THE DEVELOPMENT OF 'SCIENTIFIC' MEDICINE IN THE AFRICAN KINGDOM OF BUNYORO-KITARA*

by

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Introduction

The development of that broad stream of ideas stemming from the classical world which has culminated in modern Western medicine is inevitably the main field of medical history. There is indeed comparatively little outside this field in which it could operate. For the medical knowledge of classical times was in part based on ideas derived from Egypt, India and China. It was transmitted through Arabian medicine to Southern Europe and thence via the Italian Universities to Northern Europe, where the genius of William Harvey developed the experimental method upon which modern scientific medicine is based. By the time of Harvey, and certainly before the paths opened by Harvey were assiduously explored, Western Europe was in contact once more with India and the Far East, and the indigenous systems of the Maya, the Aztecs and the Incas had been brought into contact with the Western World. However little interaction of medical ideas there may have been, the possibility was there.

Knowledge of the development of medical thought and practice amongst peoples completely divorced from contact with developing 'Western' medicine is therefore largely derived from antiquity or is based upon studies of primitive peoples, most of whose medical concepts are rudimentary and of interest to the anthropologist rather than to the medical historian. Some considerable interest, therefore, is attached to the medical concepts and practices developed amongst the lacustrine peoples of East Africa, in particular the Kingdom of Bunyoro-Kitara, for there is evidence to suggest a remarkable level of medical knowledge in this kingdom which had seemingly developed in complete isolation from the outside world.

The Kingdom of Bunyoro-Kitara

The Kingdom of Bunyoro-Kitara was a large and powerful African State which developed in the regions between Lakes Albert and Edward and Lakes Victoria and Kioga. While its boundaries were no doubt shifting and indeterminate, its power and influence extended over a much wider area (Ingham, 1957). The heart of the kingdom consists of undulating plain crossed by swampy rivers, though towards the south-west the country is volcanic with many crater

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lakes. To the west it was bounded by the proximity of the impenetrable forests of the Congo Basin, to the north it was cut off by the immense swamps of the southern Sudan, so long an impenetrable barrier to explorers. To the east and south it was isolated from the outside world by the immense distances, the arid plains and the highlands of East Africa. In this remote area a nomadic pastoral kingdom developed, ruled by a long line of autocratic kings, the manner of whose decease was of interest to Frazer (1941), and whose lineage passes into legend. Despite this, there can be no doubt but that the monarchial line covers a considerable span of time. There was no fixed capital, the kings moving their residences from time to time as was determined by the medicine men by divination (Roscoe, 1923). They, and their neighbours to the south in the Kingdom of Buganda, had been isolated from the outside world for centuries. There is no specific evidence to suggest that they had been influenced in the slightest degree by the Portuguese on the East African coast, or in the highlands of Abyssinia, which for centuries was the only route of access to their country. Indeed the first European travellers were more impressed with evidence suggesting that some of the customs and ceremonies of the indigenous kingdoms of Uganda had been remotely derived from Ancient Egypt (Fisher, 1904), than they were with any evidence suggesting the percolation of ideas derived from the Portuguese. (This is in striking contrast to the Kingdom of Benin in West Africa.) Certainly Bunyoro had contacts with the Bari tribes of the southern Sudan but these contacts could not have led to any great knowledge of the outside world. Indeed exactly when the indigenous Kingdoms first became aware of the existence of outside civilizations is uncertain. Some trade goods apparently began to circulate about the middle of the eighteenth century.

Their first contact with this outside world seems to have been with the arrival of a Baluch soldier from Zanzibar at the court of the Kabaka of Buganda in 1852. He was soon followed by Arab traders from Zanzibar. Whatever else can be said about these Arab traders it can hardly be said that they were apostles of Western medicine, or the scientific method, for the sanitary and medical conditions of their home town were deplorable (Burton, 1872) and remained so for many years (Christie, 1876). Nor is it easy to see how many advanced medical ideas could have reached Bunyoro from any outside source. Though there is abundant evidence of tribal migrations up and down eastern Africa in the last thousand years there is no evidence to suggest that they carried with them any advanced medical knowledge derived from Western, Arabian, or Indian medicine. Such medical knowledge as developed in Bunyoro seems to have been generated within their own social system.

