through the tendinous arches of the diaphragm, it is given a certain measure of support. Further down the direction of part of the blood flow is suddenly changed by the presence of the large blood vessels, *i.e.*, inferior phrenics: cœliac axis, superior mesenteric and renal arteries; and still further down the calibre of the abdominal aorta becomes much smaller. The preceding facts, which are also confirmed by Woolsey, who reports that in this area ruptures frequently occur on injection of the blood vessels in cadavers, are probably the cause of an increased blood pressure in this area and therefore of an increased tendency to aneurysm if by any chance the wall is weakened.

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CYST OF THE VOMERONASAL ORGAN.

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CASE. — "Fifteen," a Shangaan, aged 25, was admitted to the Johannesburg General Hospital on 13th February 1923, suffering from "cyst of the nose."

The history elicited was that the lump was present when he was a small boy but used to diminish or disappear until eight years ago when it became permanent. It was always mesial in position, but gradually extended laterally thence. To begin with, thick, dirty discharge used to come from his nostrils on occasions, but this stopped when the tumour ceased to vary in size. The condition had never caused any pain.

A large fluctuating swelling about the size of a tangerine orange filled the anterior nares reaching from the maxillæ to the nasal bones and extending laterally well on to the cheeks (Figs. 1 and 2). The upper lip was pushed forwards from the maxillæ a distance of two inches. The finger could be insinuated into the nostrils as far as the nasal bones. The frontal processes of the maxillæ were deviated laterally. Posterior rhinoscopy showed the mucous membrane congested and a good deal of pus above and below the middle conchæ. The roof of the mouth seemed broadened.

Under intra-tracheal ether an incision was made along the lower margin of the upper lip about a quarter of an inch from the muco-cutaneous junction to each angle of the mouth. The lip was then raised, and while the attachment between the tumour and the maxillæ was being defined the cyst burst, and from it an oily, blood-stained fluid with many golden-yellow crystals escaped. The greater portion of the cyst wall was removed and the remaining space packed with sterile gauze soaked in liquid paraffin.

Dr Harvey Pirie examined the excised portion and reported: This cyst is lined internally by a layer of epithelium, the cells varying in shape from squamous to a low columnar type. For the most part these cells form only a single layer, but in places may form two or even three layers. A few small papillomatous projections into the cyst cavity have occurred. The main mass of the cyst wall is formed of somewhat hyaline fibrous tissue, of varying density, and with large thin-walled vessels. In the outer part of the wall there are striped muscle fibres. The fluid content of the cyst is a highly albuminous, dark red-brown coloured fluid, containing numerous red blood-cells and a few cholesterin crystals.

The man made an uninterrupted recovery and was only afraid that from his altered appearance his wife would not recognise him (Figs. 3 and 4) when he returned to his kraal.

Neither from its situation, nor from its relations did the cyst correspond to an odontome and the pathological examination showed that it was not a sarcoma.

The usual cyst of the nose in its painlessness, its occasional varying in size and ultimately becoming permanent, has clinical features which correspond to this one. These cysts were adequately described by Kelly,[1] and though cases had previously been reported by Chatellier,[2] Knapp,[3] Dunn,[4] Milligan,[5] and others, it was Kelly's investigations that first definitely explained the etiology. M'Bride[6] referred to two cases, and much more recently Dawson reported[7] the case of a patient in whom in the following year[8] a similar cyst appeared on the corresponding side. Dawson claims this to be the only bilateral case on record. It is a curious fact that so far these nasal cysts have only occurred in women. Kelly says they "always occur in exactly the same position and in that only," that is at the anterior part of the lateral aspect of the nose under the ala nasi below the anterior end of the inferior concha. They "rarely or never" extend mesially to touch the septum. The origin of these anterior lateral nasal cysts is from the glandular tissue in that position and they are practically retention cysts due

to blocking of their ducts. Notwithstanding these differences which distinguish the common anterior nasal cyst from the one at present under consideration there are histological similarities which cannot be overlooked. Professor L. R. Sutherland examined the tumour from one of Kelly's three cases and reported that the cyst was lined with epithelium two to twelve cells deep, the deepest being less cubical and set on a basement membrane, that there was a tendency to the development of in-growths into the cavity, and that underneath the epithelium ran many dilated blood-vessels with some reactionary round-cell infiltration in their neighbourhood. Sutherland's pathological report is indeed very similar to that of Harvey Pirie given above. These cysts might suppurate, and Kelly quotes a case of recurrent abscess of the nasal floor recorded by Lacoarret[9] as being probably of this nature.

