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by E. Hurry Fenwick.**

**Contributors**

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Wellcome Collection  
183 Euston Road  
London NW1 2BE UK  
T +44 (0)20 7611 8722  
E [library@wellcomecollection.org](mailto:library@wellcomecollection.org)  
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CLAY AND WAX MODELLING OF THE  
LIVING URINARY BLADDER UNDER  
ELECTRIC LIGHT.

By E. HURRY FENWICK, F.R.C.S.,

Surgeon (Out-patient) to St. Peter's Hospital for Urinary Disease; Assistant-Surgeon to the London Hospital.

ALTHOUGH Mr. Pearson-Cooper and I have been at last able, after overcoming great difficulties, to obtain good photographs of artificial growths in male bladders *post mortem*, yet our vesical camera will have to be considerably improved before we can lay before the profession a practical apparatus for obtaining faithful negatives of the mucous membrane of the living viscus in health and disease. But, until we are able to thus graphically record the many new and interesting clinical facts which the electric cystoscope is constantly revealing, I wish to advocate a substitute which I have employed for some time, and with considerable advantage. I refer to modelling in some plastic material the interior of the living bladder as it appears illuminated by electric light (the Nitze method). The changes in the aspect of the mucous membrane of the bladder, produced by relaxation, congestion, or infiltration are so varied and often so remarkable, that it is only by systematically accumulating a record of these appearances that a sure basis for establishing a sound diagnosis, prognosis, and treatment of vesical disease upon visual grounds can be acquired.

Drawings in pencil, pen, or colour are most valuable if carefully taken, but they fall far short of clay or wax modelling in conveying to others an exact idea of the disease depicted. The reasons for this are obvious. The cystoscopic field from which the artist draws is small, and the area to be portrayed is often large; hence a number of drawings is generally necessary to represent the disease in its entirety. The cystoscopic field changes with the slightest movement of the patient or the operator. Even a cough, a deep inspiration, or a slight involuntary vesical contraction is sufficient to puzzle a non-professional artist, by suddenly displacing or distorting some salient feature which he may have taken as a



"fixed point." Moreover, if bleeding should occur before the painting or drawing is completed, the transparent medium has to be renewed, and it is often difficult so to redistend the bladder as to obtain the same view of the object as before.

The plan I have lately adopted of making clay or wax models of the diseased living bladder is similar to that which I recommended at last year's Surgical Congress<sup>1</sup> in Berlin, for recording the changes of shape in the living prostate.<sup>2</sup> It is easily carried out, and only needs a small bowl or its shape-equivalent, a little oil, a penknife, and a handful of sculptor's clay.

As an example, suppose we wish to retain a record of an epithelioma of the bladder in an early stage. The clay is dropped into the bowl, and flattened out into a thick layer. A concave surface

