

## INSTITUTE OF CURRENT WORLD AFFAIRS

IMW-19  
Mwea Irrigation Scheme

Izaak Walton Inn  
Embu, Kenya  
May 18, 1962

Mr. Richard H. Nolte  
Institute of Current World Affairs  
366 Madison Avenue  
New York 17, New York

Dear Mr. Nolte:

Kenya's wealth lies in her land and in the crops produced on it. Agriculture accounts for roughly 85% of her national product and 90% of her exports. I have long wanted to look into this most important of Kenya's industries, and so several days ago we left on a trip to visit three major areas of African agriculture (Embu, Meru and Nyeri) and two major areas of European production (Nanyuki and Njoro). In a series of newsletters I plan to describe some of the recent developments within these areas.

We first went to Embu, the center of a district inhabited, appropriately, by the Embu, a tribe akin to the Kikuyu. The last thirty miles were murram (the local equivalent of dirt), bumpy but dry until we reached a spot ten miles from Embu where it disappeared into a quagmire which we judiciously by-passed through the bush. We were to come across many sections of road like this during our visit. For the Embu, however, who are too poor to own many cars, black cotton soil (the cause of this appalling mess) is a blessing, for it is this soil and this soil alone which is responsible for the success of a rice-growing irrigation project a few miles down the road which has had a sizable impact on the development of the district in spite of the small numbers taking part.

The Mwea Irrigation Project is essentially a settlement scheme, one of the several ways of reducing pressure on the land in Kenya's Central Province. Of course it also provides employment for the tenants who were largely unemployed as well as increases the rice production of Kenya. It now produces some two-thirds of the Kenya crop. The sole criterion for tenancy in the settlement was landlessness, and none had previous experience in rice cultivation. Nevertheless the average yield is four times higher than India's or Burma's.

The Mwea Plain is about twenty miles south-east of Embu below the slopes of Mount Kenya at an altitude of some 3,800 feet. Years ago a local agricultural officer noticed its tremendous irrigation potential, but it was not until 1951 that a small pilot scheme was started. At the time of the Mau Mau Emergency several detention camps with thousands of inmates were located at Mwea. In attempting to provide useful work for the detainees, it was decided to proceed immediately with the construction of the irrigation scheme even though the experimental work was in its infancy and very little was known about some important methods. In spite of this hasty start the Mwea scheme is the only one of three similar projects in Kenya which is not just breaking even but is actually making a profit, as it did last year for the first time. At present its full cost has been on the order of \$2 million.

The settlement is divided into two blocks, the Mwea (or Nguka) block and the Tebere block, of roughly 7,500 acres apiece. In them 5,000 acres have been developed in one-acre units for irrigated rice cultivation, all in black cotton soil. There is still room for further development (12,500 more acres in an enlarged Mwea block alone), but as usual it is being held up by lack of funds.

Water is provided by two rivers, the Thiba and Nyamindi, which rise on Mount Kenya whose extraordinarily high rainfall pretty much assures that they will continue to supply the amount of water needed. The project's major limiting factor is that the extremely fertile red soil which was expected to be ideal for the cultivation of rice was found to have a phenomenally high seepage rate. Irrigation is uneconomical under the circumstances, and considerable research is being undertaken to find how it can best be utilized. The less fertile black cotton soil with its high clay content holds the water well and has proved to be the project's savior.

There are now 1,246 tenants, each of whom has four one-acre plots. Each is given a free house in a nearby village (although responsible for its upkeep) as well as some extra land to grow a few vegetables on for his own use. On his four acres he is allowed to grow only rice and he must follow a strict set of rules regarding its cultivation. Although the land is Embu tribal land (but rarely cultivated), only 46% of the tenants are Embu and the rest are Kikuyu. When the project was first mooted, the Embu were furious that Kikuyu would get their land, and so an agreement was reached whereby any vacancies in the project after the initial allocations would be given to Embus. Thus their numbers will increase over the years.

