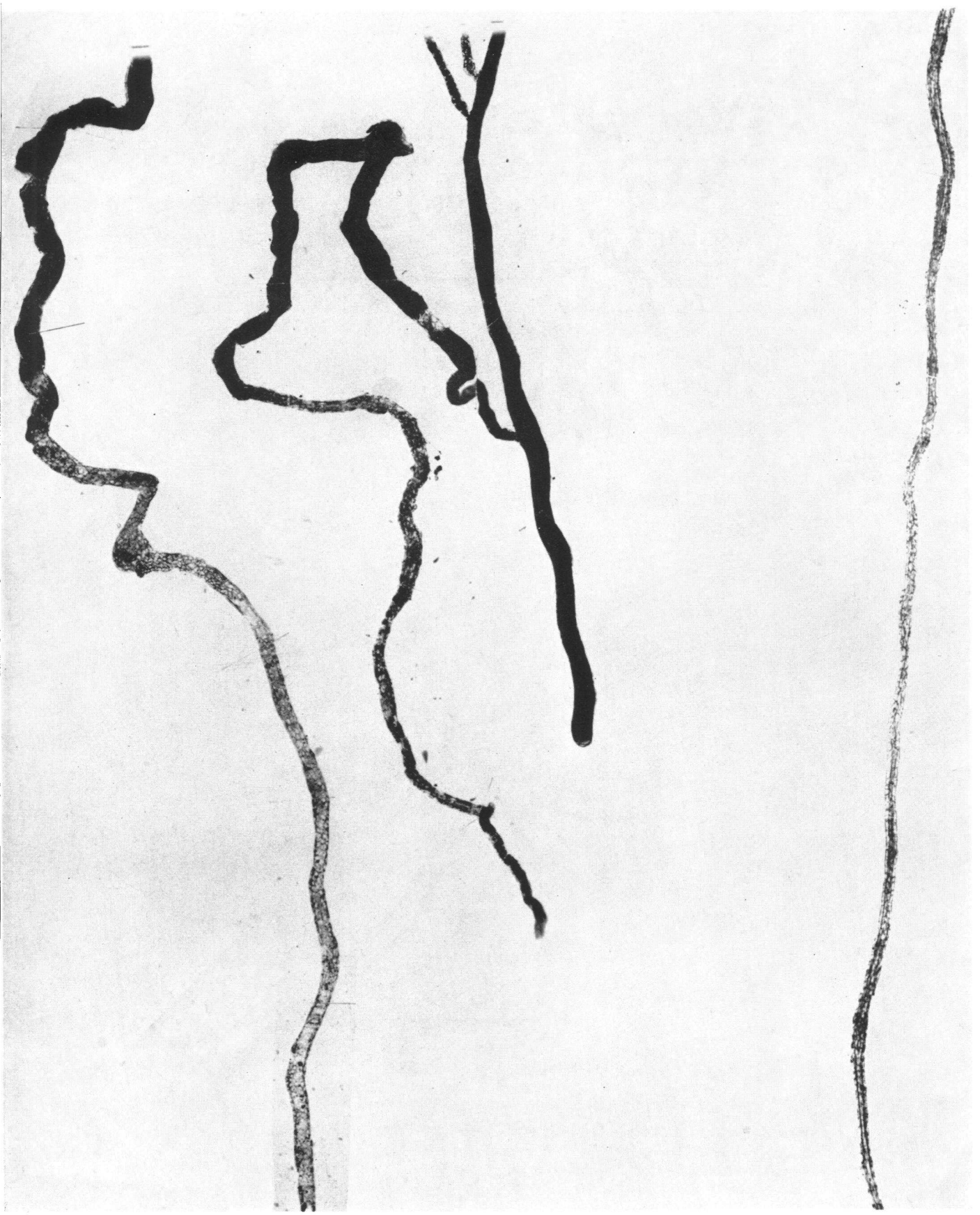
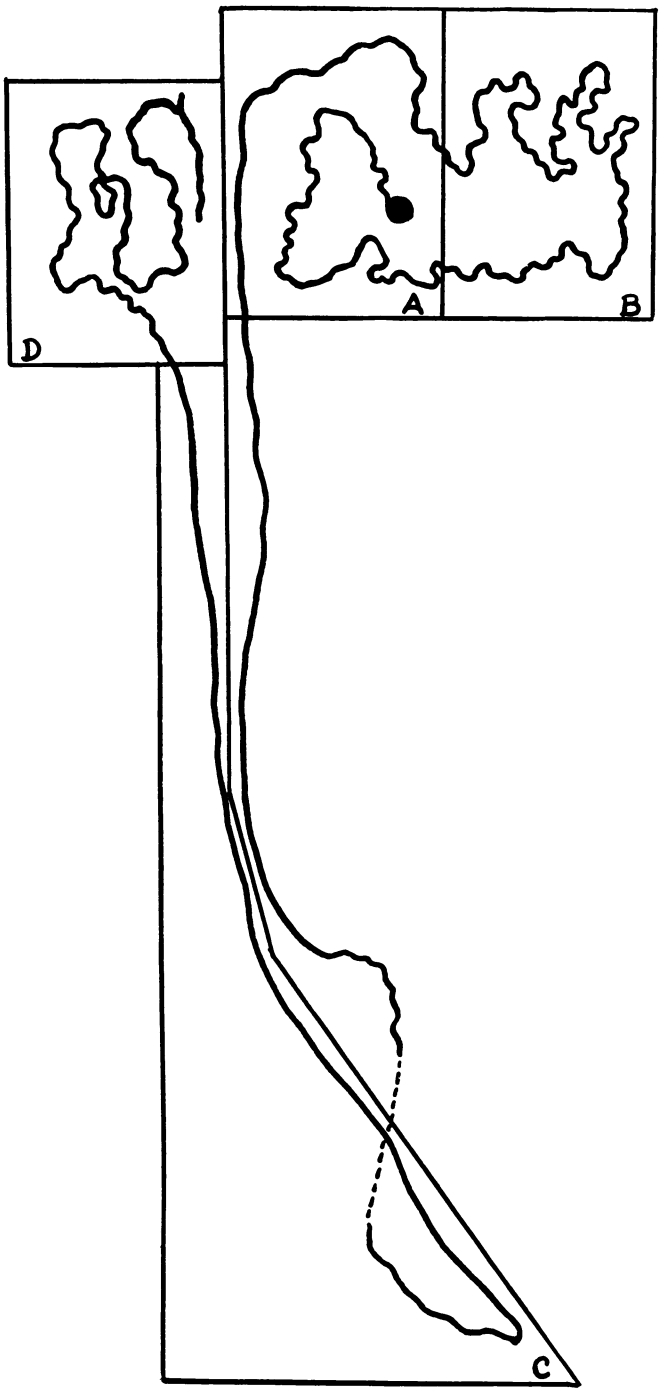


PLATE VII (A TO D)



Orientation of plates shown in outline tracing. A nephron from Case 31 in the Phase of Established Oliguria showing dilation throughout its length.

PLATE VIIA. THE CORTICAL PORTION OF THE PROXIMAL CONVOLUTION

Bowman's space is distended and the tuft compressed. Note larger afferent arteriole entering the "polkissen" and a stub of the narrower efferent. After the first coil of proximal convolution the tubule is irregularly distended with resultant patchy thinning of its wall. Original magnification of 200 × is here reduced to 80 ×.

