My Student Elective

Along the White Nile

MATTHEW DRYDEN

Sudan is Africa's largest country, a rambling giant the size of Western Europe. It encompasses the sterile wastes of the Sahara in the north, stretching southwards into thorn scrub, woodland savannah, and finally tropical rain forest. Through all this flows the Nile, a line of communication in a land of few roads and a source of water that may yet make the Sudan "the bread basket of the Arab world." The word "Arab" is important, for the northerners tend to forget that the southern half of their country is neither Arab nor Muslim. There has always been a rift between the northern Arabs and the black Africans of the south. Some have blamed this on the British policy of divide and rule, but the antagonism has a much deeper root, forged over centuries of Arab slaving expeditions in the south, and since independence made worse by years of sporadic civil war.

My elective in southern Sudan was something of a roving one. I had travelled through Egypt from Cairo to Aswan, crossed Lake Nasser to Wadi Halfa on the ferry, and from there taken the train to Khartoum at the confluence of the Blue and White Niles. South of here the steamer laboured up the White Nile to Juba, the capital of the south and the town where I was to begin my elective. The country gradually changed from desert scrub into open plains of yellow grass grazed by herds of zebu cattle. Huge wedges of migrating duck fed in the marshy pools and European waders minced alongside the indigenous herons, egrets, and storks. A greenshank rising in alarm at the straffing tactics of a marsh harrier was more reminiscent of a Norfolk fen than the upper reaches of the Nile. The steamer then entered the Sudd, a mosquito infested swamp of papyrus that stretched on every side further than the eye could see. Once free from the monotony of the swamp, the last stretch of the journey passed through the territory of the Dinka tribe, whose lean, ash daubed warriors leant on their spears to watch our passing with arrogant indifference. "These people are worse than animals. They love their cows more than their children," said one Arab passenger, embarrassed by the nakedness of these people. The small town of Juba is on the west bank of a bend in the river about 1200 miles upstream from Khartoum and only a few miles south of Gondokoro where Samuel Baker met Speke and Grant in 1863 at the end of their long walk from Zanzibar in search of the source of the Nile.

Juba bristles with foreign aid organisations, spending Western money to improve the local standard of living. Among these offices is the government hospital, a cluster of crowded buildings in a dishevelled compound. Here, too, is Africa's newest medical school, at this time closed down for three months. The hospital staff work under difficult conditions, for supplies are short and sometimes non-existent.

Transport of supplies from Khartoum is not easy and drugs

get lost, some finding their way on to the black market sales. The hospital's operating theatre was equipped for general anaesthesia, but no gas cylinders had been received for months. Tetanus was occasionally a problem postoperatively, and infections generally dominated the pattern of disease, as they do in many Third World countries. On the paediatric ward, for example, malaria, polio, and tuberculosis along with malnutrition accounted for most admissions. On the medical ward were the victims of an outbreak of scalp ulcers, for which no cause had been found.

Problem of alcoholism

I left Juba to visit a primary care programme in Tonje being carried out by the Across Trust, a Christian group that began as an amalgamation of various missionary societies working in southern Sudan at the end of the civil war. It was a two and a half day journey in a jeep along a pot holed and corrugated dirt road. At the village of Mvolo we stayed with an overworked trust doctor who was battling for the health of an apathetic population, 100% infected with onchocerciasis. It was perhaps not surprising, considering the prevalence of disease, that alcoholism was a major problem here and we heard a story, possibly apocryphal, of an attempt to set up a still to produce alcoholic fuel to power modified vehicles. The project floundered because all the fuel produced went to power the still operators rather than the vehicles.

At Tonje the primary care programme was in its early stages. The programme entailed not only direct medical aid but also efforts to improve nutrition, hygiene, water sanitation, and education. An agricultural project was under way to provide simple but intelligent means of improving the food crop. Indian mango trees, which come into fruition later than the native trees,

Shilluk village on the White Nile.

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Dinka tribesmen.

were being grown to prolong the season of this important source of nutrition. Nitrogen fixing trees were being planted among the staple crops of sorghum to avoid the expense of imported fertiliser. In surrounding villages the water supply had been improved by the installation of "donkey" pumps. The Across Trust staffs a small clinic in the village of Thiat to the north of Tonje. This clinic, run by two expatriate nurses and several locally trained staff, is the only medical service for an area populated by a quarter of a million people. In the rainy season queues of up to 500 patients a morning are found outside the small hut and some of these may have walked 100 miles to get there. Now in the dry season numbers were down to a mere 150.

