Practices and Beliefs of the Traditional Dinka Healer in Relation to Provision of Modern Medical and Veterinary Services for the Southern Sudan

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AN ADVISORY GROUP on development of primary health care programs for the southern Sudan (Lolik et al. 1976) recommended that "understanding between traditional healers and [official] health personnel [should be achieved] through regular discussions" and suggested that traditional healers might be enlisted as grassroots cooperators in community health programs. This suggestion is consistent with the growing interest of the World Health Organization, as well as of Third World governments in Africa and elsewhere, in increased communications and cooperation between traditional healers and practitioners of "Western" medicine. To these ends, a WHO Regional Expert Committee on Traditional Medicine in Africa was convened in 1976 (WHO 1976), alternative approaches to African traditional medicine have been advocated by individual scholars (Dunlop 1975; Nchinda 1976) and at least one training program for traditional healers has been organized in Ghana preliminary to their incorporation within primary health care efforts (Warren and Tregoning 1979). Recommendations for cooperation may be premature or even dangerous, however, where the beliefs and practices of the indigenous healers in question are not reasonably well understood. While some quite remarkable medical knowledge and practices were recorded by early European colonists for certain East African pastoralists like the Masai (Merker 1910; Roles 1967), very little has been written on these subjects about the numerous Nilotic or cattle-culture peoples of the southern Sudan.

A similar information lack about traditional veterinary beliefs and practices has even more immediate implications, for animal health efforts already reach down to the local cattle camp level throughout pastoral areas of the southern Sudan. Traditional and modern veterinary medicine, therefore, are even now very much in contact throughout this whole region and can be expected to become more so, since it is largely on lands grazed by these numerous transhumant peoples, and partially on their considerable though underutilized wealth in cattle, that various nationally and internationally inspired food development plans for the region are being based. Some seldom considered aspects of such plans have been noted elsewhere (Schwabe 1978b).

Few, if any, past commentators upon Nilotic or cattle-culture healing practices and beliefs have been medically qualified. Among nonmedical observers, Titherington (1927) was quick to conclude that the Rek subtribe of the Dinka "are completely without medical knowledge" for cattle or people, though he partially contradicted himself by indicating practices such as wounding treatment, abscess surgery, and bone-setting. Richards (1927) mentioned magico-exorcistic treatment of diseases among the Boma subtribe, and Lienhardt (1951) discussed witchcraft among Dinka generally. For the Nuer, Jackson (1923) stated "he seems to have but little knowledge of how to treat his animals if they become sick nor has he any medicines for them," but added that the Jeki Nuer do observe a very strict quarantine whenever rinderpest of cattle is diagnosed among them. Observations on the husbandry and diseases of Nuer cattle were recorded by Evans-Fritchard (1937), but he mentioned very little of their veterinary practices. Buxton (1973) dealt in some detail with exorcism and other forms of faith healing among the Mandari and listed a number of plants that are believed by them to possess medical properties, but only in passing did she refer to practical arts like bone-setting.

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Because of interests in food and health aspects of development in the Sudan, Schwabe took advantage of an opportunity during the rainy season of 1979 to investigate traditional medical beliefs and practices among the Agar, a Dinka sub-tribe who occupy a territory near Rumbek in Lakes Province of the Sudan. The two million cattle-culture Dinka who roam over an immense area of the Sudan’s Southern Region are its most numerous and important people.

This paper is based mainly upon taped interviews with four traditional healers, a prominent priest (bany bith), one cattle camp chief (bany wul) and several other important cattle owners of the Amothnhom clan of the Agar Dinka. Amothnhom refers to a bull with very large horns, Agar to a bull with very large widespread horns. The clan’s leaders estimate it numbers about six hundred persons and ten thousand cattle, which, by Dinka standards, is cattle-poor. For initial interviews, a set of predesigned questions provided a basis for consistent querying of all interviewees. Subsequent tapping sessions pursued points of particular interest or sought confirmation, elaboration, or refutation of information given by all interviewees. Special attention was paid to all unusually perceptive responses to assure they had not originated from non-Dinka sources. All interviewees were unschooled and illiterate; none spoke English and most spoke no more than a few words of the southern Sudanese Arabic patois. All four healers reacted positively to a respectful attitude of collegial inquiry on the part of Schwabe. Interviews were supplemented by personal observations and notes made in the cattle camps at the time or during a previous visit by Schwabe to Dinkaland in late 1961 and early 1962, and all findings were discussed with two prominent Western-educated Dinka.