It was not till the eighteen-sixties that European explorers working from the north and from the south-east broke through the barriers of swamp and forest and traversed the tsetse-ridden plains to reach the lacustrine kingdoms. Speke and Grant reached them from the south and came first to the Kingdom of Buganda. There they found, for all its crudities and cruelties, a remarkable indigenous kingdom with an elaborate social, political and economic system, in remarkable contrast to the regions, a chaos of warring tribes, through which

they had passed. The Baganda were the hereditary enemies of the equally elaborately organized Kingdom of Bunyoro-Kitara, and had latterly been expanding at its expense. Thus, when in 1862 Speke and Grant reached Bunyoro from Buganda, they were greeted, not only with intense curiosity, but with not unreasonable suspicion. They went on to the north and met Samuel Baker who in 1864 reached Bunyoro from the Sudan. The explorers were soon followed by other travellers and soon after by missionaries, and all these were received with some suspicion, which had hardened into hostilities when in 1872 Baker returned as an officer in the Egyptian Service, accompanied by truculent and unsavoury Egyptian troops, and with the obvious intention of incorporating Bunyoro in the Egyptian Equatorial province. Hostilities continued for many years as Bunyoro lay athwart the Nile route which was the obvious communication channel and trade route between Uganda and the outside world till the railway was built from Mombasa. The determined hostility of the Bunyoro to outsiders gave them, inevitably, a bad reputation with all travellers and little good was said of them.

In the prevailing atmosphere little attention was paid to them or to their medical knowledge. The missionaries were naturally antipathetic to the so-called witchdoctors, and this carried over to their converts and was accentuated by the arrival of European-trained physicians. The indigenous medical practitioners, adversely affected as all physicians are, by armed hostilities, and the recipients of criticism from so many quarters, went 'underground', to exile, or were killed off. Even their friends seemed to have little good to say of them. This makes the experience of Felkin the more remarkable.

Surgical Operations performed by Primitive Peoples

Surgical operations, and certainly operations of any magnitude, are rarely recorded amongst primitive or preliterate peoples and such as have been described are usually ritual mutilations or operations predicated by supernatural beliefs, e.g. trephining. Amputations were known to have been carried out by the Masai in East Africa (Johnston, 1902), and Sigerist (1951) quotes a Munich dissertation of 1845 which purports to give an account of the methods by which amputations were carried out at Tumale (Sudan). The patient was said to be rendered stuperose by an alcoholic drink, skin and muscle cut through, the bare bone severed by a hatchet blow and the bleeding stopped by hot butter or by applying red-hot stones. Unfortunately this account was compiled by a man who never visited Africa and who based his description on an account by an African who visited Munich. It is symptomatic of the paucity of descriptions of major operations among primitive peoples that a great medical historian should have to quote such an unsatisfactory second- or third-hand account. But as he points out (Sigerist, 1951) primitive surgery could not advance beyond such an elementary stage while purely supernatural conceptions of disease prevail. This makes the experience of Felkin even more remarkable.

R. W. Felkin was a student when, after two years of medical study he volunteered to go as a medical missionary to Uganda. In company with three

others he travelled by the Nile route in 1878 to reach Buganda after a number of vicissitudes, only to find the country in a state of turmoil. After a brief stay he returned by the Nile route with some Buganda envoys to Queen Victoria. Later he worked as a medical missionary in Zanzibar, travelled all round Africa by ship, and returned to England to a distinguished career as an expert in tropical medicine. He had a considerable reputation in Germany and was the translator of many of the works of Emin Pasha. For many years he was adviser in tropical medicine to the *Lancet*. In 1879 he was detained for a few days at a place called Katura, now a part of Buganda but then part of Bunyoro. There he witnessed a caesarean section performed by an African surgeon, he subsequently watched the patient's progress, wrote copious notes, and drew sketches, and finally was presented with, and brought away, the surgeon's knife. When in 1884 he retailed his story, in an address entitled 'Notes on Labour in Central Africa' given to the Edinburgh Obstetrical Society (Felkin, 1884), he described the operation in some detail and without laying stress on its remarkable nature. His account was received with some scepticism and with an incredulity which has persisted to this day, for, though his account has been transcribed on many occasions and has been used by many writers on primitive medicine or on the history of surgery, they have rarely done so without some direct or indirect expression of disbelief. Thus Sigerist (1951) says 'this is very startling indeed' and 'a strange story indeed, almost too good to be true'.