The people of this area were Dinka, tall, lean, and fiercely proud cattle herders. At this time of the dry season the parapuols, or young warriors, dressed only in a bead belt, their top notch of hair stained orange with cow's urine and adorned with an ostrich plume, and armed with a cluster of spears, a fighting stick, and a hide shield were out with their herds in distant pastures. They had made temporary cattle camps near water and each evening they herded in their cattle for protection. Cow dung fires were lit and the parapuols covered their bodies with ash as defence against the biting insects attendant on the herds. Later in the year the parapuols will return to their villages, sleek and fat from their diet of milk, to court the girl of their choice. Dinka economy and indeed their whole lives revolve around their cattle. Each boy has his personal ox after whom he is named, and without cattle to pay a bride price he could never marry a Dinka girl. Last year it was drier than usual and pasture was sparse. Fighting broke out between neighbouring clans of Dinka over grazing rights and many warriors were killed. A tribal court presided over the incident and only recently came to a decision, ruling an exchange of over 4000 cattle between the warring clans as payment for the deaths.

Onchocerciasis research project

From Tonje I travelled the short distance to Wau to spend the main part of my elective on a World Health Organisation onchocerciasis research project. Like Tonje, Wau is on the bank of a tributary of the White Nile, and was the site of Fort Desaix, a staging post for the French colonising expedition under Captain Marchand in 1898. This small group of Frenchmen were attempting to extend French territories in central Africa and they caused a grave diplomatic incident that almost precipitated a European war when they encountered Kitchener's forces at Feshoda on the Nile.

Onchocerciasis is a major cause of morbidity and blindness in the southern Sudan and until recently has not received the same attention as the disease has in West Africa where the population is denser. The clinical features of this disease are caused

by the microfilariae of the nematode worm, *Onchocerca volvulus*, transmitted by the bite of the black fly, *Simulium damnosum*. The overall aim of this WHO project is to determine whether local vector control will be effective in decreasing the level of transmission, thus preventing the development of ocular symptoms, by simple and cheap means, or whether, because of vector reinvasion, only a major commitment on West African lines will be sufficient. Control of the disease would enable repopulation of the fertile river edges, although to do this traditional fears must be overcome, for the river edges were where the Arab slavers took their greatest toll.

To accomplish this, the project has surveyed vector breeding sites and centres of human population by travel in an inflatable boat, Land-Rover, and by walking with the aid of NASA satellite photographs. The identification of the vector species involved in transmission has not been easy. This is not possible from adult female black fly morphology but only by chromosome studies of larvae and there are over 30 cytotaxonomically distinct species. This work will be followed by localised larval control at the breeding sites using an organophosphate, abate. Research in West Africa suggests that abate does not greatly damage the ecosystem, slightly reducing the biomass but not the number of species.

The project employs several local fly recorders and a cow, a goat, and a small but noisy flock of chickens. Each morning we would travel with the menagerie out to various river sites where the fly recorders would sit all day with their legs exposed collecting the black fly that landed to feed on them or the livestock. At the end of the day the collection was returned to the laboratory where the gravidity of the female flies and the life stage of any parasites present could be determined.

Across the road from the laboratory was a small clinic where diagnostic procedures and treatment were carried out. In those patients with a light infection there were few signs, although most had generalised pruritis and often secondary skin infection from scratching. A long standing infection may result in loss of skin elasticity and characteristically a hanging groin. Eye damage is associated with heavy infection. The diagnostic tests meant bilateral skin snips from the temples and hips. The snips were placed in saline for an hour and then examined under the microscope for the presence of microfilariae. A thick blood film was made for each patient to look for other filarial and malarial parasites. A slit lamp was available but its use was only possible on those rare occasions when the town generator showed a spark of life and then we might be awed by the strange spectacle of microfilariae swimming in the anterior chamber of a heavily infected patient's eye.

For those patients whose investigations were positive, treatment was implemented immediately. Nodulectomy, recommended in some centres, was not performed here, and no supplies of the microfilaricide, Diethylcarbamazine, had been received for several months. The treatment available was suramin, which kills the adult worms and decreases the microfilarial load. Suramin, however, is a very toxic drug, producing side effects not dissimilar from the disease it is treating; pruritis and optic nerve damage and fatalities from exfoliative dermatitis and renal complications have been reported. The drug was initially given at a low dose and any side effects carefully monitored where patient compliance allowed. Because of the toxicity of this drug, it must be administered under medical supervision and is of no use in the mass eradication of the disease.