Dinka Healers

There are four more or less distinct classes of healers or “doctors” among the Agar Dinka, each of whom practices both on animals and people. The class whose activities are most directly related to the purposes of this study are atet, a word in Dinka that means an “expert” or “specialist.” Rope makers, for example, are a type of atet. A particularly valued group of atet are men skilled in the manual arts of wound and abscess surgery, bonesetting, obstetrics, and castration, the latter two for animals only. Most atet practice on cattle, goats, and people, though one of the four we interviewed restricted his practice solely to cattle. The range and excellence of their manual skills also vary. Knowledge of the anatomy, physiology, and infectious diseases of cattle possessed by the atet we interviewed was extensive, though not much more so than that of the cattle camp chief and other important Agar cattle owners we queried. It is chiefly their manual surgical and obstetrical skills, therefore, that make medical atet unique and create the demand for their services.

Other forms of medical-veterinary practices Agar Dinka employ are exorcism, magic, and use of various “medicines.” Practitioners of these arts are the tiet, who is an itinerant exorcist with other functions in the traditional Dinka religion; the ran cau, a witch doctor (often a woman) who attempts to counteract the curses of witches; and the medicine man or ran wal (Malou Ater 1976:25). Certain women are also recognized as being particularly skilled in human obstetrics. In recent years, most Dinka have also recognized the value of governmental veterinary services, especially in the area of rinderpest vaccination, and to a considerably lesser extent, the value of the government’s human health services.

Though a medical atet is usually trained by observing and helping his father or uncle, his is not an elective office as are those of the priest and cattle camp chief, and his individual reputation and standing in the community rest entirely, therefore, on the extent of his own practical skills and his success in the exercise of them. In contrast, the tiet, who may sincerely believe in his religiously based art, often is opposed by bany bith (Malou Ater 1976) and was considered by some of the Dinka we queried as a mercenary charlatan. Nevertheless, the tiet’s services remain much in demand. Ran wal probably possess some efficacious medicines and their nature and properties need to be studied, though an opportunity to do this did not present itself to us.

The sharpness of this categorization of Dinka healers into four classes is blurred somewhat because, in rare instances, medical atet are also tiet (Titherington 1927) and some medical atet use at least a few medicines in their practices (see below). Also, certain individuals appear to combine some of the functions of a ran wal, ran cau, and tiet; for example Richards (1927) referred to a tiet wal. Clearly, these distinctions are not absolutely rigid ones.

The Medical Atet

Skillful medical atet (whom we will henceforth simply call atet) are often wealthy men who may be called from long distances from other clans. Conversely, the reputations of unsuccessful atet, such as those who have injured nerves, muscles, or tendons during abscess surgery, spread rapidly and they soon lose recognition as atet. The atet’s pay is almost always in livestock and is related to his success and the value of the animal, or wealth of the person, treated. The often stated belief that African cattle-culture peoples are interested solely in cattle numbers with disregard for cattle quality is false in the case of the Agar Dinka (Schwabe 1981) and this is reflected in the atet’s fees for treating them. For example, Agar recognize five distinct value classes of cows. Most highly valued and never parted with voluntarily, even to secure a bride, are special “sacred cows” dedicated to a god or to spirits of departed ancestors. Only slightly less valued are other cows producing enough milk to feed several people besides supplying the calf, that are of good conformation, bright and active (i.e., good runners and swimmers, the forerunners in reaching water or fleeing from raiders) and that are of lengthy, known lineages of such animals. An atet will be paid a great deal to save one of these classes of cows. Valued next are cows with useful milk-producing and calf-producing abilities but of uncertain lineage (i.e., bull mating not observed or animal purchased), or otherwise inferior to cows of the first and second classes. Much farther down the value scale are cows that sometimes give birth even though their calves may die before weaning, but that may be milked nonetheless (with milk “let-down” stimulated by a foster calf or a dummy made from the skin of its own calf). The lowest value is assigned to barren cows which are traded if possible or sacrificed (in which case the sacrifice is still considered superior in spiritual value to that of a steer or even an entire bull).
Wound, Abscess, and Similar Surgery

One of the three most important areas of the atet’s practice on cattle and people is wound surgery, which he performs quite effectively. Wounds, caused frequently by goring or by fighting with spears, are washed, then sutured with the strong tail hairs of the giraffe or softer tail hairs of cattle using iron needles fashioned by blacksmiths. Lienhardt (1961) has stated that, traditionally, the Dinka were dependent on blacksmiths in other tribes, particularly Jur Luo, but according to present-day Agar, they now have some blacksmiths of their own. Accessible puncture or tear wounds of the bovine rumen also are sutured, but in cases of intestinal wounds or liver rupture, atet say the animal or person will die anyway and therefore surgery is not attempted. Rents in large blood vessels may be sutured with bovine tail hairs, the bleeding being controlled first by tourniquets and pressure. Cautery with a hot iron is not employed by atet to control bleeding or for other purposes, although some of them are aware that some non-Dinka healers treat with a red-hot spear.