The Caesarean Section in Bunyoro in 1879

Indeed it is a strange story. The year 1879 was only two years after Lister had moved to London to spread his gospel of antisepsis. Caesarean section was then regarded in England as an operation of the greatest gravity only to be performed in the most desperate of circumstances (Young, 1944). Indeed some doubted if it was ever justified. Aseptic surgery was unborn.

Felkin remarks that Uganda (presumably Bunyoro) is the only country that he knew of in Central Africa where caesarean section was performed in the hope of saving mother and child. In other areas, as he implies, the mother's life was sacrificed for the child. He was not permitted to examine the woman, indeed he only entered the hut as the operation was starting. The patient was a healthy-looking primipara of about twenty years of age and she lay on an inclined bed, the head of which rested against the side of the hut. She was half intoxicated with banana wine, was quite naked and was tied down to the bed by bands of bark cloth over the thorax and thighs. Her ankles were held by a man who is sketched as squatting on his heels, while another man stood on her right side steadying the abdomen. When Felkin entered the hut the surgeon was standing on her left side holding the knife aloft and muttering an incantation. He then washed his hands and the patient's abdomen first with banana wine and then water. The surgeon gave a shrill cry, re-echoed by the crowd outside, and made a quick cut upwards from just above the pubis to just below the umbilicus severing the whole abdominal wall and uterus so that amniotic fluid escaped. Some bleeding points in the abdominal wall were touched with red hot irons.

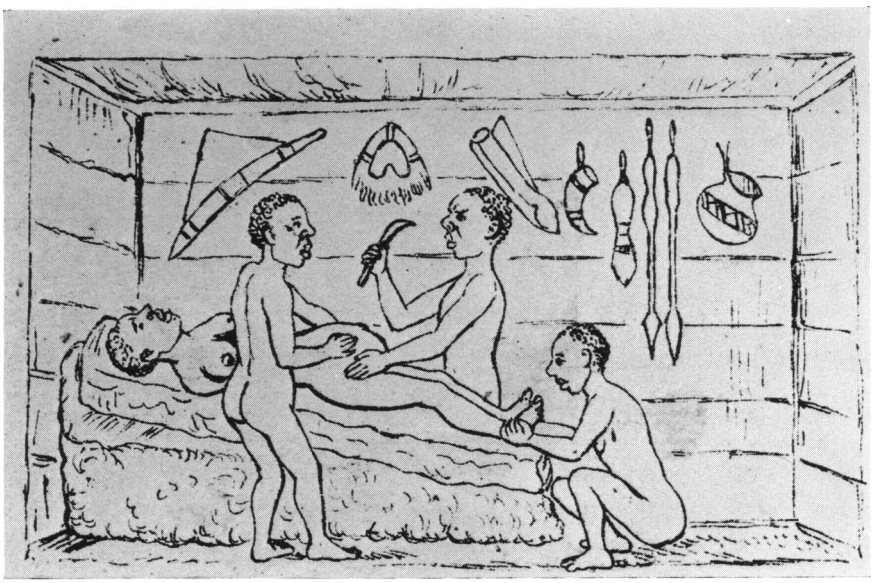


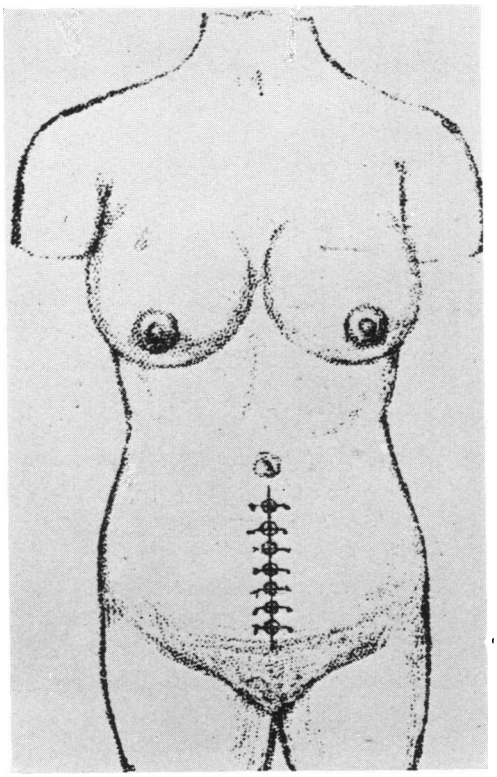
Fig. 1
Illustration from Dr. R. W. Felkin's description of the Caesarian section as published in the *Edinburgh Medical Journal*, 1884.