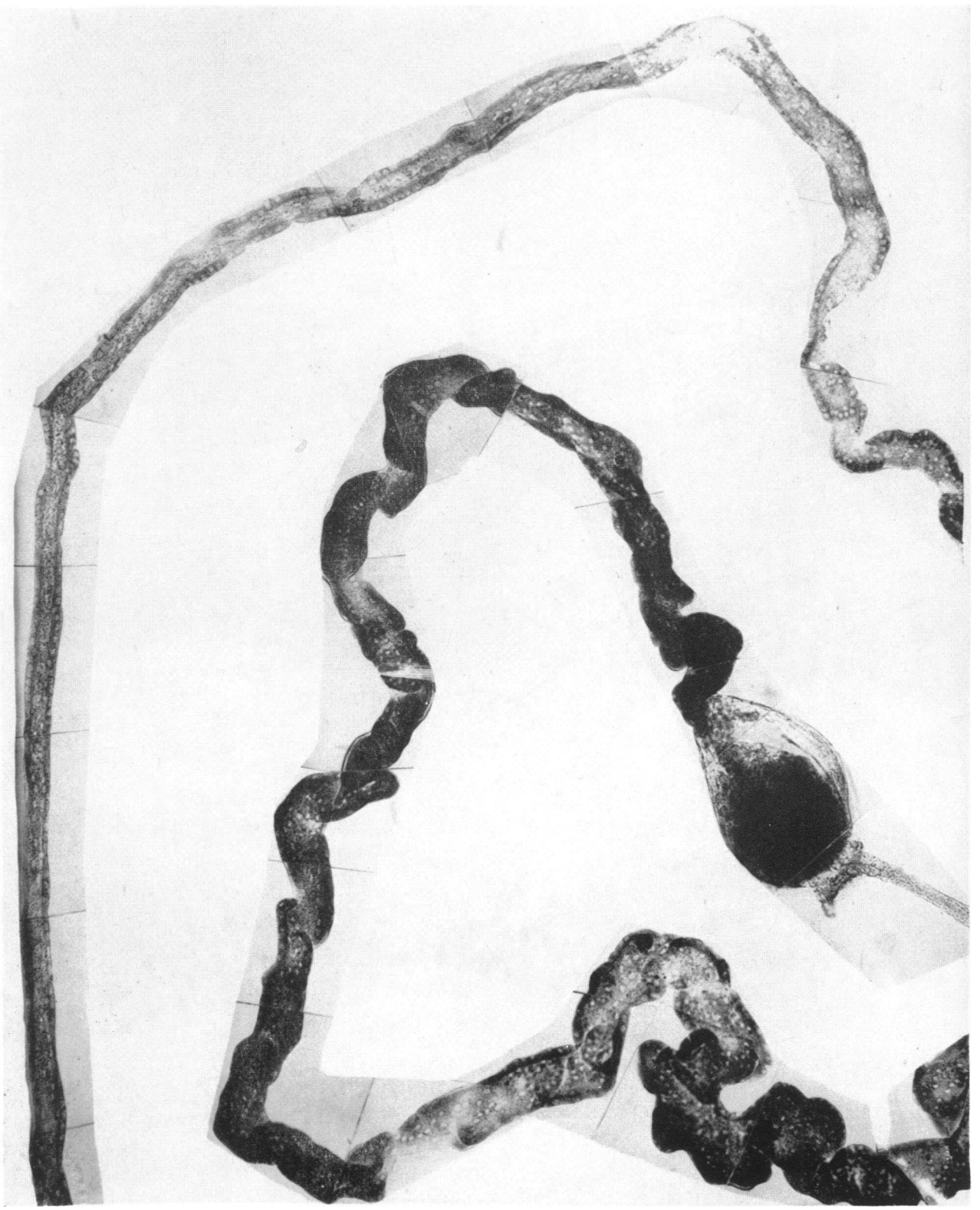


PLATE. VIIB. CONTINUATION OF DILATED CORTICAL PROXIMAL CONVOLUTION

Note the irregular thinning of the epithelial pattern in the distended portions.

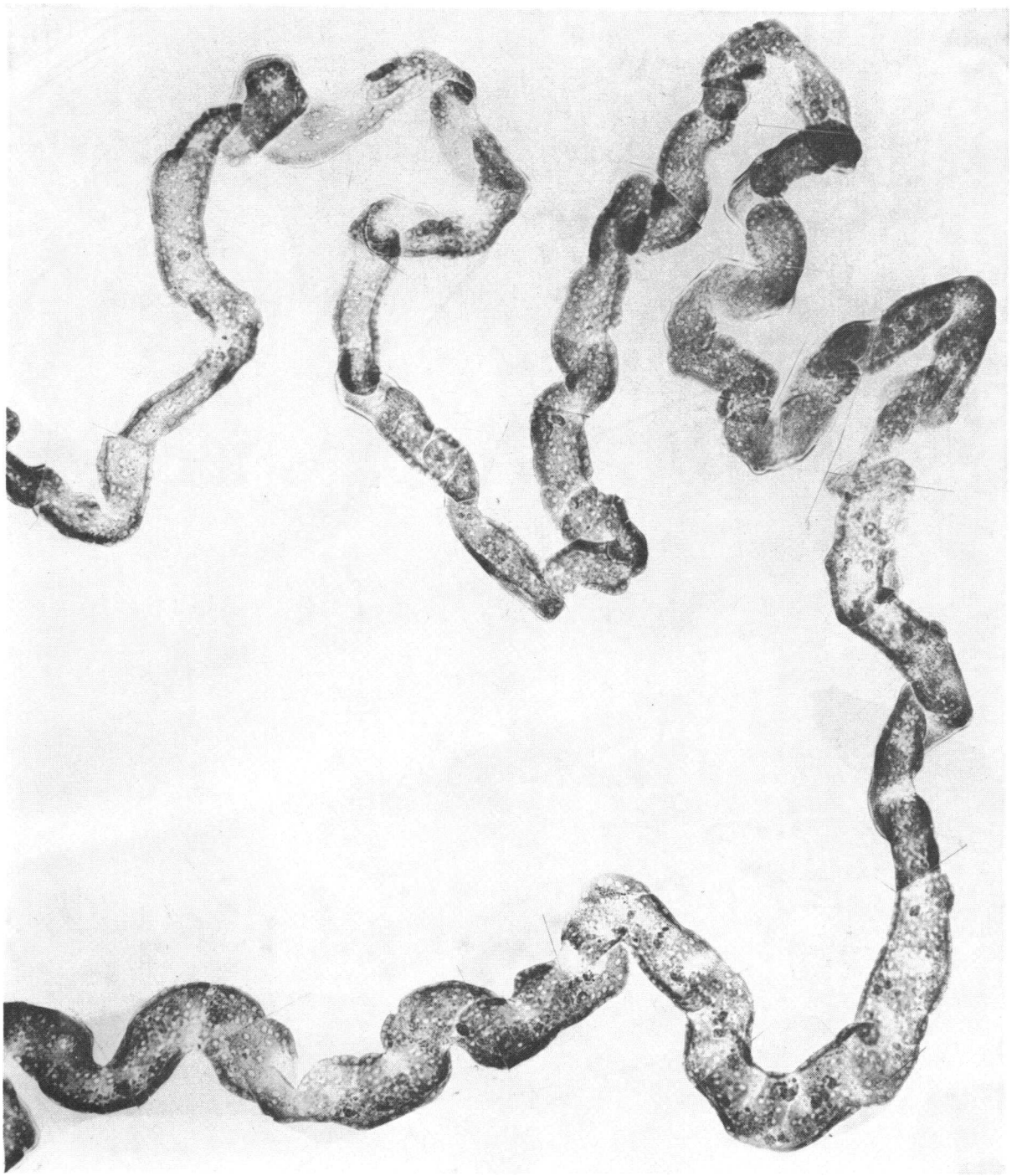


PLATE VIIC. PORTIONS OF DILATED ASCENDING LIMB AND LOOP

The tubule is well preserved in spite of distention.

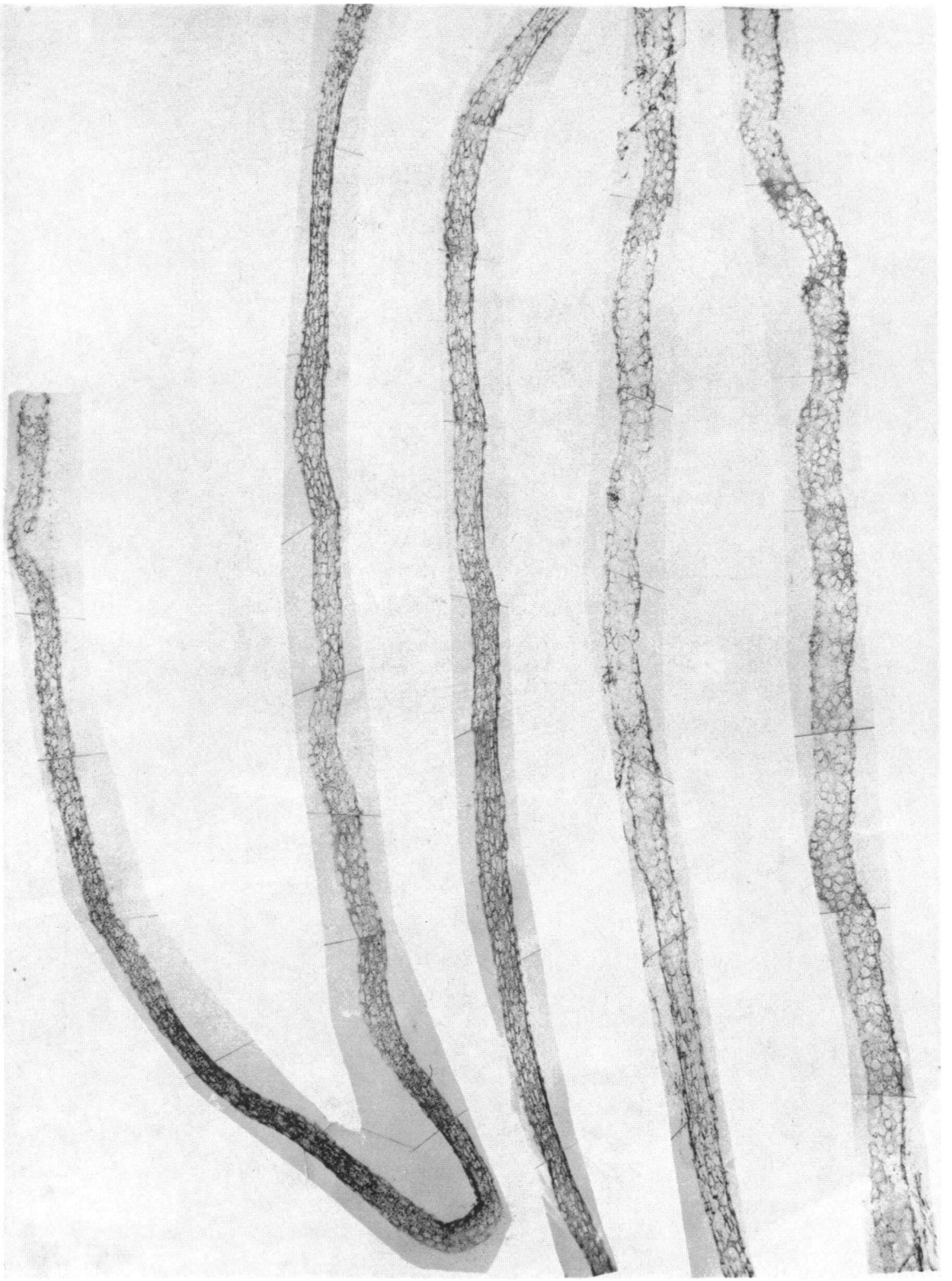


PLATE VIID. THE DILATED DISTAL CONVOLUTION, CONTAINING SOME DARK STAINING DEBRIS, THE CONNECTING TUBULE AND COLLECTING TUBULE ALL WELL PRESERVED