Wounds in general are dressed with sterile cattle dung ashes (arop) and, in the case of fresh wounds, with cow’s urine (keth). (Other urine is called lac.) Wounds caused by hyena bites or septic wounds are debrided surgically usually by scraping with a knife or other sharp-edged object and dressed with boiled keth cemin, stale cow urine that has been kept two to three days (this latter is used also to curdle milk for human consumption). These dressings are said to promote healing and repell myiasis-causing flies and presence of allantoin in cow’s urine suggests that there may be some merit in the former claim.

Much of the demand for atet is to lance abscesses and drain or express the pus, which Agar Dinka regard as harmful. These surgical wounds then are cleaned and usually are not sutured. Some atet will only attempt to drain subcutaneous or other relatively superficial abscesses, knowing that incising deep swellings, as of the leg of the cow, can cause temporary or permanent nerve, muscle, or tendon damage and lameness. Anatomical knowledge varies and some atet will attempt to repair surgical damage done by others.

Swollen joints or other areas of edema may be similarly treated, although some atet said they would first try certain oral plant preparations. Likewise, bloat in cattle is sometimes successfully relieved either by a pounded root preparation called alet ciec administered orally, or by rumen trocarization with a bith or fishing spear. Constipation in both species is treated with plant preparations that are said to be efficacious and fast acting.

Venesection, Castration, and Horn Surgery

One of the few areas of systemic therapy within the province of atet is venesection, an ancient and widespread method of therapy discarded by Western medicine only comparatively recently. In the case of cattle it is usually the jugular vein that is opened, although the tail or nose of a calf also may be cut. Jugular venesection employs a tourniquet and usually a knife with a depth guard. Chronic headache in humans is treated by bleeding induced in the nose by a sharp object or venesection at the temples. Venesection is to let out the “bad” (dark) blood believed to cause the illness being treated. It is also done for cows to “aid conception.” (Agar Dinka without other food may bleed steers for blood which is cooked before it is eaten. This is not usual practice, however, and noncastrated bulls are never bled.)

Bulls (and rams) are often, but not necessarily, castrated at a fairly advanced age, probably in part to allow the conformation and characteristics of the animal to become evident before the decision is made. A castrated steer is called muor buoc, an entire bull then (men in general are likened to muor which are usually handsome animals greatly admired on that account; an unusually brave, strong or successful man may be called than, that is, “bull with testicles”). Dinka do not keep an excess of than, usually one per 10 to 40 cows. Stated reasons for the castration of others are for important esthetic and cultural reasons, to reduce fighting, for easier control, and to prevent indiscriminant or repeat breeding of cows in heat (the latter regarded as detrimental to pregnancy and accurate genealogies).

For castration, the bull is cast and tied, the testicle held securely in one hand and an incision made through the skin and tunic. The cord is severed by scraping with a knife edge in order to control bleeding. For the same purpose and “to repel flies,” warm cattle dung ashes are packed into the scrotal incisions.

Broken horns of cattle are amputated by a spear. A more interesting horn operation performed by atet is cosmetic surgery to produce the highly valued muor cien display bull with its right horn trained upward and backward and left horn downward and forward, a surgical practice followed in the Nile valley since pharaonic times and which will be considered in detail elsewhere, together with descriptions of its ancient portrayals which are as old as the fifth Egyptian Dynasty (Schwabe and Makuet Kuojok 1981).

Bonesetting

Limb fractures are said to be successfully treated in cattle and people and some atet enjoy particular reputations as bone-setters. The methods used are commonplace. “Greenstick” fractures are simply splinted with wooden or cane splints and securely bound. Simple fractures are reduced by manual traction and similarly treated. Wounds are cleaned and debrided in compound fractures and bone fragments removed in comminuted fractures. Some atet, however, will replace a fragmented bone with a cut piece of calf or giraffe bone and successes with such bone grafts were reported to us. Treatment of fractured skull in man consists of incision, removal of bone fragments, wound cleaning, and suturing of the skin.