Fig. 2

The knife used in the operation of Caesarian section, 1879. This knife was presented by Dr. R. W. Felkin to the late Sir Henry Wellcome and is now in the Wellcome Historical Medical Museum.

Fig. 3

Illustration from Dr. R. W. Felkin's description of the Caesarian section, 1879, which was published in the *Edinburgh Medical Journal*, 1884, xxix, 922–30.



The surgeon completed the uterine incision, the assistant helping by holding up the sides of abdominal wall with his hand and hooking two fingers into the uterus. The child was removed, and the cord cut and the child was handed to an assistant. The operator then dropped his knife and squeezed the uterus with both hands, and he then dilated the cervix uterus from inside with his fingers. He cleaned the clots and the placenta from the uterus while his assistant was, with no great success, trying to prevent the intestines escaping from the wound. The red hot irons were used to seal off some other bleeding points but Felkin noted specifically that they were used sparingly. The uterus was squeezed till it contracted but was not sutured. A porous grass mat was now tightly secured over the wound and, the restraining hands being removed, the woman was turned over to the edge of the bed and then over the arm of the assistant so that any fluid in the abdominal cavity could drain away. She was put back, the mat removed, and the peritoneal edges were held together and secured, together with the wound edges, by seven well-polished iron spikes which, after insertion, were tied together with skin. The patient, hitherto quiet, uttered a cry as the spikes were inserted. A paste of pulped roots was plastered over the wound, covered with a banana leaf and finally a bandage of cloth was tightly applied thus completing the operation.

Felkin was able to observe the progress of mother and child for eleven days. The child had sustained a small cut on the shoulder which was dressed and was healed after four days. The fact that it was presumably a breech presentation may have been the indication for performing the operation. The mother's temperature rose on one occasion only, the uterine discharge was healthy but the milk supply was scanty. On the third day the wound was dressed and one of the spikes pulled out, on the fifth day three were removed, the remainder on the sixth day. A fresh dressing was applied each time and a little pus was squeezed out. Felkin could not continue his observations owing to his departure.

Status of Felkin's Report

It should be noted that this account of the caesarean section was not the main feature of Felkin's paper, and forms only a small part of it, being indeed almost incidental. No stress was laid on its remarkable features or on its importance in throwing light on the development of primitive surgery, and he went on immediately to discuss the methods of expelling the placenta used on the East Coast of Africa. Felkin never withdrew his account, never retracted or modified it, and permitted its translation and publication in Germany. His account was much quoted during his lifetime. There is nothing in Felkin's career to suggest that he was a hoaxer and in view of his religious outlook it is difficult to believe that he was not telling the truth as he saw it. His careful description, his sketches made at the time, and his acquiring the surgeon's knife, rule out hallucinations or delirium, indeed he was in good health at the time. To suggest 'hashish or trade gin' is impossible, in view of his life, his work and his writings. His description must be accepted as accurate, as accurate as his other writings on Africa.

Commentary on the Operation

The whole conduct of the operation as Felkin has described it suggests a skilled, long-practised surgical team at work conducting a well-tried and familiar operation with smooth efficiency and unhurried skill. It is this that has so impressed itself on all commentators on Felkin's narrative and which has, in part, made them so dubious. Lister's team in London could hardly have performed with greater smoothness. The leader of the team was helped all through by assistants who seemed familiar with their roles. The after treatment followed a clear routine. Moreover, there is clearly shown, even if only in a rudimentary form, an astonishingly advanced conception of surgical technique. There is the use of banana wine, not merely for its stupefying anaesthetic properties, but for washing not only the patient's abdomen but the surgeon's hands. This at a time when there were, it was said, some surgeons in Europe who only washed their hands after the operation! For there is no reason to suppose that banana wine, its alcohol content being up to 7 per cent (or up to 40 per cent if distilled) was not a reasonably efficient cleansing agent under these local conditions. Indeed all through Felkin's narrative can be seen an extraordinary efficient use of convenient local materials, the banana wine, the bark cloth restraining bands, the red hot irons (applied sparingly), the well-polished iron spikes, the porous grass mat, the bark cloth string, the root paste and banana leaf. Equally interesting is the absence of any attempt to suture the uterus, perhaps experience had shown that this was unwise. There would seem to be an appreciation of antiseptic surgery and perhaps even a prevision of aseptic surgery. Were the description of this operation an invention of Felkin's brain he must have had the gifts of a Defoe in his sense of atmosphere and the use of local materials. His other writings do not suggest that this was so.