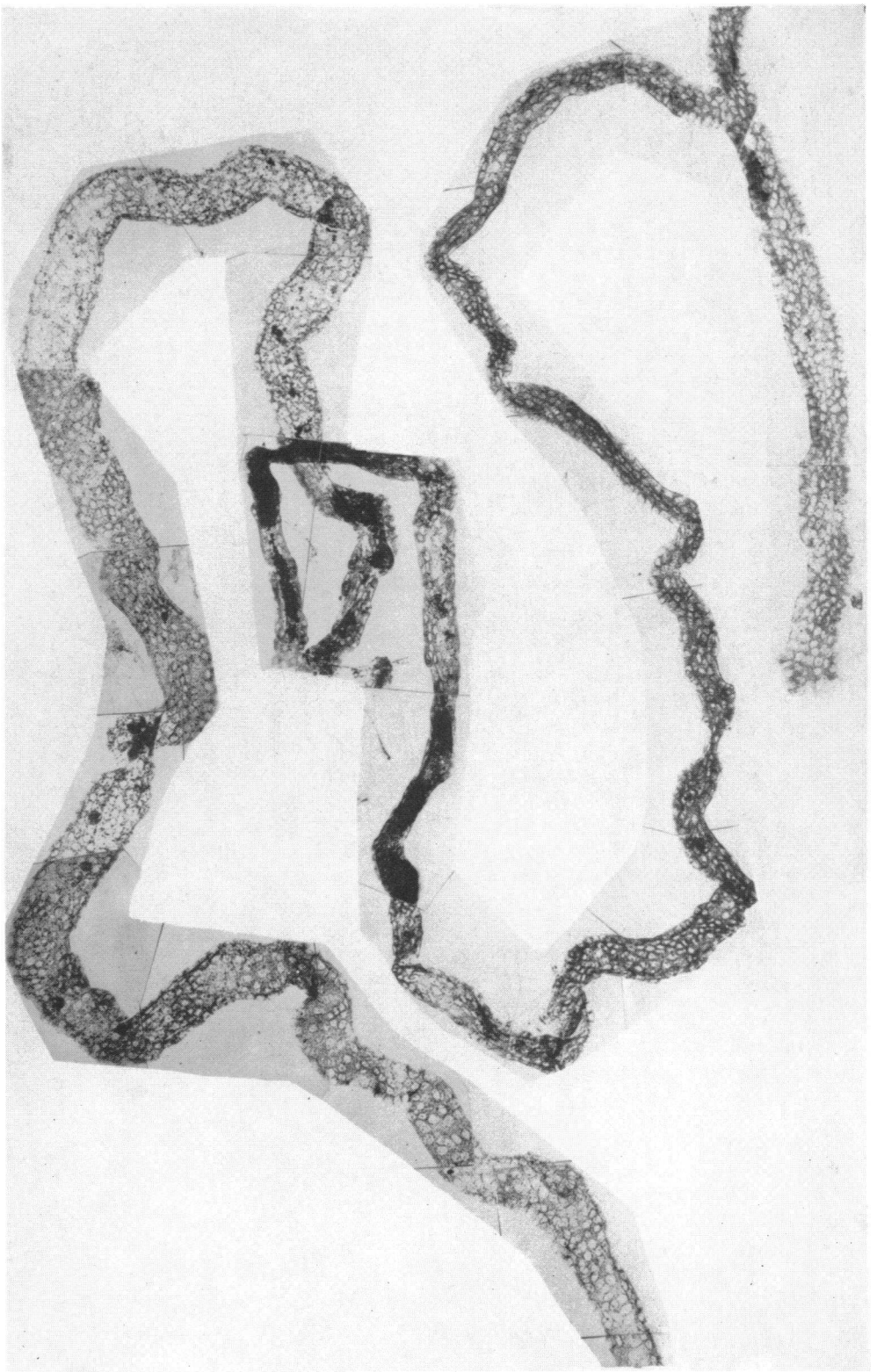
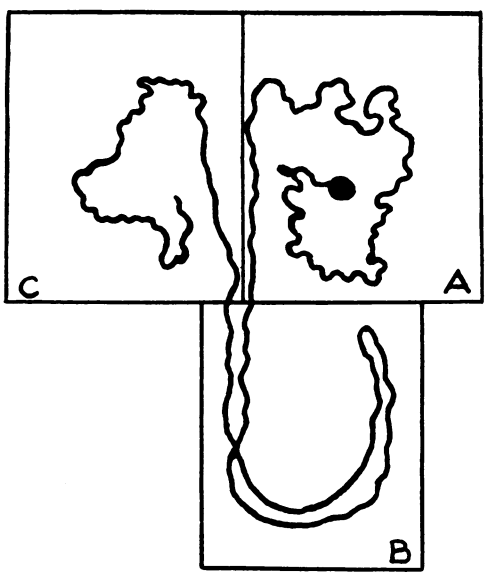


PLATE VIII (A TO C)



The tracing shows the orientation of the three plates of a complete cortical short-looped nephron from Case D, who died in the period of transition from oliguria to diuresis.

Plate VIIIA. The glomerulus is of normal configuration; the dark spot on the afferent arteriole is a collection of "myo-epithelial" cells of the juxta-glomerular apparatus. The greater part of the proximal convolution is dilated. As a result of atypical regeneration the epithelium of its wall is irregular in thickness, and redundant. For histological appearance *cf.* Figures 32 and 33. At *a* there is an incompletely healed tubulorhexic lesion. There are many desquamated epithelial cells in the lumen of the convolution shown to the left. Original magnification of 200 × is here reduced to 80 ×.

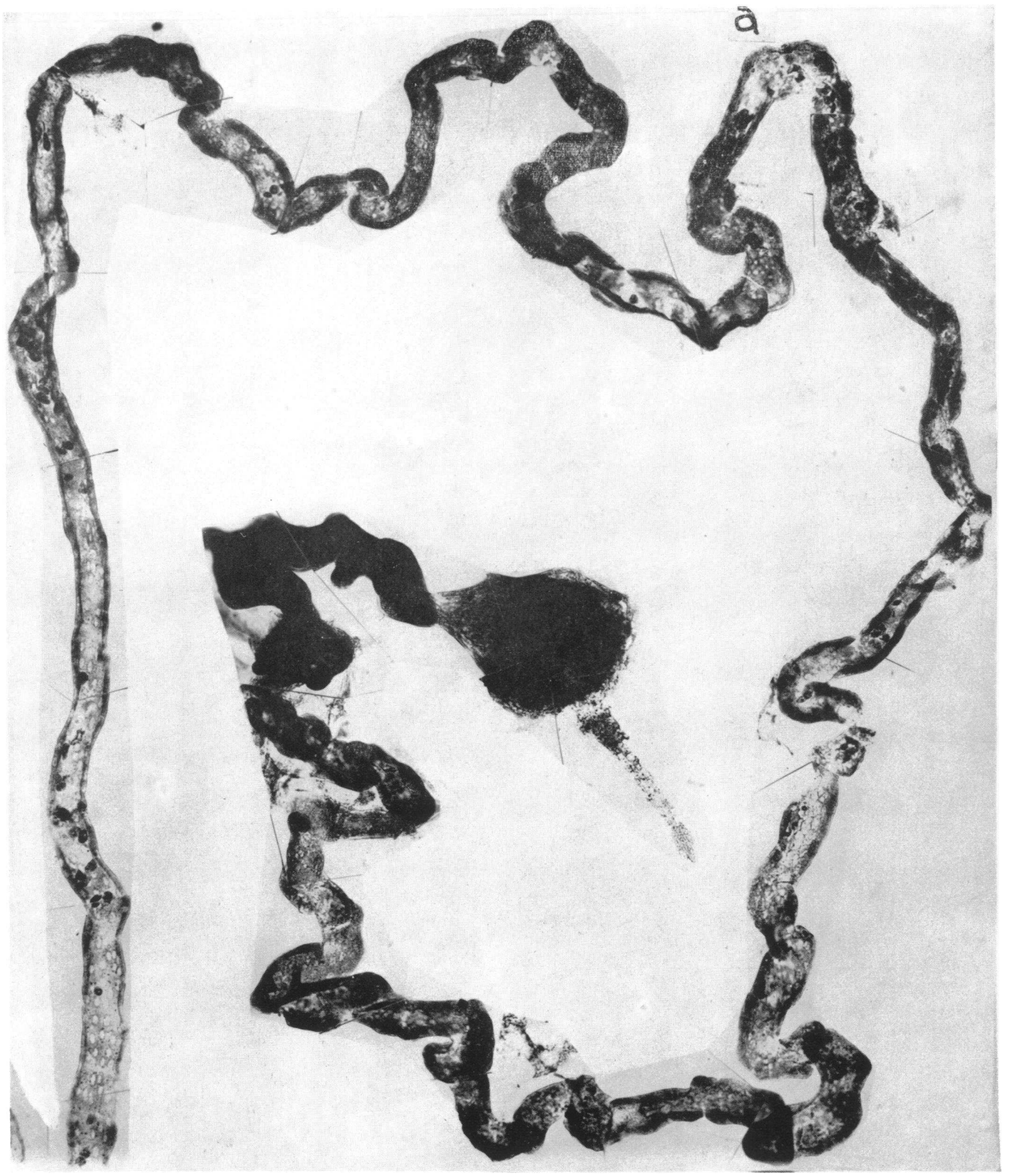

a

PLATE VIIIB

To the right the continuation of the proximal convolution which, dilated and containing desquamated epithelial cells, ends at *a*. At *b* the thin portion of the loop passes to the thicker portion and through the loop ascends toward the distal convolution.

