



I.I.A.A.

BUILDING A BETTER HEMISPHERE SERIES NO. 20

Of Tractors and Tortillas

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POINT 4 IN ACTION

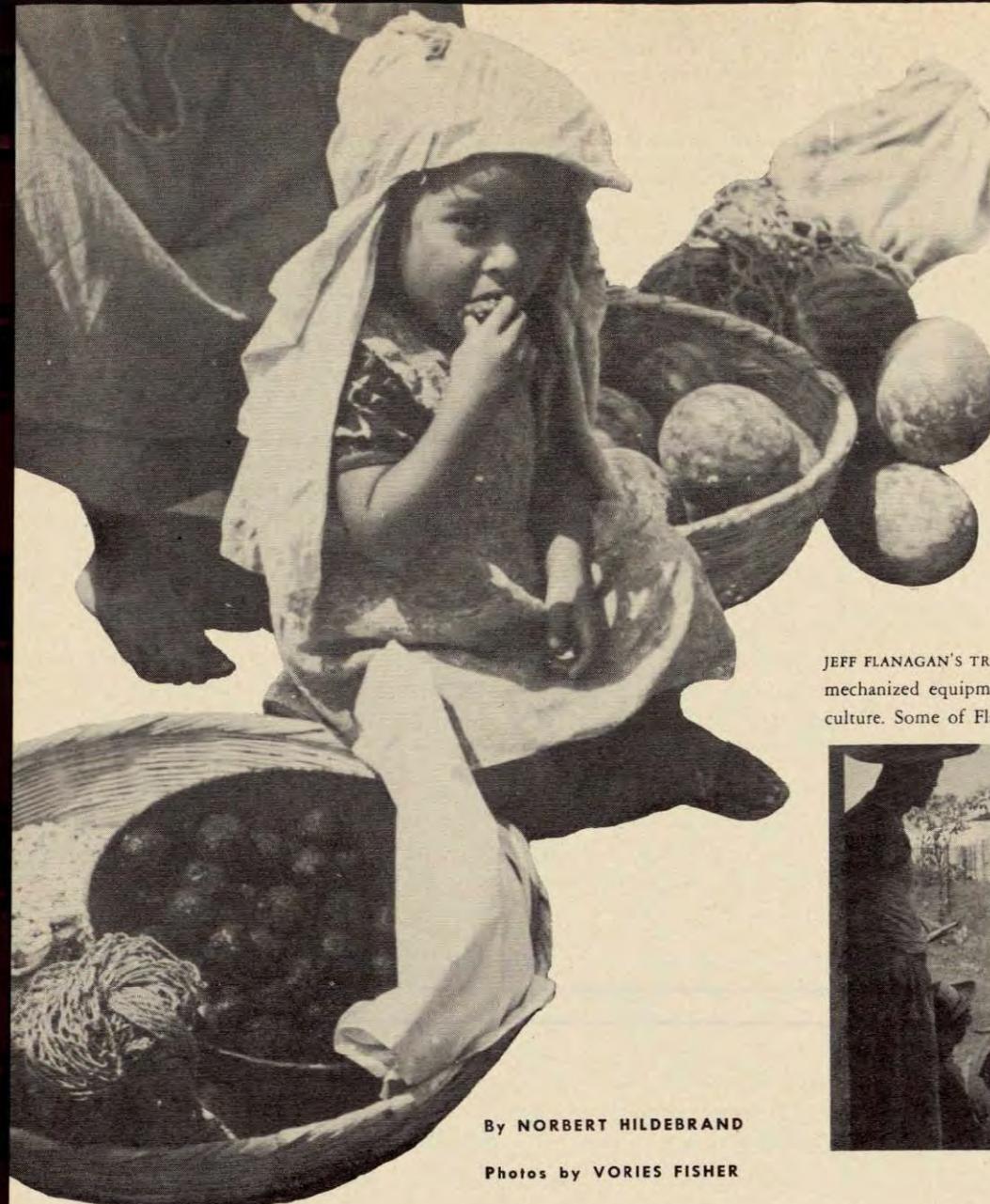
THE INSTITUTE OF INTER-AMERICAN AFFAIRS

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TECHNICAL COOPERATION ADMINISTRATION



Street market in San Salvador, El Salvador, where milling stones for grinding flour are still sold.



SALVADOREAN CHILD enjoys a snack while her mother "hawks" melons. Virtually all marketing is done by women, many of whom walk 30 miles to town, carrying baskets of farm produce on their heads.

JEFF FLANAGAN'S TRACTOR SCHOOL is helping to speed the day when mechanized equipment will assume a major role in Salvador's agriculture. Some of Flanagan's students had never even seen a tractor.



By NORBERT HILDEBRAND

Photos by VORIES FISHER

OF TRACTORS AND TORTILLAS

A recital of stirrings in El Salvador where people are going to have to eat less or produce more

THEY'RE LEARNING TO operate tractors in El Salvador today. And the ability to operate tractors is going to mean a lot to the babies who are now being born in this Central American country.