Yet in all his narrative it is the smooth, well-practised efficiency of the surgeon and his assistants that is most difficult for the sceptics to accept. Felkin had not encountered elsewhere in Africa anything like this; his descriptions of labour in other tribes makes this clear. Yet if his account is to be accepted then this evidence of long experience must equally be accepted. Much of the reluctance to accept Felkin's story lies in the fact that so far little other evidence has been produced to show any unusual level of competence of the Banyoro medical men in other fields of medicine. Felkin (1884) and Roscoe (1923) were strongly critical of certain aspects of their activity. They cupped with an ignorance of human anatomy which was thought shocking, they spent much time in indecent dances and their approach to illness was said to be entirely supernatural. It has, therefore, been difficult, at first sight, to reconcile the high level of experience and competence in the performance of a caesarean section disclosed in Felkin's account, with his and Roscoe's scathing remarks on the ignorance and incompetence of Bunyoro medicine men.

Yet Felkin in a later book (1895) does hint that he knew of other evidence of a high level of medical competence amongst the Banyoro in their practice of inoculation.

Other Evidence on Banyoro Medicine

Variolation against smallpox was certainly practised but this was a widespread feature of African medicine. Roscoe (1923) suggested that it had been recently introduced to Bunyoro from the Bari tribe. This would seem, for several reasons, to be unlikely and certainly there appears little evidence to show that this tribe had any high level of medical skill. But there is indisputable evidence that the Banyoro practised protective infantile inoculation against another disease and were in much odium for doing so.

In the early years of this century the Uganda administration was much perturbed about the high incidence of syphilis in Uganda and Colonel Lambkin, the well-known British venereologist of the day, was called in to investigate and advise. He found syphilis to be unduly common (Lambkin, 1908) and in searching for an explanation of what he considered an explosive outbreak of the disease, he discovered that, in certain parts of Uganda, healthy children were deliberately inoculated with the syphilitic 'virus' from affected persons, the reason given for this being that syphilis so communicated in infancy would protect that individual from the disease in adult life. The practice was well-known to his African informants, to the Government administrative and medical officers, and to the missionaries (like Roscoe) who had preached strongly against it. All condemned it thoroughly and all united in condemning Bunyoro, for the custom was centred there, was most widely accepted and carried on quite openly. Hoima, their then capital, was regarded as the worst centre of this practice. Its custom was specifically denied in Buganda and the blame laid fairly and squarely on Bunyoro. In the light of the views held at the time by Lambkin and by the Uganda Administration, the practice was deplorable and deserving of condemnation. There are, however, other ways of looking at it. As has been pointed out elsewhere (Davies, 1957) there are strong reasons for the belief that the disease which was rife in Bunyoro at that time was neither yaws nor venereal syphilis, but a form of endemic syphilis. If this is the case, it induces a different view of this system of infantile inoculation, a practice which, incidentally, continued at least into the nineteen-thirties. There is good evidence to show that the contraction of the disease in infancy would prevent the adult getting the disease in later life, that the course of the infection would be milder in the child, and that transmission is effective in the majority of cases. This procedure, therefore, was not only of value to the adult in preventing his getting the disease but was of great value to the State in that his ability as a fighting man would not be impaired or destroyed by a very prevalent, painful and crippling disease. This was, however, only achieved at the cost of inflicting on the children an unpleasantly offensive and unsightly disease, which can only have added appreciably to the high infant death rate. There must have been powerful sanctions operating against a ready acceptance of this custom, indeed it was widely accepted only in Bunyoro.

However this procedure is viewed it argues an unusual attitude to a medical problem. None of the writers on this subject suggest that this custom had any special religious or sacrificial basis. Indeed it is specifically stated that it was

carried out for purely medical reasons. Thus 'a practice exists of deliberately inoculating infants with the syphilitic virus to prevent their getting the disease again' (Lambkin, 1908), and 'inoculating infants . . . to prevent a repetition of the disease in grown-up life'. Both Europeans, Government officers and missionaries alike, as well as Africans, testified to the open and widespread nature of this procedure.