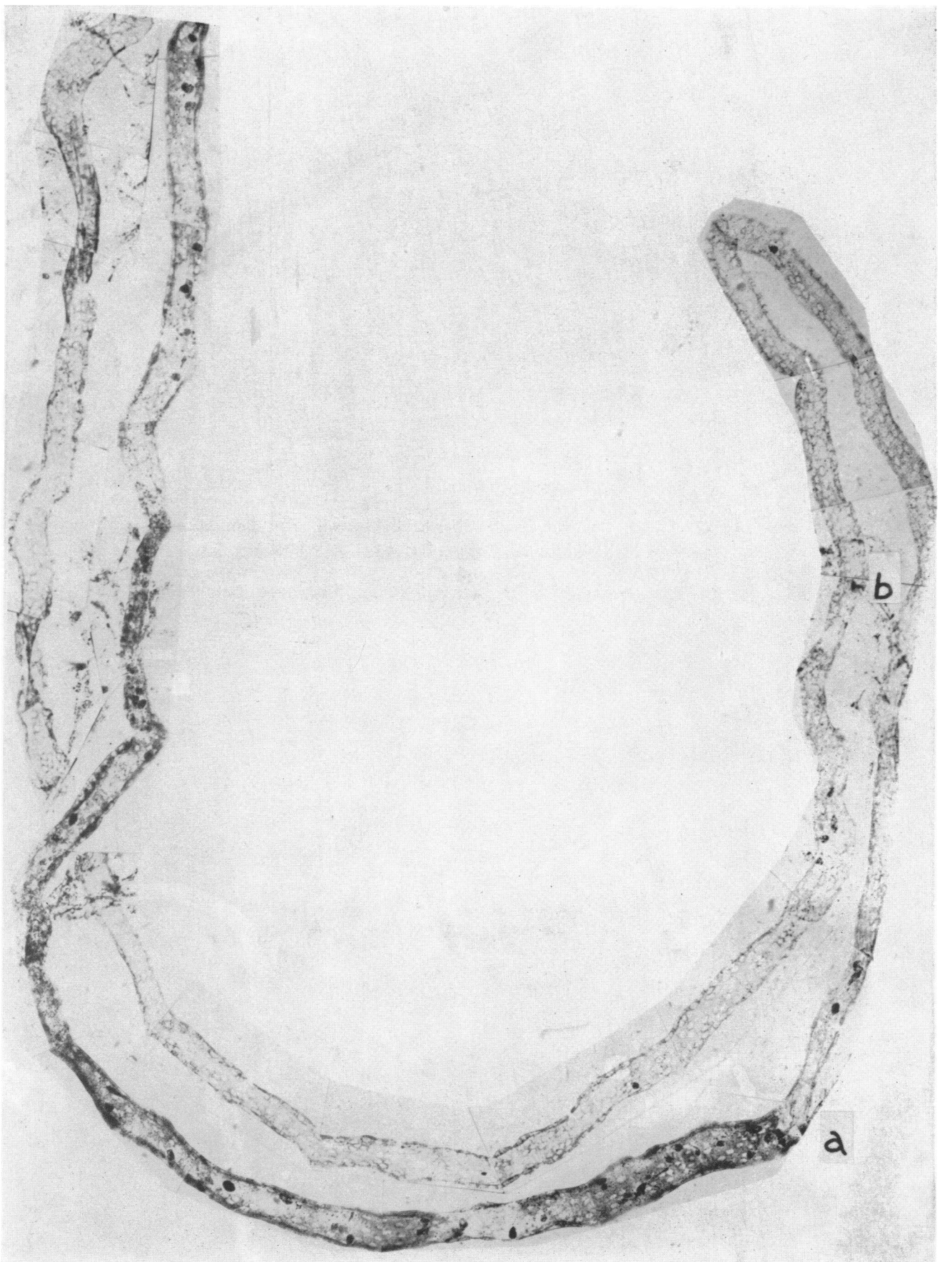

b
a

PLATE VIIIC. THE IRREGULARLY DILATED DISTAL CONVOLUTION WITH THINNED WALL

The linear marks at *a* are folds that developed as the greatly distended tubule collapsed after it was dissected. At *b* the connecting tubule, less distended, contains deeply stained coagulated material. Note that the epithelium covering the coagulated mass is thin but well preserved.

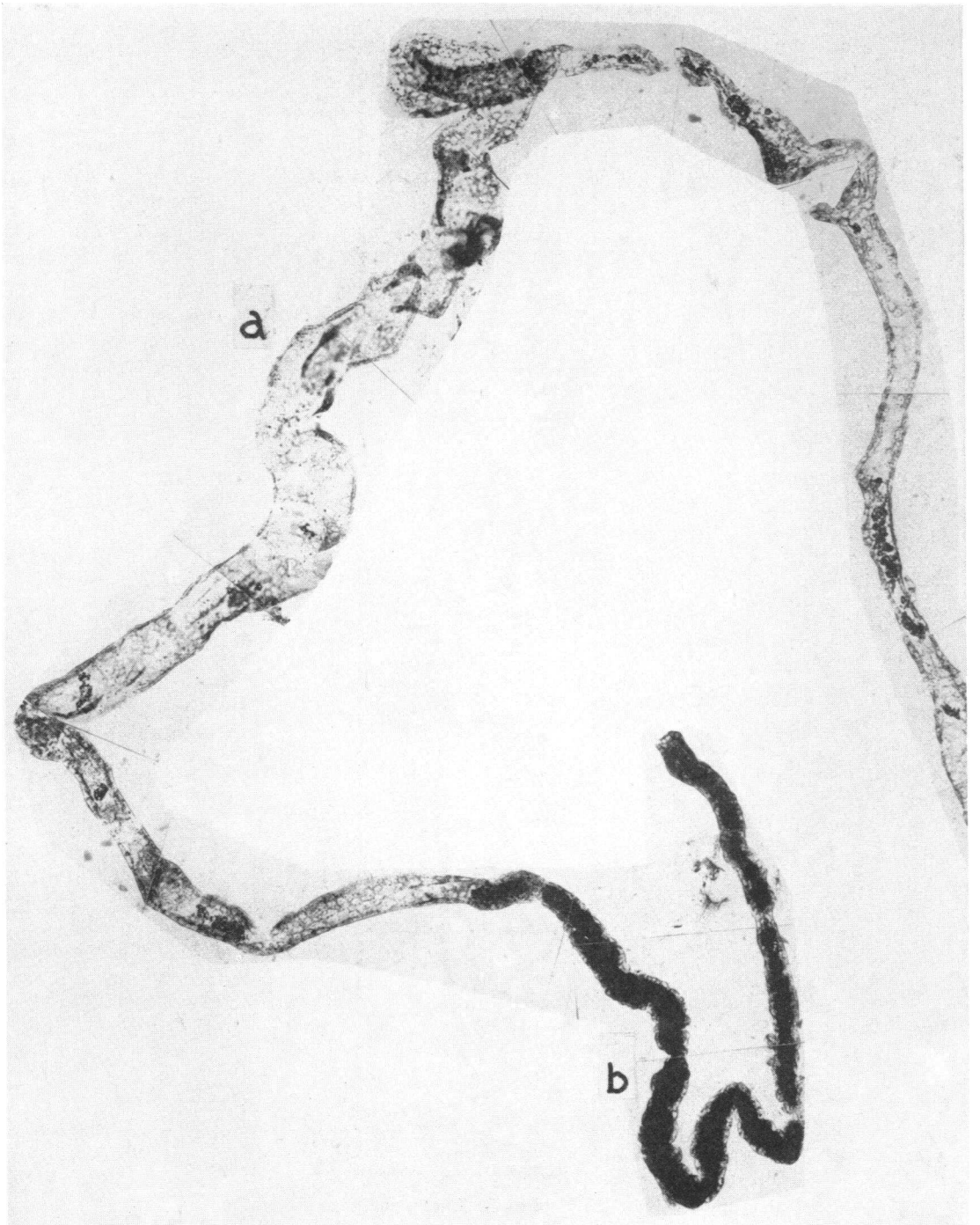
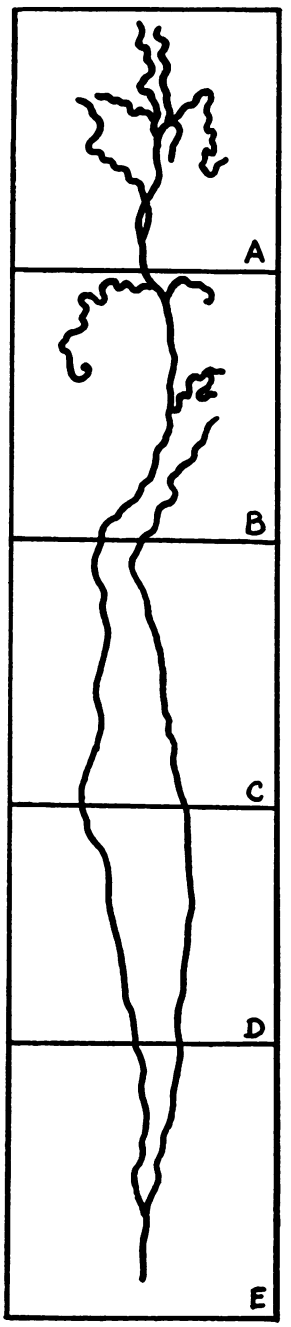

a
b

PLATE IX (A TO E)



From the same case. Orientation of plates in line tracing.