Obstetrics

Perhaps the atet’s most valuable and most valued job is as bovine obstetrician. Although he is usually a comparative healer of cattle and people otherwise, human obstetrics is regarded as strictly a woman’s province. Even in cases where traditional midwives are unsuccessful in delivering a baby, and the death of either mother or fetus is likely, atet interviewed stated they would never offer advice or assist (as one said, “I don’t look in the woman’s vagina”).
The only bovine obstetrical functions performed by ordinary Agar Dinka cattle owners are (1) in cases of mild dystocia, usually of first calf heifers, in which the front feet and nose are normally presented through the vulva, slight manual traction may be exerted on the forelimbs; and (2) some owners will also perform a minor episiotomy with a spear in similar cases. For anything more difficult or for any abnormal presentation, an atet is called.

For retained forelimbs or head, he repels the fetus and manually corrects the presentation. For breech presentations, the fetus is rotated within the uterus. Episiotomy is very commonly performed. Obstetrical cords, used in the Nile valley and elsewhere in the Middle East since ancient times (Schwabe 1978b frontispiece) were used for treatment of dystocias by only one of the four atet interviewed, despite the fact that the Dinka braided cowhide tethering cord, with a well-fashioned noose at its peg end, appears well suited for obstetrical use. Perhaps there is undue fear of injuring the calf. The atet who used cords inserted the noose end of the cord into the vagina in the palm of his hand and slipped it over the foot of the fetus. This was repeated for the other limb with another cord and sometimes a third for the lower jaw. The atet appears to be as manually skilled in such procedures as is the modern veterinarian.

Dead fetuses are delivered by embryotomy, in this case always with such an obstetrical cord. The embryotomy knife is said to be made by the blacksmith and to fit into the palm of the hand so as to avoid cutting the uterus. When we asked to see one, it was not available although all interviewees queried (atet and non-atet alike) substantiated its description and use. For embryotomy, the atet first incises the skin free around the ankle of the forelimb and attaches a cord to the ankle, the scapula is freed, and the limb minus its skin pulled out. This procedure is repeated for the other limb with another cord and sometimes a third for the lower jaw. The atet appears to be as manually skilled in such procedures as is the modern veterinarian.

Caesarean section is not performed on living cows but, if a cow dies while trying to calf and uterine exploration reveals a live calf, it is delivered through a flank incision.

A retained placenta is regarded as harmful and the maternal and fetal cotyledons are carefully separated manually by the atet, a practice of many present-day veterinarians. For treatment of prolapsed uterus, the organ is washed and replaced manually, attempting to seat it with the closed fist in its normal position. The vagina then is closed with retention sutures allowing only a large enough opening to permit urination, again reasonable procedures.

Prior to service of a cow in heat, the atet may be asked to ascertain whether its cervix is open. If not, he will force it open with his fingers or perform a cervicotomy, in which latter case venesection of the cow may also be done (venesection being regarded by them as useful for treatment of difficult breeders).

Anatomical Knowledge

As might be expected, since sacrificed steers (and goat surrogates) are dissected and ritually distributed among a sacrificer's family and others, atet (and most other Agar Dinka males interviewed) were very familiar with the gross internal anatomy of ruminants. No effort was made to catalogue their anatomical knowledge completely but their nomenclature was considerably more detailed than one encounters among most Western butchers, though lacking some of the detail observed in Western scientific usage. Of the bones of the spine, for example, the atlas and axis are individually named, while the remaining cervical, the thoracic, the lumbar, the sacral, and the coccygeal vertebrae are each given collective names. Similarly, the ribs are divided into four named groups, from the anterior juil, lom wut, lom nar, and lom abiel, which correspond again to divisions of the sacrifice.

As an example of more detailed knowledge, the bovine heart was described reasonably well without benefit of an actual heart for demonstration, as consisting of four chambers, between which were "strings of flesh." There were said to be one large and several other entering vessels and three large exiting vessels, one running anteriorly then dorsally to the area of the spine, and the two others going to the lungs.

Beliefs about human internal anatomy appeared to be derived entirely by analogy from cattle (and other animals) with no interviewee professing personal acquaintance with the human viscera. Interviewees were queried at considerable length on this point and a few examples will make this source of their overall anatomical knowledge clear.

1. When asked whether there was any difference between the kidney of the goat and that of cattle other than size, all queried responded immediately that, while the surface of the goat kidney is smooth, that of cattle is divided into many sections. When asked if the human kidney was like the goat's or the bull's, no one knew.