Financially the project has been doing well as can be seen from the following table (in £):

	<u>1960</u>	<u>1961</u>
Recurrent expenditure	39,677	59,446
Non-recurrent expenditure	53,194	9,984
Total	92,871	69,430
Revenue	60,066	92,124
Difference	-32,805	+22,694

Revenue is earned from water rates, rotivating fees and charges for marketing, handling and administration. The drop in non-recurrent expenditure reflects the end of project development in 1960.

Crop statistics are as follows:

	<u>1960</u>	<u>1961</u>
Acreage cropped	3,281	4,958
Total yield (bags)	79,760	149,998
Mean yield (bags/acre)	24.31	30.25
Average income (shillings)	2,606/-	2,851/-

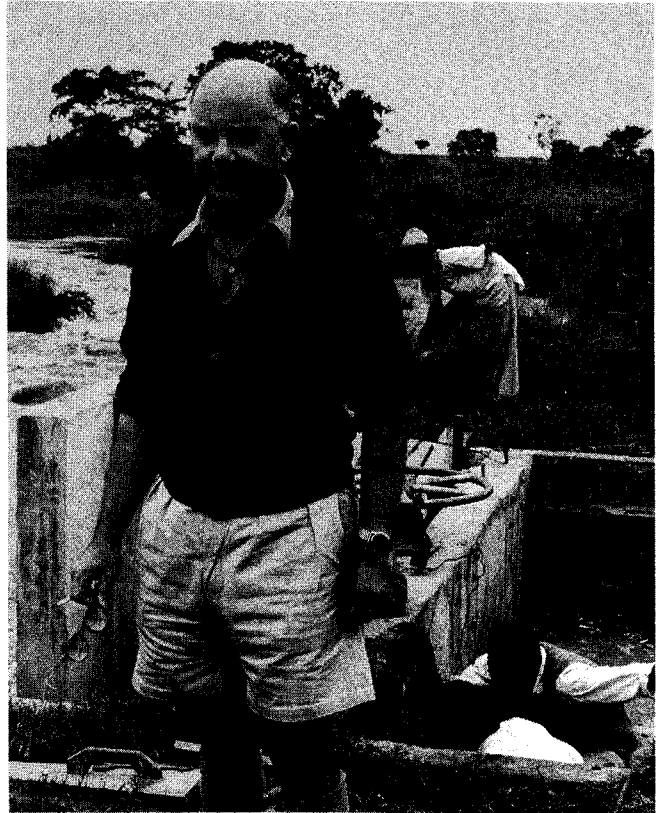
The increase in yield per acre has been almost 25% during this past year.

With these facts in mind we spent a day at the scheme talking with the acting manager, Jack Carver.

Mr. Carver in front of the Thiba waterworks.

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"Everything here is for the tenant and most of it is free. All he has to do is grow rice and that doesn't take much time---we estimate about three months out of the year. We do have a water rate though. For his four acres he pays £4 his first year, £20 his second year and £40 from his third year onwards. The rate is subsidized for the first two years to allow the tenant to settle down. We have also just introduced mechanized cultivation for which he pays 30 shillings an acre or £6 for all four. £46 (\$130) isn't bad for a year's rent when the tenant is provided with a house, tools, spraying services, fertilizer and seed. He's even paid a wage until he reaps his first crop.



"For all of this he has to produce about six bags of rice an acre. In fact last year's average was over 30 bags. What's left over is pure profit, £143 (about \$400) last year. He's even allowed to keep £23 (about \$65) worth of rice for home consumption which isn't included in the above figure."

A story is told of an old man who did everything he was told and got a harvest of 12 tons. When pay-day came he went off, in dazed astonishment, with a wad of bills amounting to £150, having never before handled more than 20 shillings in his life.