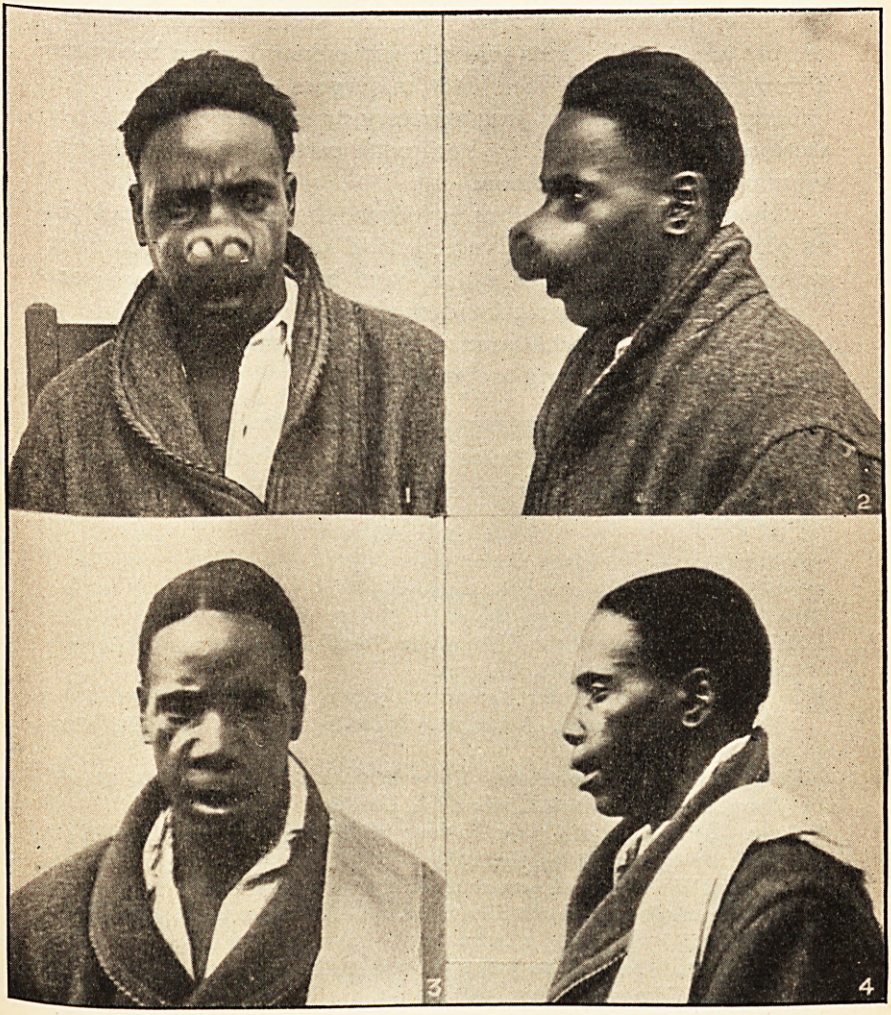
The cyst had not the characters of a dermoid. The development of the nose and the neighbouring parts is peculiarly favourable to the formation of sequestration dermoids (*cf.* Bramann[10]), and though the septum is particularly exempt. Kelly[11] has described teratoid tumours of that part.

Lastly, the possibility of the cyst being developed from a vomeronasal organ demands consideration in view of its mesial position and its relation to the incisive canal. But though mesial the vomeronasal organ is as a rule bilateral and symmetrical. It is in the human subject a vestigial organ in course of phylogenetic obliteration. According to Read[12] it lies at the anterior extremity of the nasal septum a little distance from the palate and opens into the ductus palatinus which leads from the nasal to the oral cavity. In comparative anatomy it is an organ of importance, and Broom[13] even proposed to classify mammalia according to its development in relation to its cartilages, and in a later paper[14] logically uses his argument to determine the position of hyrax in the animal kingdom.

Though the vomeronasal organ lies higher in the septum in the human subject[15] than in most animals, a cyst need not be related strictly to the organ itself but to its duct lower down.

It is long since Klein[16] pointed out the peculiar structure of the vomeronasal organ, its tubular shape, its mesial wall a degenerate sensory surface supplied with inefficient olfactory nerve filaments and containing aborted olfactory cells, and its lateral wall a glandular epithelial mass of cavernous tissue.

There is nothing in this incompatible with the development of a retention cyst which would have the characters of the cyst found in this Kaffir. Indeed Gegenbaur[17] considered the



Cyst of the Vomeronasal Organ in a Kaffir.
1 and 2.—Before operation. 3 and 4.—After operation.

vomeronasal organ to be a rudimentary gland, and though doubtless this is unjustifiable, as Merkel[18] points out, there is a glandular element which might assume the ascendant. In

a new-born child Merkel found the duct well developed on one side and very poorly developed on the other, and at the very end the small canal was subdidvided into two. Weidersheim[19] also refers to the organ and its duct being absent or unilateral in man. At the sixth month of intra-uterine life Arey[20] states that the vomeronasal organ measures 4 mm. in length but thereafter undergoes degeneration. To liability in the adult to inflammatory or syphilitic affection, is ascribed by Hajek[21] and by Potiquet[22] certain affections of the septum including perforation.

Though useless as a sensory organ, though unimportant in its glandular function, the vomeronasal organ appears to have pathological potentialities which have been for the most part overlooked, and it cannot be denied that the site, the history, and the histological appearance of the cyst the subject of this paper suggests a vomeronasal origin.

I have to acknowledge my indebtedness to Dr Harvey Pirie and to Mr Pink for assistance in dealing with the case, and to Mr D. M. Greig for references and help in the preparation of this paper.

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FURTHER NOTE ON A CASE OF ADENOMA OF THE BILE DUCTS.

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THIS case was recorded by Mr D. M. Greig in the *Journal* of September 1921, and, on account of the rarity of the condition, I have thought it worth while to bring the record up-to-date.

After her discharge from hospital, in February 1921, the patient remained well till the beginning of June 1923, when she began to suffer from a dull pain in the epigastrium accompanied by nausea, but no vomiting, exhaustion, jaundice, and severe itching of the skin. On 20th June the pain became more acute, and she had to lie up, but she did not summon her medical attendant till 23rd June when the pain had become almost unbearable.