The existence of this custom in Bunyoro suggest that experience had convinced some powerful adherents of its value. Whether imposed from above or accepted generally without coercion, the fact that it was widely accepted by the Banyoro is noteworthy. It differs from variolation for smallpox, a disease notorious as a slayer of children, as from inoculation against snake bite, a purely personal problem, in that it must have needed for its introduction both the capacity to take a long-term view, a capacity to observe over a period of many years, and an appreciation of the importance of the disease to the community. Whether imposed by autocratism from above or developed by common acceptance, the fact that Banyoro mothers would continue to expose their children to this ordeal for what might appear such a trivial gain is remarkable. Even if the idea was not developed in Bunyoro, and Felkin (1895) hints that at least in East Africa the Banyoro were the only people to practise this inoculation, the fact that it was so widely accepted in that country again argues an unusual attitude to medicine.

Medical Research in Old Bunyoro

Both in the case of preventive inoculation against syphilis and in the caesarean section with its meticulous technique we seem to see the evidence of analytic minds at work capable of observing over long periods and possibly capable of experimenting. That this was so is supported by the testimony contained in a report available in the Uganda Government archives at Entebbe (Grant, 1902).

In 1902 when the ravages of sleeping sickness were causing concern in all quarters the Government made enquiries everywhere as to possible means of cure. It came to notice that, in the affected regions of Busoga, there was an itinerant medical man, a Munyoro named Yangoma with an established reputation for curing sleeping sickness. The senior administrative officer in Busoga, Mr. W. Grant, Collector of Jinja, was requested to seek out Yangoma to enquire into his methods of treatment. This Grant did and reported as follows:

> from information gleaned from an Nyoro named Yangoma, there is reason to believe and conclude that the above disease [Sleeping Sickness, J.N.P.D.] in the Uganda Protectorate was first known and recognized in Bunyoro. It was rife in the country in 1886 and 1887. After many deaths had occurred Kabarega, the late King of Bunyoro, deputed Yangoma to make experiments in the interest of science, or more probably from selfish motives, being possibly in fear of contracting the disease himself, and gave Yangoma full powers to deal with any cases which might assist him in his researches. After a sojourn in various parts, Yangoma was eventually successful in procuring a cure . . .

The report goes on to explain how, after travelling about and treating cases by various methods, Yangoma and a woman together devised a concoction of roots which seemed to cure the disease. These were put to a trial in sleeping sickness cases by Yangoma under the observation of Dr. A. P. Hodges, but unfortunately they were ineffective. In retrospect it would appear that the Bunyoro outbreak was one of plague and that Yangoma was able to cure cases during the decrescent phase when natural recoveries are more common. However that may be, and allowing for the language difficulties and the translation of a medicine man's story into English by an administrative officer, the incident is still very interesting. Even if we impute, in the fashion of the times, the worst of motives to Kabarega, and why should anyone not wish to avoid getting a severe and often lethal disease, it is the calmly scientific way of going about things which is so striking. Even if we assume that Kabarega still had tried all supernatural means of staying the plague, by magical means, by smelling out of witches, by sacrifice, it remains that when he turned to Yangoma as a medical man, he called for experiments. The State in fact, called on its medical men for research much as the British Cabinet might turn to the Medical Research Council.

The Status of Bunyoro Medicine

There exist then three items of evidence concerning the medical knowledge of the Kingdom of Bunyoro all of which concur in suggesting a remarkable degree of medical experience and practice and an attitude to disease quite extraordinary in a preliterate people, all independent of each other and now brought together for the first time. The items are the record of the skilfully performed Caesarean section witnessed by Felkin (1884), the existence of protective inoculation against a form of endemic syphilis, and a record of instructions given to a native medicine man to carry out experiments on patients to devise a cure for a serious and often fatal epidemic disease. All are centred in Bunyoro and the tribe responsible was as cut off, up till one hundred years ago, from the rest of the world as it is possible to imagine. Moreover, these practices were restricted to this area, and in one case were strongly disavowed by neighbouring tribes. It is difficult to see any way in which they could have percolated to Bunyoro. The Egyptians did not practise caesarean section, nor did the Arabs. While the operation was described in the old Indian records it is not clear if it was ever performed for the mother's sake. These ideas could scarcely have come from Europe, and even if they were thought to have been introduced, who could have been responsible? The evidence we have suggests long-established practices, such as would not be the sort of thing introduced by the early explorers and Arab traders.