PLATE IXA. ORIGIN OF THE PERIPHERAL COLLECTING TUBULE SYSTEM

Five connecting tubules, all filled with deeply stained coagulated material, but intact, which lay beneath the capsule in the outer cortex. The cellular pattern of the collecting tubule is normal and it is not filled with coagulum. Original magnification of 200 × is here reduced to 80 ×.

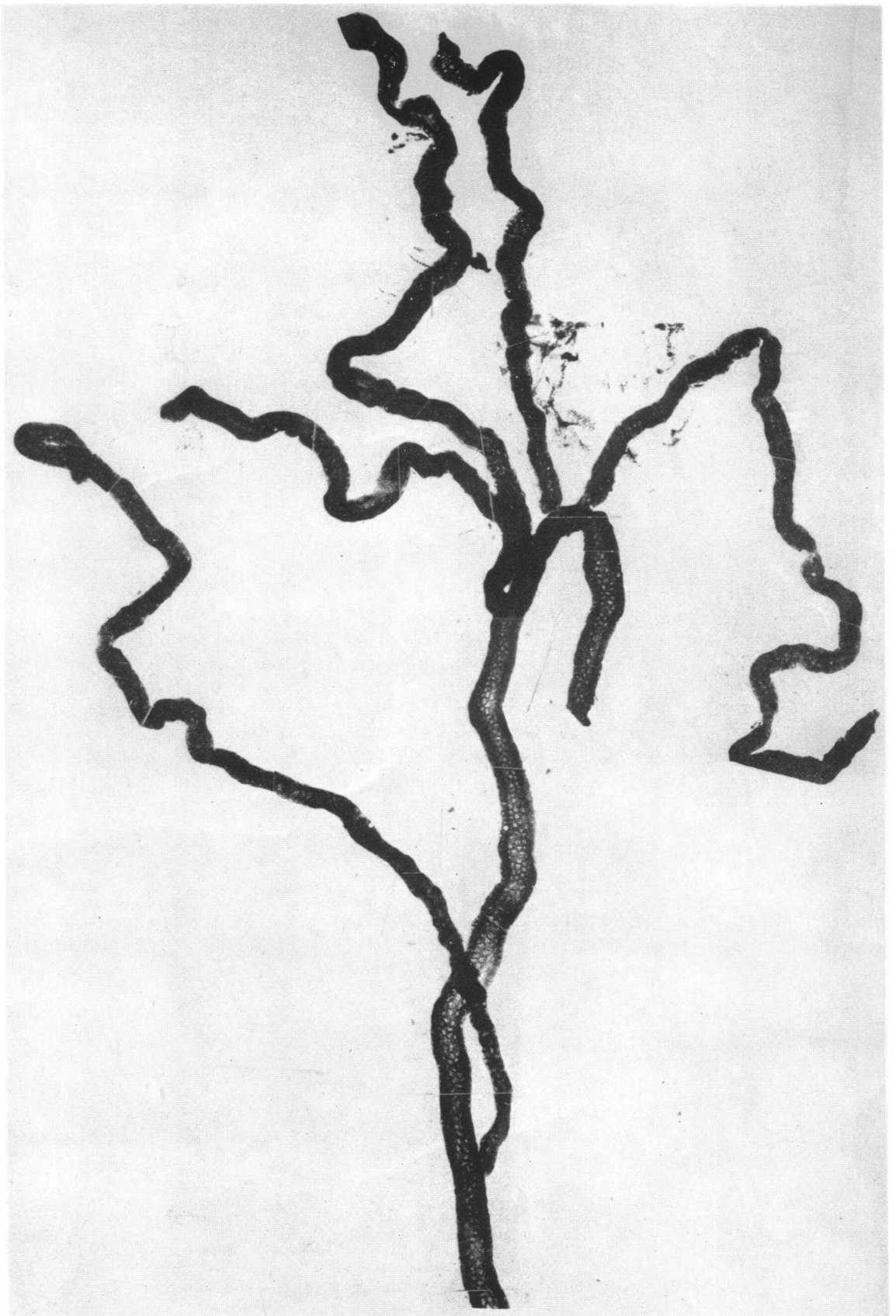


PLATE IXB. THE SAME COLLECTING TUBULE IN MID-CORTEX

Three more connecting tubules join the main tubule which, as shown by its clear cellular pattern, is intact and empty. To the lower right, a neighboring collecting tubule.

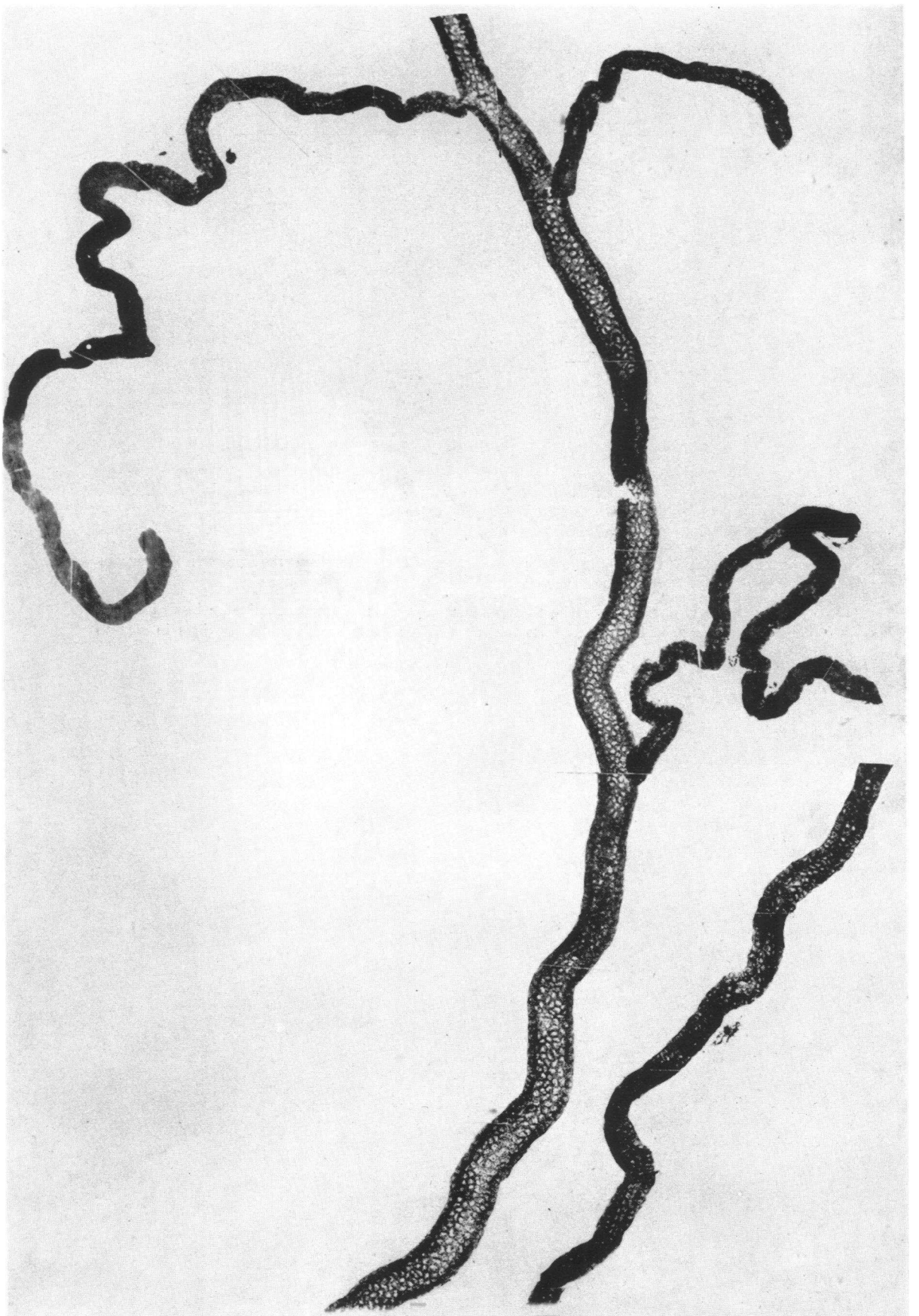


PLATE IXC. CONTINUATION OF THE TWO COLLECTING TUBULES INTO THE SUBCORTICAL AREA OF HEMORRHAGE IN THE OUTER ZONE OF THE MEDULLA

Below the level *a*, the damage to the epithelial cells is barely apparent in the loss of clarity of the nuclear pattern in the tubule to the left (*cf.* see Plate IXB), and is obvious in that to the right.