2. The divisions of the digestive system of ruminants (and functions of the major portions) were well understood, including the process of regurgitation and the route of passage of feedstuffs through the four stomachs. However, in reply to questions about the human digestive system and why people did not eat grass, explanations given ranged from "man's dung (and blood) were corrupt" and "man could not regurgitate and rechew grass like cattle" to "man has only a single stomach." When the person who said the latter was asked how he knew people had a single stomach, the reply was that he assumed it was so because "the dog has a single stomach and rarely eats grass and then vomits it up completely and that man's dung (and blood), like the dog's, are corrupt and smelly." Asked then how he knew the dog had only a single stomach, he said he had once withdrawn and examined the entrails of a dead dog being eaten by a carrion-feeding bird. That is, interviewees either did not know about the parts of humans' digestive tract, or assumed certain things by analogies or comparisons with animals on which observations had actually been made.

3. When shown a picture of the skeleton of a bull, no interviewee had any difficulty in giving the Dinka name for each bone. When we then asked that they identify each of the bones of the bull's hind leg with their own leg bones, no problem was reached down to the level of the hock. One person expressed surprise in realizing for the first time that people's heel bones and the bull's hock bones are the same and that a person therefore walks "on the middle of his leg." However, no one could relate the bones of the human foot to the bones of the bull's limb below the hock joint.
Physiological Knowledge

Since considerable bovine anatomical knowledge was evident, much more time was spent querying the interviewees about bodily functions, and about bovine reproductive physiology and behavior in particular. While many of these functions were also assumed by them for people, Dinka physiological knowledge also appeared to be derived almost entirely from observations on sacrificial animals.

The wei or breath, which after death goes to Nhalic (God or “the above”), is thought incorrectly to originate in the heart and to pass from it via the pulmonary vessels to the lungs. In fact, breath and blood both have properties of wei and are closely related in Dinka thought. The lungs however are recognized as the organs of breathing per se. Since the calf in utero is alive, it is regarded as having wei and, in answer to our question, all interviewees assumed therefore that the fetus must breathe.

Blood is incorrectly but not irrationally believed to originate in the liver and to be contained wholly within the liver, spleen, heart, and vessels. The liver is thought to produce too much blood which is then removed through the vessels by pumping action of the heart. The spurring of blood from cut vessels is known to be due to successive contractions of the heart, and arterial (good) and venous (dirty) blood are differentiated. The externally palpable pulse is recognized and is known to represent the movement of blood in the vessels through the heart’s action.

Urine is said to originate in water drunk and food eaten and to come more immediately from blood that becomes “dirty.” One atet said the urine comes out of the blood in the kidneys and the bany wut independently identified this function of the kidneys. When the latter was asked how he knew that, he said, “Don’t you know when you cut the kidney of the sacrificed steer, you see a mixture of blood and urine?” As to how he knew it was urine, he said “When you roast the kidney on the fire, don’t you smell urine?” In reply to how he thought the urine came out of the blood, he said, most perceptively, “Do you know how we separate ground dura flour from the unground dura with a woven sieve? That is what happens to the blood in the kidney.” From the kidneys the urine is known to go to the bladder where it is held between micturations. While cow urine is considered useful for many purposes, including the curdling of milk for human consumption and to wash the face and hands, human urine is regarded as poisonous.

Milk is believed, incorrectly, but again not irrationally, to be derived directly from the good blood and to reach the cow’s udder via the milk veins.

Semen is said to arise in the brain and spinal cord and to pass thence into the testicles where it is stored, a belief held by the ancient Egyptians, as well as by the Greeks (Schwabe, Adams, and Hodge 1981). The penis of the sacrificed steer is sometimes worn as a belt by a male Dinka with backache (which is believed to result from too much or too little sexual activity), and this is related to the spine as the source of sperm. The melted “fat” from the steer’s roasted penis is drunk for the same reason. The related idea prevalent elsewhere in Africa, and in ancient times in Egypt (Schwabe et al. 1981) that the sire provides the fetus’s brain, spinal cord, and other white parts and the dam provides the red parts, is not held by the Agar Dinka. Rather, all parts of the bovine fetus are believed to be derived equally from the bull and cow.

A female calf born twin to a male (a freemartin) is recognized by Dinka as being sterile. The explanation given for this is that such an animal when dissected lacks a uterus, a correct observation. Calf cows (both female) are believed to more commonly produce twins themselves than do other cows, and physical characteristics of cows and bulls, as well as milk production of female offspring, are also correctly regarded as heritable from both bull and cow.

It was suggested from further pursuit of these and similar Dinka beliefs about physiology that they, like those of internal anatomy, are derived largely from sacrificial dissections of cattle and goats.