Carver continued, "Our greatest problem is maintaining standards, because if we don't we won't be able to sell our crop. We have rules covering all aspects of the irrigation scheme. Most similar schemes which have failed have done so through lack of discipline, and this isn't going to happen here. Each tenant is bound to obey us. Those who don't, get a warning letter and if they don't reform, they're fined. Repeating offenders are kicked out, as are those who abandon the land or are imprisoned for more than six months. On the whole tenant discipline isn't bad, although there are far too many offences dealing with waterways. Now we have a Tenant Liaison Council which gives full representation to every village in the scheme. It has an equal number of nominated and elected members, and it acts as a clearing house for local troubles and as a distribution channel for advice and information to the tenants. It has worked very well, especially by explaining to the tenants the provisions of the irrigation rules."



The rotivator in action.

Mr. Carver then took us to see the project itself. We drove for miles between empty plots since the last rice crop had just been harvested. Finally we came to one with a rotivator churning up the mud, in effect plowing it prior to planting.

"We rotivate them while they're under water so the mud will settle slowly and be more level. At first the tenants were sceptical of the whole operation, mainly because they didn't want to carry the portable bridges for the tractors, but now they are as enthusiastic as they can be. Altogether mechanical cultivation has greatly assisted the

timing of operations, and this in turn has given us a more rational use of water as well as improved discipline.

"When the rotivator finishes, the farmer can transplant the seedlings into his fields. We used to have communal nurseries until last year. We had to discontinue them, because no one took responsibility and everyone took more than his share. Now each farmer has his own nursery.

"We have been trying to get them to plant the seedlings closer together, because we think they'll be able to increase their yields perhaps by as much as 50%, but they just won't do it. They're living better now than ever before, and I think they're just too lazy to give any more effort.

"The crop is weeded, reaped and threshed by the tenants. Then we collect the paddy (unmilled but threshed rice) and bring it into the collecting centers at Mwea and Tebere where it is weighed, dried to 15% moisture, cleaned and packed in bags to a standard 160 pounds. The entire crop is then shipped off to the Central Province Marketing Board which sells it, pays us and then we pay the tenants after deducting our costs.

"Theoretically each tenant has to give us all his crop, save what he is allowed to keep for his own consumption. But much is sold on the black market, perhaps as much as a third of the entire crop.

"Luckily we're not bothered by many pests or diseases, agricultural or human. Occasionally we have an onslaught of quelea birds. They are small things that breed in huge numbers and then migrate in search of food. If you're on their route, it's just too bad. They

eat everything; they're far worse than locusts. Luckily we haven't had any for two years, but when we get them there are only two ways of destroying them: blasting and spraying. They roost in swamps where they are easy to find at dusk."

We talked with others about quelea birds. Blasting is not a very effective way of killing them, but spraying is very dangerous. Not only does the pilot have to fly his plane a few feet above the ground at dusk when visibility is poor, but the poison is said to be so powerful that if a few drops would splash on his arm, he'd be killed instantly. A local character, "Timber" Wood, flies these missions. Although he was an air ace during World War II and has many citations for bravery, most local people are convinced nothing he did then ever approached this.

The scheme also has a medical department which carries out anti-malarial and anti-bilharzial services. Bilharzia is a debilitating disease, akin to amoebic dysentery, carried by a water snail which penetrates human skin on contact. The snail can't survive in a fast moving stream, nor can it live in still water, but it seems to prefer slow moving water, as is found in rice paddies. It slowly destroys the liver, and in Mwea an outbreak could cause untold damage. So far neither has appeared.