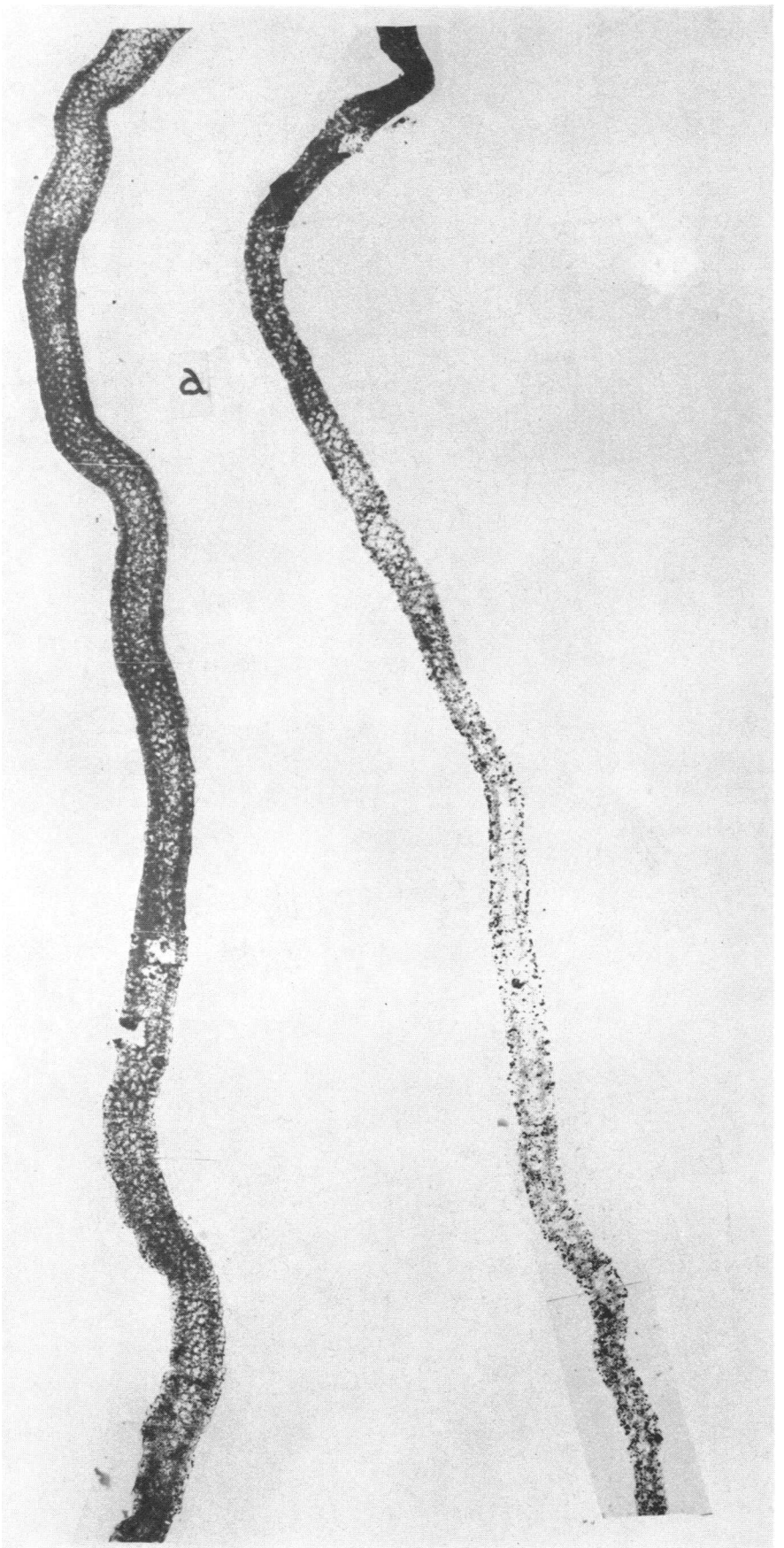

a

PLATE IXD. CONTINUATION OF THE TWO COLLECTING TUBULES WITH EXTENSIVE EPITHELIAL NECROSIS OF THE GREATER PART OF BOTH

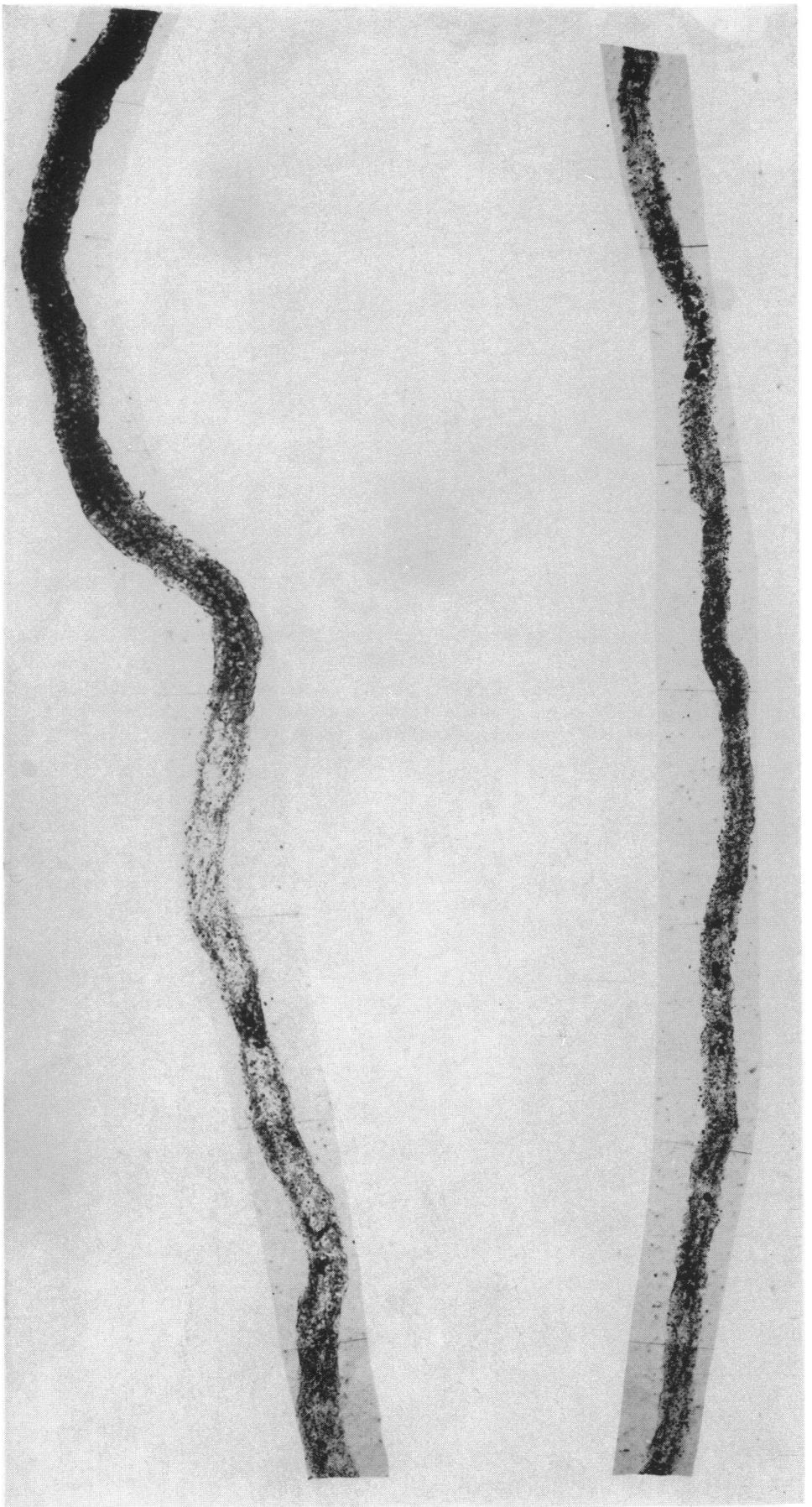


PLATE IXE. CONTINUATION OF THE TWO COLLECTING TUBULES INCLUDING THEIR JUNCTION IN MID-MEDULLA

Only the external configuration of the two tubules, now entirely necrotic, remains. After the tuning-fork junction the tubule continues, necrotic and filled with deeply stained debris. For histological appearance of similar necrotic collecting tubules, *cf.* Figure 29.