Knowledge about Diseases

Ateet diagnose and also attempt to treat some infectious and other diseases of cattle (and, sometimes, of people). However, other cattle owners will do the same and such treatments are not a primary function of most Agar medical atet. Bovine diseases recognized by most of the interviewees and which have names in the Dinka language include anthrax (matak), contagious bovine pleuropneumonia (abut puonu), hemorrhagic septicaemia (anguet), blackleg (daat or macou), trypanosomiasis (liei), rinderpest (maketh or sweet), tuberculosis (ayiel or adheng ace butu), foot-and-mouth disease (jong liep), infectious conjunctivitis (nyin tok), fascioliasis (name not recorded), scabies (jony), mange (atok bok), calfoof diarrhea (alakic), and mastitis (about nyou). Other cattle conditions described include red worms in the stomach that “bleed” when cut, tapeworms in the intestines, and hydatid cysts (which Agar Dinka dissect out and do not eat). Ticks (acak) are thought to cause cattle disease (jong acak), even when removed, if the head of the tick remains in the skin. Therefore ticks are carefully picked from cattle and tick birds which do the same are valued. Common human diseases like measles, smallpox, and whooping cough and their symptoms also are recognized though no detailed cataloging of this knowledge was attempted by us.

To indicate more specifically the kinds of things about cattle diseases individual Dinka men believe, their descriptions of the diagnostic signs and the gross pathology of some diseases will be given. These few examples are not composites of the observations of the several interviewees, but were selected randomly from their answers to three questions: (1) how do you recognize a given disease in a sick cow or bull; (2) what do you see when an animal dies of this disease and you open it; and (3) what other beliefs do you have about this disease? The answers given by different individuals, as well as the range of diseases recognized, did not differ remarkably.

Anthrax. (1) First one sees a swollen throat, muzzle, and face, and bleeding from the nose and anus. Death is sudden. (2) There is a very enlarged spleen that is black when cut. Subcutaneous hemorrhages occur throughout and dark, clotted blood is found on most organs. (The above are all accurate observations.) (3) The Dinka name for anthrax is derived from tak meaning “spleen.” (An alternative name, jong akoon, was said to imply disease of sudden death, although akoon literally means elephant.) Cattle anthrax is believed to be contracted...
from dead antelopes and buffaloes, which is quite possible. Anthrax is not regarded as communicable to humans; therefore the dead carcase is dissected, cooked and eaten, as are almost all cattle that die. (This belief about communicability is, of course, incorrect. Interestingly, Masai, who do recognize intrahost transmission of anthrax, realize that human infection and death are not invariable and also will eat such meat [Schwabe 1969].)

**Contagious Bovine Pleuropneumonia.** (1) The affected animal stands apart from the herd, seeks the shade, and faces the wind with its head lowered. It craves water, grunts, and has a short, dry cough. The characteristic cough associated with this disease *(awuok)* is distinguished from other coughing *(rot)*. (2) Lungs are inflamed, discolored, and attached to the ribs. The pleural cavity smells putrid. (These observations are all accurate and astute.) (3) The Dinka name means “swelling of the chest.” Owners of cattle with the awuok cough are ostracized and forced to flee the cattle camp with their animals in order that their animals’ breath will not make the other cattle sick.

**Rinderpest.** (1) The animal has severe diarrhea and will not eat. Tears flow from the eyes, there are spots on the gums and lower lips and the mouth is red. A high proportion of animals die. (2) The gall bladder is much enlarged and the mucosae of the intestines are necrotic. (While these descriptions are incomplete, they are accurate and include some of the most characteristic signs and lesions.) (3) The Dinka word maketh means “gall bladder.” The disease is correctly believed to be a necrotic disease *(awuok)*. Owners of cattle with rinderpest are ostracized and forced to flee the cattle camp with their animals in order that their animals’ person will not make the other cattle sick.

**Foot-and-Mouth Disease.** (1) There are spots then blisters on the tongue, lips, and gums and cracks between the digits. The animal pants. (2) Cattle do not die of foot-and-mouth disease (these observations are correct). (3) The Dinka name means “tongue disease.”

**Tuberculosis.** (1) The superficial lymph nodes are enlarged, particularly in the jowls and limbs. (2) Lymph nodes are enlarged, especially those in the mesenteries. They often contain pus. (These observations are incomplete, as might be expected in the case of such a chronic and variable disease, but are accurate as far as they go.) (3) The second Dinka name given previously means “swollen glands.” The affected parts or the whole carcase are put out for the hyenas to eat (which may indicate belief it is communicable to humans or just too unappetizing to eat).