When the Spanish conquered El Salvador in 1525, along with most of Central America, they found the Indian inhabitants to be primarily farmers whose principal food crop, corn, was planted by pushing a pointed stick a few inches into the loose volcanic soil to make a hole into which the seed was dropped.

The Indians have virtually disappeared today, having been replaced by a mixture of Spanish-Indian termed "mestizo." But corn is still being planted with a pointed stick.

Despite the primitiveness of such agriculture, El Salvador, smallest and most densely populated of the Central American countries, has been able until now to produce enough corn for tortillas garnished with rice and beans to keep its two and a half million people subsisting on an average of around 2,000 calories a day.

The agricultural problem El Salvador faces today is not bare subsistence, which is what they've had for years. The problem is "existence" for a phenomenally growing population. At the current rate of increase, there will be three million corn-hungry people in the next 12 years, and by 1977 there will be four million. El Salvador is either going to have to eat less or produce more.

Topographically, El Salvador is a tropical land of mountains, hills and upland plains containing a rough assortment of 9,000

OF TRACTORS AND TORTILLAS

square miles, of which 5,000 are cultivable. Two parallel mountain ranges run lengthwise through the country from the border of Guatemala at one end to Honduras at the other. Cradled between is a high plateau region serrated by low mountain ranges whose denuded slopes and valleys are the cornfields which comprise the nation's tortilla basket.

The nation's principal agricultural product, also its chief export, is coffee, grown on the sides of the volcanoes which make up the southern mountain range.

Between the coastal coffee ranges and the Pacific lies a 10 to 15-mile-wide strip of hot, moist, lowland providing some of the best agricultural lands of the country. But the area is underutilized at present.

Economically, El Salvador is entirely geared to the production of coffee and its price on the world market. At present the national treasury rides high, along with the five percent of the people who control the coffee industry and split up the major share of the gross national product. The 90 percent of the people who are engaged in agriculture share nothing of the coffee profits, as most of them are engaged in producing the food for their own consumption. The remaining five percent of the population is made up of office workers, mostly governmental, and small shopkeepers and tradesmen. Aside from a little mining and only the beginnings of a textile industry, there is no real industry in

El Salvador, due to underdevelopment and a lack of power.

The problem of providing enough corn, beans and rice boils down to several basic factors: limited land resources; lack of proper irrigation; the growing specter of land loss due to erosion and harmful farming practices; and low crop yields.

Recognition of these factors led to the establishment of an agricultural experimental station at Santa Tecla in 1942, accomplished through an agreement between the Ministry of Agriculture of El Salvador and the United States Department of Agriculture. With the impetus made possible by the "Point Four Program," this agricultural experimental station has undertaken a teaching role in addition to its research work, with the government of El Salvador putting up \$9.00 for each \$1.00 invested in the salaries of American technicians provided by the United States. Under this small staff of Americans working alongside the Salvadoreans, the "Centro Nacional de Agronomia" has gone a long way toward solving production problems.

BUT OBSTACLES REMAIN: Corn is now being grown on much marginal and even submarginal land that should be put to reforestation before what little remains of the topsoil disappears into the Pacific ocean via the Lempa river, which virtually bisects El Salvador.

And people who insist on growing corn on 25% slopes are hard to dislodge, especially when all they have to eat is the corn that doesn't get washed out.

Water in El Salvador either does too much or too little. First it comes in concentrated doses during the rainy season, and the countryside not yet washed away turns lush and green. There is little run-off in the flat plateau areas; it simply sieves down through the bone-dry volcanic soil of the tortilla basket, and before the corn is knee-high, the water is beyond reach of its perspiring rootlets.

That's where Jeff Flanagan, an irrigation engineer from Pennsylvania with three years' agricultural service in South and Central America behind him, came into the picture. But before he could talk irrigation and erosion control, he found he had to start on page one of agriculture, *The Tractor*.

Before you can teach how to build simple earth check dams, bulldoze irrigation trenches and cut terraces which will allow water to come down in gentle, soil-preserving steps, farmers have to know how to run the tractor. There isn't much modern farm equipment in El Salvador, but enough to make a start—except that American tractors, as well as related farm equipment, don't talk Spanish. When a plug fouls up, or a gasket breaks, the tractor is through.

Fortunately Flanagan speaks Spanish fluently. So he's running a tractor school



WITH NAZARIO DEBACA supervising, a tractor student takes the wheel. Other students await their turns. At tractor school in San Andre, operators are being trained with the cooperation of Quinonea Hermonos Y Cia, IH distributor.



LEARNING HOW to take a tractor apart—and getting it back together again—are even more important to Salvadoreans than knowing how to operate it. Much American farm equipment lies idle there because of a lack of maintenance knowledge. Picture is beginning to change.



THIS IS AN OVERHEAD VIEW of San Salvador's fruit and vegetable market. Produce baskets line the sidewalks and gutters in tropical lavishment and filth. A housewife who can afford to purchase ingredients for vegetable soup would have to walk several blocks to get all of them collected.