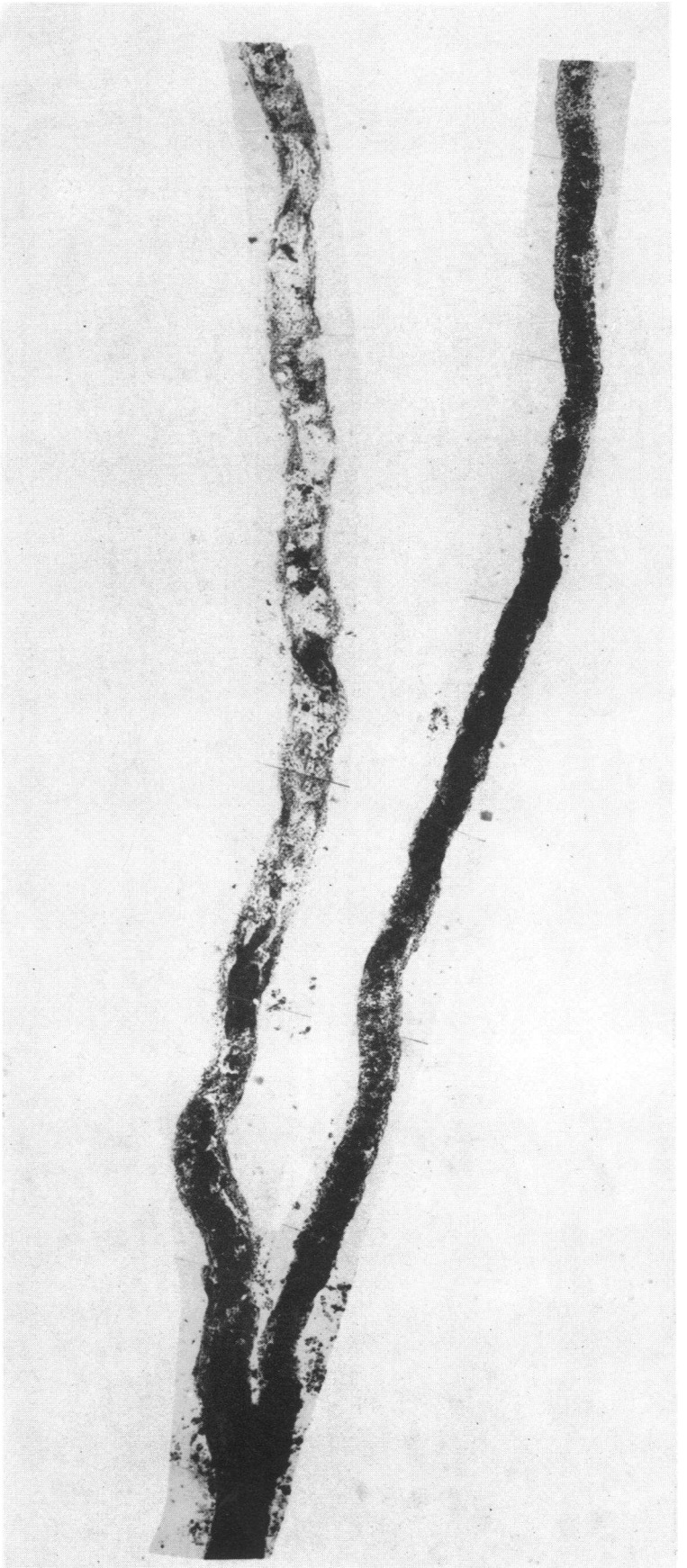


PLATE X (A TO B). PORTION OF PROXIMAL CONVOLUTION FROM CASE 33 WHO DIED ON THE NINETEENTH DAY OF HIS ILLNESS AND IN THE TENTH DAY OF DIURESIS

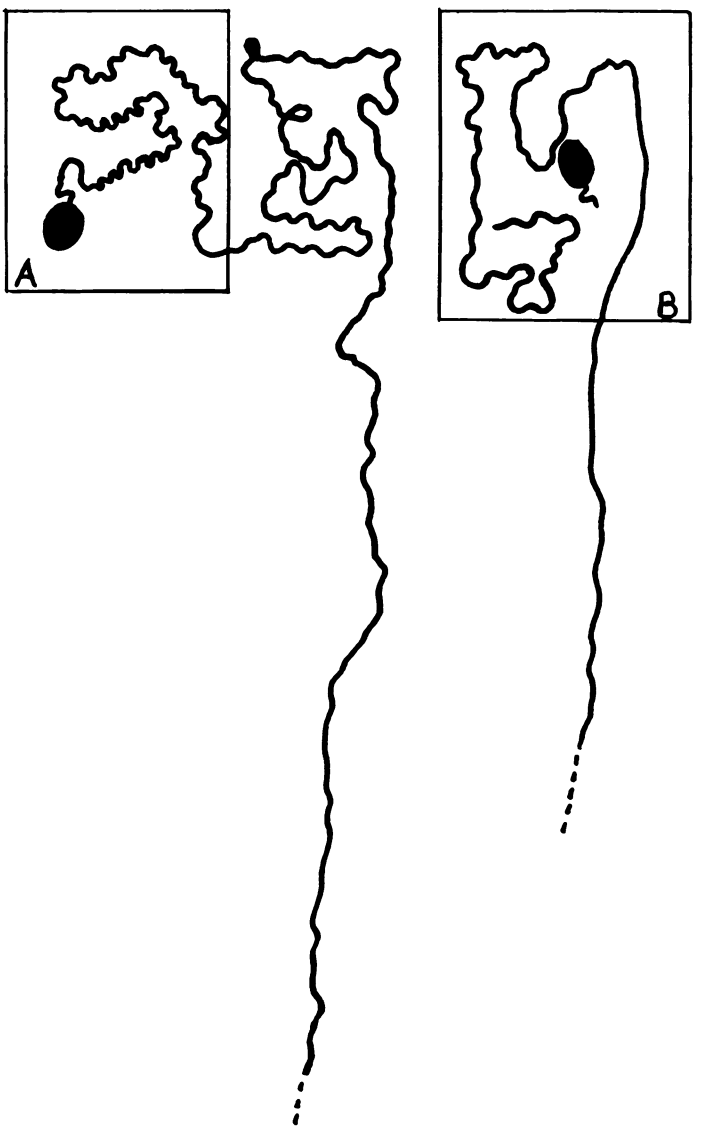


PLATE XA

Although the lumens of the proximal convolutions appear large in histological section (*cf.* Figure 40), as can be seen from the dissected specimen, this is not due to dilatation of the tubule but to the irregular regeneration of its epithelial wall (*a*). Original magnification of 200 × is here reduced to 80 ×.

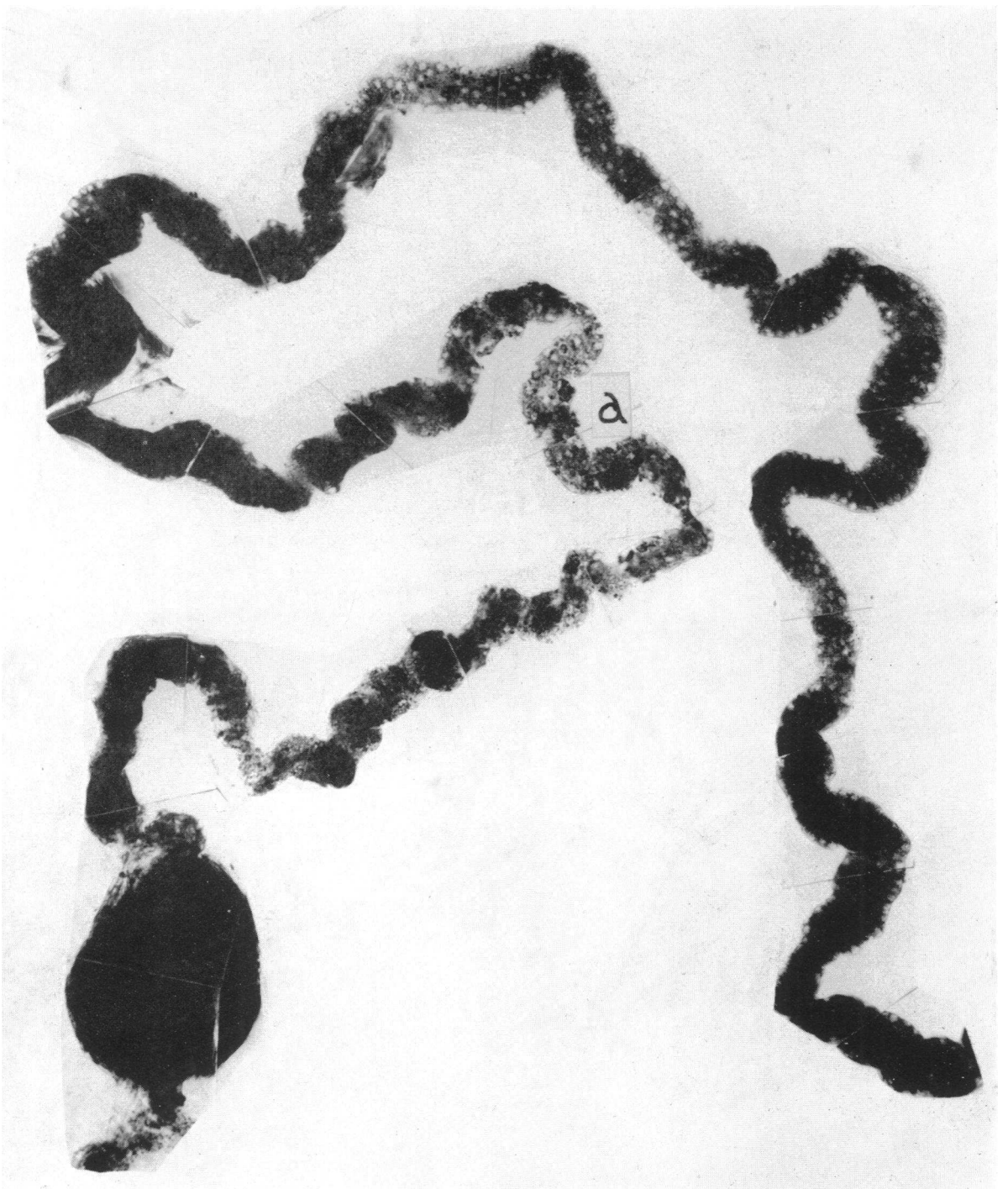

a

PLATE XB. THE DISTAL CONVOLUTION OF THE SAME NEPHRON

A duplicate print of the glomerulus has been mounted in the position of its attachment to the tubule. The ascending limb is essentially normal. The first half of the distal convolution is irregularly dilated, the second half filled with a large solid cast-like mass which continues into the connecting tubule.