Dangers of guerillas

It was while working on this project that 13 Arab merchants were murdered by Anya-Nya guerilla fighters in Aweil to the north of Wau. Tension ran high for a few days and we were isolated for a while when all civil transport from Khartoum to Wau was stopped. The army set to work rounding up anyone suspected of affiliation with the Anya-Nya. Among these was a Sudanese ophthalmologist who was working on the onchocercia-

sis project. We heard some disturbing rumours from the gaol, but 10 days later the ophthalmologist reappeared looking quite fit and free of any charge. He said that he had been well looked after in prison for he was related to most of the gaolers.

Well outside Wau was a smart German leprosy hospital of scrupulously clean red roofed buildings surrounded by the tropical colour of bourganvillia, flame trees, and the fragrant blossom of frangipani. The hospital houses 50 inpatients and its clinics served many more outpatients, displaying the whole spectrum of the disease from pure lepromatous to pure tuberculous cases, and all stages from the earliest innocuous looking macules to the disease of many years standing with severe mutilation. A farm next to the hospital compound provided work for some of the patients. Cobblers made orthopaedic shoes to protect anaesthetic feet and there were advisers to instruct patients in the limitations and dangers of anaesthetic limbs and to aid rehabilitation. One of the oldest patients was employed as the gate keeper. Dressed in a green uniform and sporting a topee he would salute with a fingerless hand and teased me mercilessly for stalling my motorcycle in front of the gate.

At Wau the river waters were becoming very low. An old and sickly hippo was stranded in one of the pools. As the water level dropped the hippo's back became exposed and the children took

to stoning the creature until a game warden put it out of its misery. The river trips were becoming less productive for fly catching as the dry season progressed, but the bird population swelled with migrants and the area provided a fascinating interface between the familiar pale arctic species and the more exotic residents of the tropical forest and woodland savannah. In a comparatively small area over 180 species were seen.

The steamer made good time on the return journey from Juba to Khartoum, leaving me with several days free before my return flight. The steps where General Gordon was killed are hidden behind the guarded walls of the palace, but over the river in Omdurman I could visit the Khalifa's house and the Mahdi's tomb and on a Friday afternoon watch some dervishes whirl themselves into a dizzy trance. On the bank of the Blue Nile lies the wreck of Gordon's paddlesteamer, *Bordein*, and Kitchener's gunboat, *Melik*, is now the sailing club house. My hosts took me for picnics on the Blue Nile, supposedly free of bilharzia. Two early morning sandgrouse shoots on the White Nile gave me a final view of that great river, to whose waters, once drunk, it is said, one must return. I hope the saying is true.

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New Drugs

Antidepressants

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The classification of depression presents many problems, but most psychiatrists group depressions into psychotic and neurotic (or endogenous and reactive). Depressive symptoms may also be secondary to other psychiatric illness such as schizophrenia or organic syndromes and may be a side effect of drugs. Antidepressant treatment should usually be considered only after detailed consideration of the nature of the symptoms and causes. Not all patients with depressive symptoms require drugs, and in some individuals other forms of treatment may be important, such as electroconvulsive therapy, psychotherapy, and, possibly, cognitive therapy and behaviour therapy.

Tricyclic antidepressant drugs

Imipramine was the original tricyclic antidepressant and has been used for over 20 years. Most trials have shown it to be superior to placebo, resulting in improvement in about two thirds of cases. Amitriptyline, introduced subsequently, was shown to be as effective but more sedative.

The disadvantages of the original tricyclic antidepressants that have become apparent over the years include inefficacy in some cases of depression, slow onset of action, and various side effects including the commonly occurring anticholinergic side effects as well as danger when taken in overdose.

A succession of newer tricyclic antidepressants and similar drugs has been introduced subsequently, often with claims of speedier action and fewer side effects. They have different degrees of sedative effect but generally seem to have a similar range of activity to each other and to the older drugs. The results of most trials support their claims to be effective antidepressants, although many of the studies have been comparisons with established agents. In patients with less severe depression an apparently favourable result from a trial against another antidepressant may just indicate that both drugs have a sedative effect or that spontaneous remissions occur. Small numbers make many trials difficult to interpret.

Newer tricyclic antidepressants include dothiepin, which has some sedative action and fewer anticholinergic side effects than amitriptyline. Dothiepin is an effective antidepressant and usually well tolerated. Clomipramine, on the other hand, has a particularly pronounced effect on the uptake of serotonin. This drug is not particularly sedative but anticholinergic side effects may sometimes be a problem. It has been used as an intravenous infusion, but there is no evidence that this has any specific advantages. It has been claimed that clomipramine may be particularly effective in treating obsessional neurosis, although this may be partly an effect on associated depressive symptoms.

Lofepamine (Gamanil) is a very recently introduced tricyclic

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