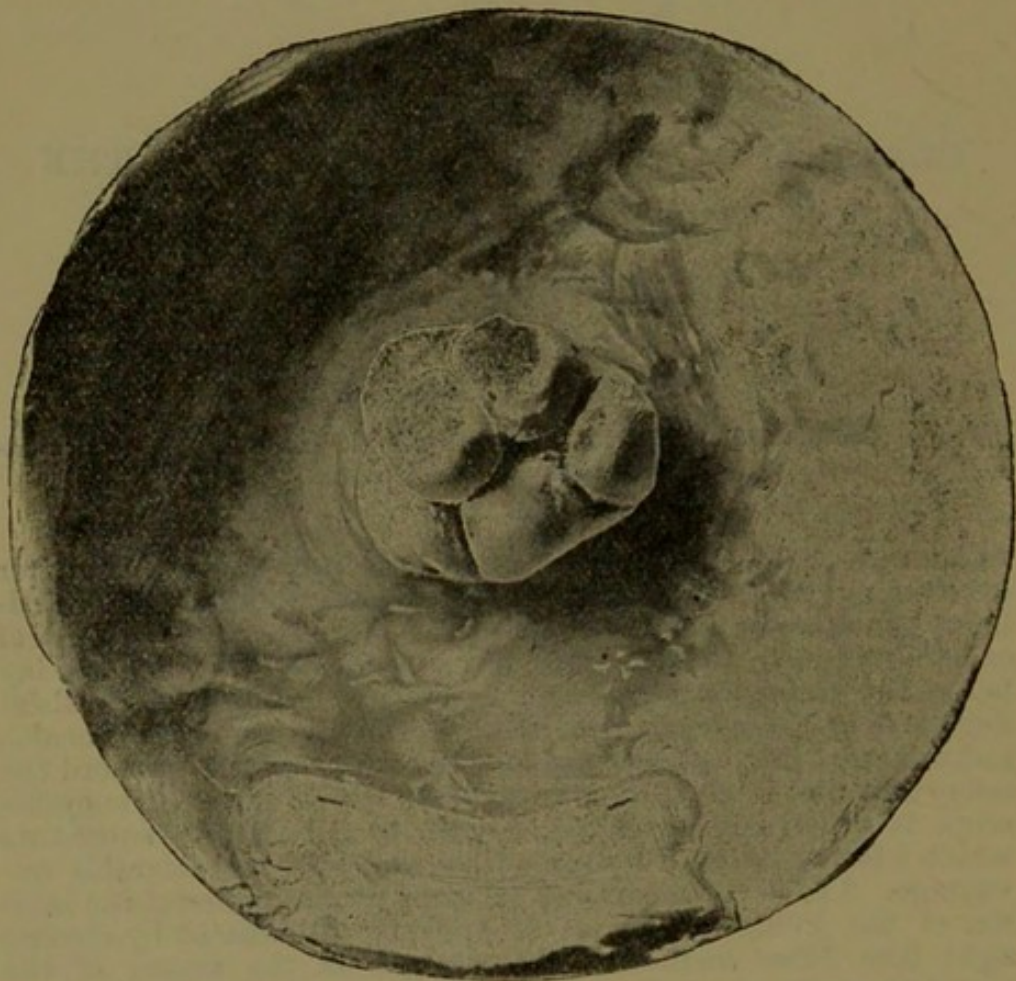


Fig. 1.

is thus formed, which will roughly represent the interior of the bladder. A little oil previously smeared over the inside of the bowl will permit the model to be subsequently turned out after drying. The bladder is now carefully examined in all parts by electric light, and the diseased section localised. Each part of the tumour is next observed; its size and the character of its surface appreciated. The light is switched off, and the handle of the cystoscope given to the patient or the assistant to hold, or it may be laid on a scrotal cushion. A fresh piece of clay, the size of the tumour, is taken and roughly modelled to the shape of the growth. The light is again turned on, and the tumour re-examined. With a

<sup>1</sup> Ueber Thonabdrücke der Prostata am Lebenden, Langenbeck's *Archiv*, Bd. xxxvi, Heft 2.

<sup>2</sup> JOURNAL, May, 1887.



little trimming by means of the knife and fingers, the clay shape is made to assume the form of the growth. It is finally stuck on to the concave clay in the bowl, its position being easily marked by pricking two slits to represent the orifices of the ureters.

Fig. 1 is a photograph of a clay model which was taken of the bladder of a patient suffering from epithelioma of that viscus. The case was sent to me in April last by Dr. de Gruyther, at the suggestion of Dr. Carmalt Jones, with the diagnosis of vesical growth. On examining the bladder with electric light, a smooth, multilobed, malignant growth was seen projecting from the posterior wall a little above the interureteral bar. A rough sketch of its position and size, with a note to the effect that the tumour was invading the gut, and that operative interference was use-