In the entire absence of any evidence that the ideas behind these practices were introduced, it can only be concluded that they were indigenous products of the native medical genius of Bunyoro. They are thus worthy of consideration by any student of the history of scientific ideas. Moreover, they developed in an illiterate society. It is tragic that our knowledge of Bunyoro medicine is so

meagre and conveyed so largely by hostile and unsympathetic observers. Even now it is possibly not too late to recapture some of the evidence, for the knowledge that caesarean sections were carried out, as were other operations, is widespread in Bunyoro today.

It is evident from what is on record that magical and purely rational medical procedures were carried out in the same environment at the same time, possibly by the same practitioners. More probably, however, there were two separate groups of medical practitioners, the largest composed of both men and women who were exponents of magical and supernatural medicine, backed up by some knowledge of herbal medicines. It was probably this group which came most in contact with the travelling missionaries and administrators, and whose ignorance of anatomy and crudeness of procedure produced such general condemnation. The other group of practitioners, doubtless very much fewer in number, were confined to men only, and were no doubt trained by a long and rigorous period of apprenticeship of which we get a glimpse in Felkin's narrative, for the surgeon was helped by two assistants, both with obvious experience in assisting their chief and on different levels of seniority, for while one only held the ankles and assisted in turning the patient over, the other played a prominent role in the operation. It can be guessed that apprenticeship would be prolonged in a preliterate society where records of past experience could only be carried in the memories of the surgeons. The background to this system is quite obscure, we only see the system in action in a single well-recorded glimpse, but clearly the Bunyoro surgeons had from unknown beginnings groped their way to a surprisingly high level of achievement, and not in one field only, for Johnston (1902) speaks of Uganda surgeons punching holes in the chest until the air passed freely through for the treatment of lung inflammations and pleurisy. Even Roscoe (1921) in other respects so critical, pays a tribute to the level of 'surgical skill which had reached a high standard', trephining was carried out and the bones of depressed fractures were elevated. Horrible war wounds, even penetrating abdominal and chest wounds were treated with success, even when this involved quite heroic surgery. A remarkable case is recorded by Talbot (1912) from Nigeria, in which protruding bowel was replaced and the skin sown over a small calabash to keep it in place. The patient made a full recovery to the extent of labouring on the roads. Roscoe records the use in Uganda of a gourd shell to retain the bowels in open abdominal wounds, just as Talbot's surgeon used a whole small calabash. Harley (1941) records other examples.

But there is a big gap between the crude surgery of war wounds and the smooth unhurried working of the surgical team that Felkin saw in action. Roscoe suggests that such skill was only achieved at the cost of countless lives in reaching this proficiency. No doubt this was true and it could equally be said of Western Europe. Of greater importance is his suggestion that the surgeons had gained this experience through being called upon to perform the mutilations which are a feature of preliterate society and which Roscoe records were 'performed in anger by the kings or chiefs upon followers or slaves for trivial

offences'. Often, as Roscoe says, the surgeons were responsible for performing these as well as for tending to the sufferers afterwards. It may well be that in this way they groped their way towards their attempted aseptic surgery and learnt by experience the tricks of their surgical craftsmanship, their sparing use of the hot irons, their avoidance of uterine sutures.

Their achievements stand so clearly apart from the developing knowledge of modern Western medicine that they tend to be ignored. One thing is certain, the knowledge could not have been introduced from outside and could only have been developed in the hard school of experience by observation and experiment. For if Yangoma was directed to experiment on patients to find the cure for an epidemic disease it is probable that many years before in old Bunyoro the medicine men were told to find out what to do for women unable to deliver themselves, or to discover how the effects of endemic syphilis on the fighting men of the tribe could be mitigated. It is fascinating to speculate what might have happened in Bunyoro had the European world not blundered in in 1860, for clearly there, in the heart of Africa, traditionally the dark continent of witchcraft and superstition, some Banyoro had crossed that Rubicon that divides the magical world from that governed by experimental science.

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