**Fascioliasis.** (1) The hair coat of the thorax is rough; mucosae and sclerae are pale. The animal coughs. (Fascioliasis is difficult to recognize clinically, but an “unthrifty” coat is usual and anemia is evident in heavy infections). (2) Worms are found in the “vessels” of the liver. (3) It is believed that fascioliasis is associated with rain and dirty water and that the worms “crawl up on grass.” (These latter associations are scientifically acceptable as far as they go.)

In response to similar questions about diseases of humans, we found no evidence that Dinka atet or other Dinka males possess any knowledge or opinions about the internal pathological anatomy of people.

**Epidemiological Knowledge**

The Dinka recognize that some cattle diseases spread from animal to animal or may be acquired through contact with fomites. Sick animals are often quarantined but will not be killed because it is always hoped they will recover. As an example of the reasoning process by which specific causal epidemiological associations are made that sometimes lead to rational preventive measures, consider the case of *arop miir*.

Arop is cattle dung ash which possesses a variety of poorly recorded sacred properties. Miir is giraffe. Arop miir is regarded as a means to combat or prevent sudden death of cattle believed to be caused by a *jok* (bad spirit) of the giraffe, for example, rinderpest. The ritual procedure involves tying up a package of cattle dung ashes and hanging them with some cow fat on a horn-shaped branch of one of the cut tree shrines *(ghoro)* that Dinka erect about the cattle camp and on which the sacrificed steers’ horns, tethering cords, and other things also may be hung.

Belief in the harmfulness of the giraffe jok is said to have been derived as follows: When Dinka were out with their cattle and saw kites soaring about in close circles, then dropping to the ground, they would run with their animals to the spot post-haste because they knew they would find a dead giraffe or other game. The dead giraffe was quickly cut up, a fire made, and the meat cooked and eaten at the site. During this activity the cattle came around and smelled the blood of the giraffe and touched it with their muzzles, then usually made frightened noises and ran away. When the cattle and men returned to the cattle camp in the evening these cattle touched muzzles with all the others. After several days a bad disease would come causing the death of many of the cattle. After such a series of events had occurred several times, the men began to think more about the dead giraffe. It was not being eaten by hyenas. It was not being eaten by lions. How then had it died—from a jok? The men then took sacred arop and tied it on the branch and rubbed some on the back of a steer, saying to it: “If you are the jok of the giraffe that dies alone, leave our cattle.” Arop was rubbed over the other cattle and people too and the steer addressed was sacrificed. Through its wei (blood and breath) their message reached Nhialic, or the jok. This ritual of arop miir, repeated before leaving for new pastures, provides a reminder to the Agar Dinka and a warning for a rational preventive measure, namely, if one finds a giraffe that has died alone and no cause of death such as a lion is obvious, skirt that animal widely and do not allow the cattle near it and do not eat it. That is now a cattle rule among those Dinka who believe in arop miir.

**A Possible Role for Medical Atet in the Sudanese Medical and Veterinary Services**

As a result of this study we concluded that, while the Agar medical atet performs mostly a range of useful manual skills on animals and people, based on considerable practical knowledge of bovine anatomy and physiology, he may also
employ certain “medicines” for treatment of some of the considerable number of cattle diseases he is able to diagnose. Some of his information and explanatory surmises may be incorrect in major or minor parts, but they appear mostly to be derived through a rational, empirical process. Though illiterate and thus wholly dependent for his knowledge on his own observations plus orally communicated information he finds reasonable or can personally confirm, the Agar atet, if the four we interviewed were typical, is an intelligent, perceptive man willing to acknowledge the limits of his knowledge and skills. For example, two atet, and the bany wut, freely stated that traditional Dinka treatments for most plagues of cattle usually were not effective. These characteristics of the atet suggest he merits the special interest of physicians and veterinarians concerned with the grassroots delivery of health services to people and livestock in the Dinka areas of the southern Sudan. Therefore, Schwabe has pursued in some detail elsewhere a proposal for a new approach to delivery of veterinary services in the southern Sudan in which at least selected medical atet might be effectively integrated as field auxiliaries (Schwabe 1980).

The medical atet’s usefulness may extend similarly to the human health services and he could possibly provide a really primary level of health care to a large unsettled population of pastoralists over an immense area of the southern Sudan. The considerable present effectiveness of medical atet and their own personal prestige could be enhanced considerably by their partial integration within the official veterinary and medical services. Appropriately designed educational programs in the Dinka language, carried out mostly in the cattle camps and of short duration, could probably correct any serious misinformation individual atet possess and amplify things they only partially perceive. Concepts like asepsis could be usefully taught, as well as the uses of some basic drugs, especially for treatment of wounds and other common and easily diagnosed conditions. Such a training program might best begin with cattle, and if that were successful, it could be extended to people.