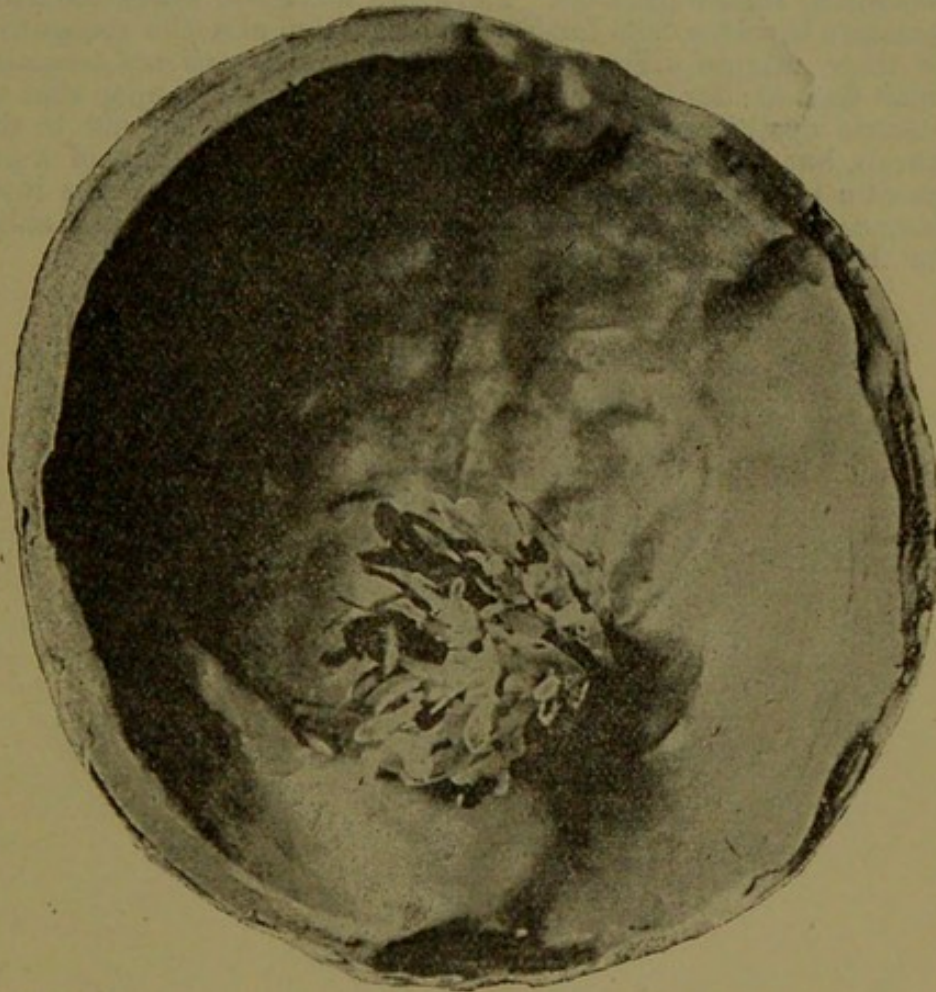


Fig. 2.

less, was sent back with the patient. A clay model was subsequently made and photographed (Fig. 1). The patient was admitted into, and died in, the Cancer Hospital in September. On *post-mortem* examination the position and invasive character of the growth were verified. The clay model and the specimen now give a rough but valuable indication of the rate of growth of the tumour during the last five months of the man's life.

The delicate "villous tumour" (papillary fibroma) is most difficult to represent in clay, but it will be found that the villous processes can easily be modelled in appropriately-coloured wax or ordinary dental wax. The second photograph (Fig. 2) was taken from the wax model of such a case. The patient was brought by



Dr. Harle, of Hackney, with painless hæmaturia and a diagnosis of probable vesical growth. A very beautiful "primrose-leaf" villous-surfaced tumour was seen attached to the upper lip of the left ureteral orifice, its long individual leaves swaying apart at each jet of urine propelled from the subjacent opening. Some of the leaves were whitish from loss of blood-supply. Its pedicle appeared to be succulent and epitheliomatous. The patient was leaving for Australia in less than two days and a half, but he was able to take with him a photograph (Fig. 2) which will afford the surgeon he next applies to a sufficient representation of the position of the disease he is called upon to treat.

Besides the value of thus keeping a record of vesical disease, or of sending a photograph or model to the practitioner in charge of the case, there is a still greater benefit to be derived from modelling vesical growths. The mere attention which the manipulation involves calls forth the observation and the recognition of those minute differences upon which *prognosis and treatment* must depend; for it cannot be too strongly insisted upon that the electric cystoscope ought not only to be an efficient aid to diagnosis, but ought also to assume the higher position of a prognostic agent which may deter the surgeon from needless interference, or may indicate to him the form of operation best suited for the removal of the growth in question.