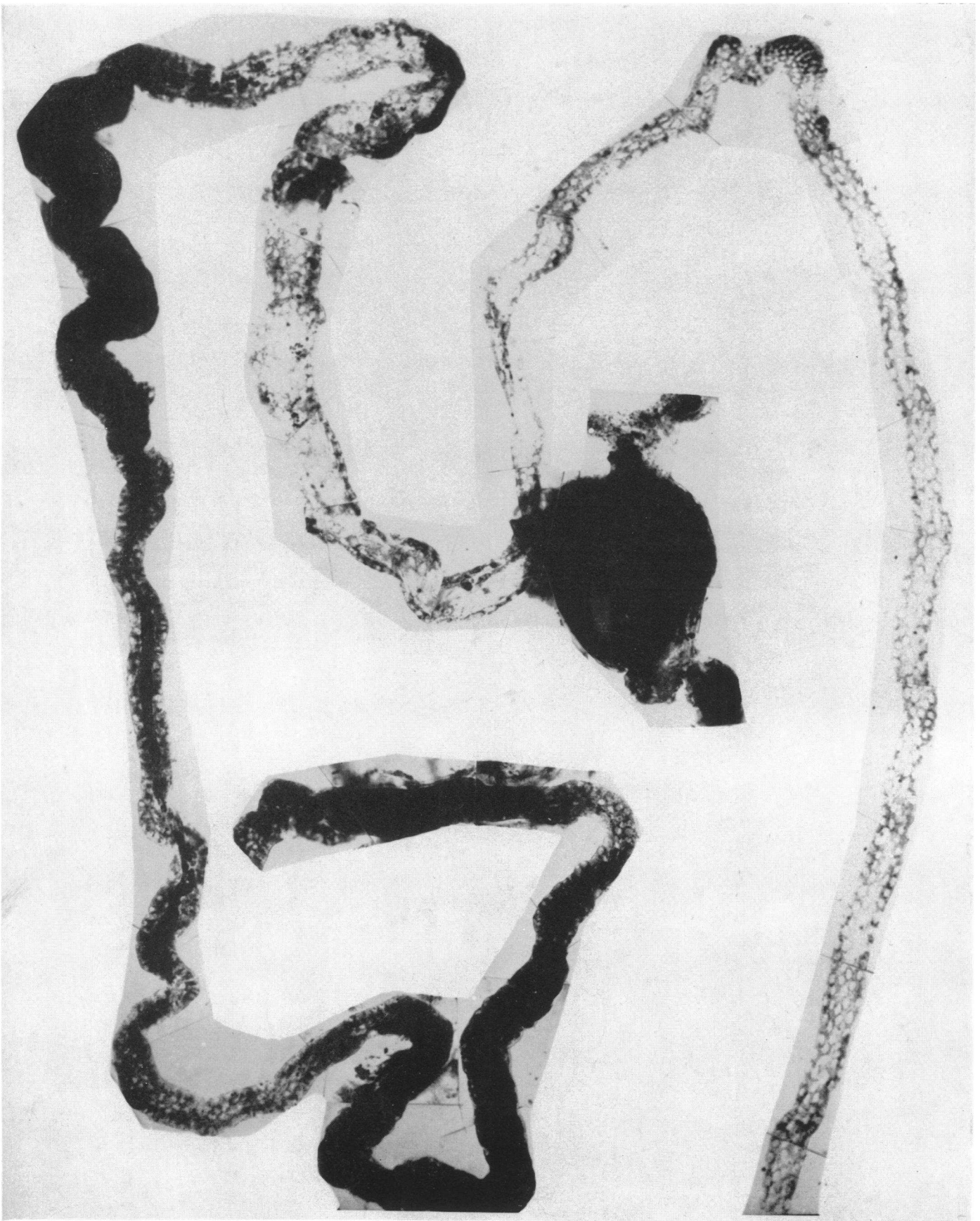


PLATE XI (A TO B). THE TERMINAL COLLECTING TUBULE AND THE DUCTS OF BELLINI FROM THE SAME CASE

In the normal kidney these tubules show smooth, even contours with gradually increasing diameters. These are markedly irregular both from the presence of the large renal failure casts of Addis that intermittently distend their lumen and from the irregular hyperplastic proliferation of their epithelial cells. Original magnification of 100 × is here reduced to 40 ×.

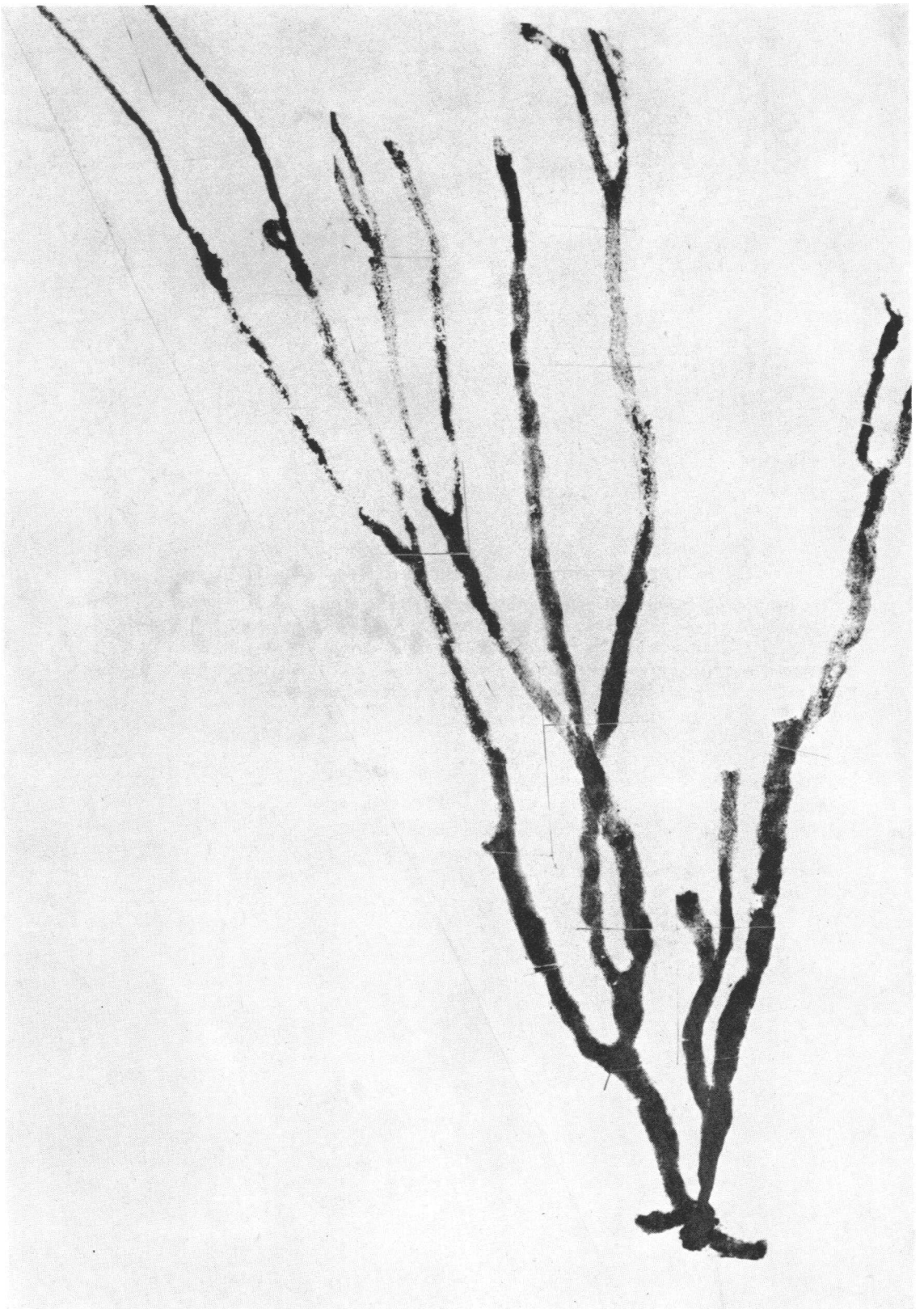


PLATE XIB. THE DUCTS OF BELLINI ENTERING THE RENAL PELVIS

The foot-like appendage that joins the three ducts below is a reflection of the pelvic epithelium which usually remains attached in spite of dissection. As has been observed, the tortuosity and irregularity of contour is seen to be due to the masses of debris that fill the lumens as well as to the marked hyperplasia of epithelial cells of the walls of ducts. For histological appearance, *cf.* Figure 41. Original magnification of 175 × is here reduced to 80 ×.