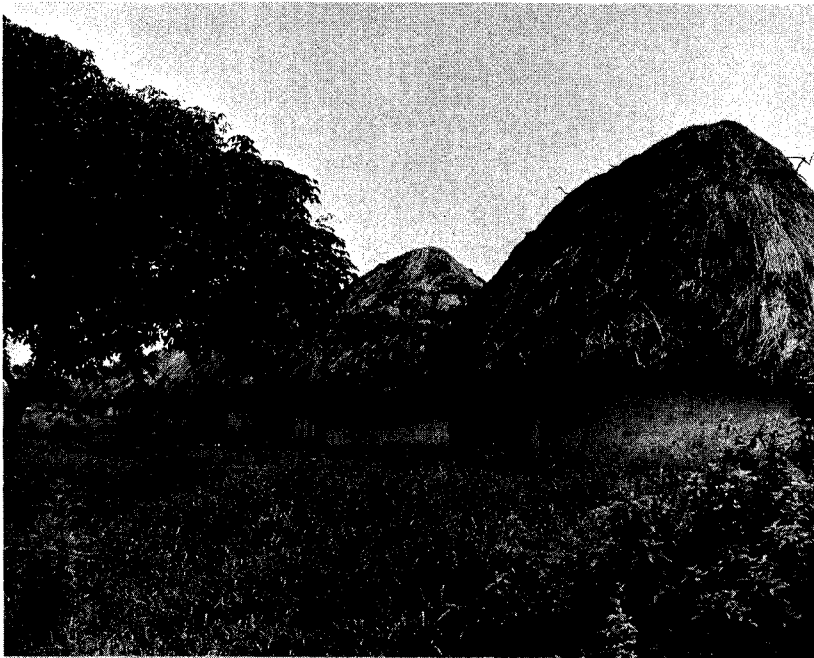
One of the most important aspects of the work at Mwea is research and experimentation. There is much fertile red soil for which no economic use has yet been found. The main problem is that overhead irrigation is too expensive for the low-value cash crops that have been successfully grown in the area. But research continues for higher priced crops.

"We are doing all sorts of things to try to increase productivity. We have proved the value of fertilizers, but we still haven't been able to get two crops off the land each year. At the beginning of the project we tried, but the crop planted before the long rains turned out to be a dud. All the heads were blind. In other words there wasn't any grain. During the short rains when the temperatures are higher we have no trouble.

### Rice



"This year we are again trying two crops,



A Mwea village

we've gotten several farmers to volunteer, and from the looks of their fields, they're not going to do badly at all."

The widespread Asian practice of growing fish in rice paddies and thereby getting a double harvest led us to enquire about this possibility.

"Unfortunately we haven't been able to do that here, although we did some experimenting on it a few years ago. Not only did the fish

have an unsatisfactory growth rate, but we found we were busy enough getting the growers to grow their rice properly. We didn't have the staff necessary, and the growers had their hands full anyway. The previous director was a fish enthusiast and pushed it, but it just didn't work."

We then went to one of the eighteen villages where the farmers live. Lines of houses with thatched roofs stood in neat rows, a sure indication they were planned by Europeans. Each village has a system of waterborne sanitation and most houses have aqua-privies. The villages have shops, community halls, and even houses for teachers.

"We don't have the vaguest idea what the population of the project is. We have 1,246 tenants, but although in theory each tenant and his family should have one house to themselves, in practice there are often three or more families in each house."

On our way back to Embu late that afternoon, we stopped in at Mucii wa Urata, Homestead of Friendship, the only social center at Mwea and jointly sponsored by the Friends Service Council and the Christian Council of Kenya. The Warden, Onesimus Wanjau, had just returned from a social work course in England.

"Mucii wa Urata was founded in 1958 to help people in the resettlement scheme develop community life. We serve the tenants as well as a few WaKamba who graze their cattle nearby. We have leadership training courses, youth clubs, a health clinic, literacy classes and a nursery school. We also help a few special hardship cases. People are interested in what we are doing, and we always have plenty of applicants for courses."

We walked around, saw a few children playing near an almost finished slide, met the cooks and inspected their spotless kitchen. In an unobtrusive way Mucii wa Urata accomplishes a lot.

The whole project is accomplishing a lot. It is one of the brightest spots in a country of which the Agriculture Department estimates that certainly no more than 10% of the African land is soundly farmed at the present time.

Sincerely yours,

A handwritten signature in black ink, reading "Ian Michael Wright". The signature is written in a cursive, flowing style with a large initial 'I'.

Ian Michael Wright