Not only might a wider range of therapeutic methods and skills than atet now possess be effectively channeled through them as a result of such a program, but suitably “trained atet” could provide a widespread and badly needed disease intelligence system, especially for animal diseases, over a large area of the southern Sudan. If need arose, he could be taught to collect stool, blood, and other specimens, and even prepare blood films and the like. The benefits realized through improved livestock disease intelligence could be sufficiently large as to permit modern epidemiological analysis and more rational design, performance, and evaluation of livestock disease control programs.

In contrast to conventionally recruited and educated veterinarians and physicians, and many of their assistants and technicians, the medical atet would not be educated out of his local environment or his already demonstrably useful niche in his community, but would continue to perform his established role, only more effectively. Any existing elements of competition and antagonism between atet and official veterinary medical or health services would be reduced through the atet’s cooptation into governmental programs. At the same time this would reduce any threats atet now feel from the governmental services.

Virtually no note has been taken thus far by authorities concerned with the difficult problem of rural health care among pastoralist peoples, that the differentiation between human and veterinary practice in some traditional medical systems may not be marked, and that associations of human with veterinary programs may yield economic, scientific, and acceptance benefits to both. Thus Buxton (1973) who studied spiritual healing among the Mandari neighbors of the Agar Dinka, suggested it is “ironic that it should be animals rather than humans who benefit most from modern preventive medicine, or even from any scientific medical treatment. Herders who have themselves never visited a government dressing station, still less a hospital bring their cattle for inoculation.” This is more ironic, perhaps, to Buxton than to an African cattle-culture pastoralist. But it is not the uniquely Nilotic phenomenon Buxton apparently believes, for human medical services have rarely reached out to rural people anywhere to the extent veterinary services customarily have (Schwabe 1969; WHO/FAO 1975).

It is of interest therefore that, while the primary health care planning document for the southern Sudan (Lolik et al. 1976) does include in its terms of reference the general suggestion that “ways of integrating Primary Health Care Services into other community development at community level [be found],” it fails to recommend development of this most obvious and relevant link between health services provided for people and those provided cattle. A cooperative program between the veterinary and human health services to make use of atet would possibly have much to recommend it to each, and could lead to other practical steps like the pooling of their virtually identical needs for laboratory diagnostic facilities, facilities that are now woefully inadequate in both the human and veterinary spheres. This step would be consistent with a recommendation by a WHO Expert Committee (1962) for worldwide medical-veterinary cooperation in the laboratory diagnostic area.

Appropriate development in health matters as in others is considerably more than applications of an appropriate technology. Rather, it is an imaginative building upon the indigenous, the valuable, and the valued in ways that will secure for a people the maximum benefits of the experiences of others with the least disruption of their culture and traditional economy. Deng (1972, 1979) has examined this overall question of “tradition and modernization” from the perspective of a Western-educated Dinka who cherishes that large fraction of the Dinka’s culture deemed worthy of preservation. In this study we have attempted to provide enough background data to suggest one way in which to proceed appropriately at the local level for the two important overlapping development areas of food and health among a difficult to reach pastoral people inhabiting a large portion of the Southern Region of the Sudan.

NOTES

1 Individuals interviewed were the healers (atet) Mou Cawul, Agany Malou, Makur Carek and Yang Majok, the clan’s priest (bany bith), Makuer Gol, one of its chiefs of cattle camps (bany wut), Mayom Agany, plus several other men of the clan.

2 There has been little consistency in rendering Dinka words into English. Most educated Dinka have been taught an alphabet based upon international phonetic characters, but those letters not found in written English have been variously transcribed. An English-Dinka,
Dinka-English dictionary (Nebel 1954) is very incomplete and is generally lacking in medical vocabulary. Therefore, the forms transcribed here are those of Kuojok, who is a trained veterinary auxiliary educated in Dinka and English, as amended by Dr. Francis Mading Deng, an authority on the Dinka generally, and the Reverend John Malou Ater, an Agar and student of the Dinka. Any language errors that may remain are regretted. As a general aid to the reader, c is pronounced in Dinka as English ch (e.g., Nihalic, “God”); the letter transcribed here as o includes the Dinka ā, pronounced as the a in paw (e.g., in the word gol, “homestead”); what is rendered here gh (e.g., ghoro, “shrine”) is a gutteral sound written y and, finally, the English ng, as in singing (e.g., Garang, a principal god) is written η.

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