AMERICAN TECHNICIANS working at the Centro are (left to right): Ralph E. Hansen, South Dakota; Floyd R. Olive, Arkansas; Nazario D. DeBaca, New Mexico; Jeff E. Flanagan, Pennsylvania; Allen Kinnison, Arizona, and E. William Ranck, Maryland.



BONE-DRY SOIL of the "tortilla basket" region is almost as fine as talcum powder after plowing, as above picture indicates. Although considerable water is needed before this volcanic "ash" begins to look and feel like earth, irrigation can double yields.

TRACTORS AND TORTILLAS

IN A MODEL FARM PROJECT, Salvadorean farm hands learn irrigation control under the direction of American engineer, Jeff Flanagan. Land was made available by Salvadorean government. Proper use of water turned it into lush acreage.



DEBACA INSPECTS TERRACES where young coffee bushes will be transplanted shortly. Bushes are placed in square holes about six to eight feet apart, alternated with rapidly growing shade trees to give the necessary protection to the coffee plant.

Typical HOME in the interior of EL SALVADOR



in the morning and teaching irrigation in the afternoon. Assisting him is Nazario DeBaca, formerly from New Mexico. De Baca's afternoon job is organizing a county agent program so that helpful information can be disseminated through the grass roots.

The tractor school, now in its first year, has been an immediate success. Boys come in from their fathers' farms or are sent in by a plantation owner to find out how to get the wheels to go 'round. Which is just where the school starts, with "This is a wheel."

The school lasts three months, with the student spending the first one on the ground (with both feet)—learning how the tractor operates, what makes it go, how to take it apart and, more important, how to get it back together again. After that he's ready to get into the saddle and learn how to use it as an all-around workhorse.

No fees are charged students, the government providing the equipment and costs of operation other than salaries of the Americans. The students feed and house themselves (just how is something of a mystery), and their number is limited currently to 12 to 15 in each term. Those who do not have prior commitments as tractor operators have jobs offered to them by the large farm owners long before they are ready to graduate.

Obviously, it will take some time before tractors assume a major role in Salvadorean

agriculture, but aside from the practical usage of such machinery, there's a psychological effect the tractor is also producing. For the tractor involves a different mental approach to agriculture. And the way a farmer thinks is mighty important when, for centuries, he's been using a pointed stick to plant corn. But he's changing his ideas now, slowly. And with each convert the program spreads a little further.

Like terracing. It took a year of cajoling to get one man sold on terracing. Finally, on a slope that had never produced anything but lizards, he agreed to try terracing, and put it in coffee. When the coffee bushes remained standing after the rains had ceased, he was convinced. Now he's a county agent himself and has gotten half a dozen of his neighbors sold on terracing. More important, it's not all going into coffee production.

The other Americans at the agricultural center are attacking other segments of the broad front of the problems of production. Some of these problems, like the volcanic soil composition being studied by Dr. Earle Matthews, formerly of Florida, are peculiar to El Salvador. Others are the same old problems American farmers have faced and conquered years ago. Every country has its own bugs, but Entomologist Paul Berry, of Missouri, claims that El Salvador has the world's greatest collection—that fly, creep or burrow—and all of them hungrier than the people.

The other Americans are the kind of specialists no agricultural program can do without: Floyd R. Olive is an agronomist from Arkansas; Allen Kinnison, of Arizona, is the horticulturist, and E. William Ranck is an agricultural economist from Maryland.

Ralph E. Hansen, of South Dakota, is the "information specialist." Essentially, Hansen's task is to keep the people informed on what the Centro is doing, both to insure the program's continuance and to convince farmers that they can use the information and assistance available. Publishing pamphlets on specific problems is one item; a monthly agricultural newspaper with a 15,000 circulation is another. Regular radio programs are still another. Getting these farmers, many of whom have never seen a tractor, to know about modern agricultural methods is simply a matter of convincing them that a handful of Americans know more about farming than the people who've been doing it for centuries. Superstition, antiquated methods, the farmer's natural inbred resentment toward advice and change are the things Hansen must overcome.

It will be a long time before the tractor and harrow replace the oxen and the pointed stick in El Salvador, but the ground that raises the fodder for a team of oxen can be better utilized to provide food for people. The oxen and the agricultural methods they represent have got to go.



A NEW TRACT OF experimental acreage is mapped out by a Salvadoran government official (left) and the overseer. Note the machete, the traditional farm tool of El Salvador, worn by the overseer.

DEBACA CHECKS CORN GROWTH in typical experiment. This corn plot is one of five receiving different frequencies and amounts of water. Knowing exact amount of water needed for irrigation is vitally important to arid El Salvador.



AMERICAN FARM MACHINERY doesn't speak Spanish, so tractor school students spend considerable classroom time mastering terminology before learning about principles of internal combustion.



NAZARIO DE BACA (from New Mexico), extension specialist with the Centro Nacional de Agronomía, El Salvador, one of staff of American agricultural specialists furnished through the Point Four program, inspects a coffee nursery and gives the plantation overseer advice on control of a simple form of blight.

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