

## INTRODUCTION

On 10 May 1942, ground was broken for the construction of Escuela Agrícola Panamericana. On 1 September 1943 the school was opened with 72 students from 7 countries. Only one dormitory was ready at the time, and the main building (Zemurray Hall) had only one wing ready for use. We were short of teaching personnel. On 12 October 1944 the formal inauguration took place - Zemurray Hall and most of the principal buildings having been completed.

During this period we issued occasional progress reports, and we have annually presented to the Government of Honduras a report covering the activities of the fiscal year. At the suggestion of Mr. W. E. Turnbull, we commenced in July 1946 the distribution of a Monthly News Letter.

The year 1946 was the first in which the school operated on a complete program - the first in which a class was graduated. We now consider that the school is a going concern from all angles, and that it is time to inaugurate the preparation of annual reports. Since this is the first, it is in some respects a review of progress from the year 1942 down to the present time; and it is therefore somewhat more extensive than may be the case with later reports.

## THE OBJECTIVES OF THE SCHOOL

These, as outlined by Mr. Zemurray on various occasions, are briefly the following: The provision of sound and well-rounded agricultural training adapted to conditions in the tropical American (and more especially, the Central American) republics. That this training shall be made available without any cost whatsoever to the student. That applicants who are otherwise unable, for financial



reasons, to obtain a good agricultural education, shall be given preference. That the great majority of scholarships shall be granted to Central Americans; and that no student shall be received who is not a citizen of one of the Latin American republics. That every effort shall be made to develop sound character and good citizenship; and that graduates are not to be employed by the United Fruit Company, except in occasional instances for specialised activities along lines such as dairying, the cultivation of new crops and research, which activities are not concerned with banana production, but tend to improve Latin American Agriculture in general.

#### HOW THE STUDENTS ARE SELECTED

Without any advertising or other effort on our part, we receive annually a great many more applications for scholarships than are required to enable us to select the 50 to 60 boys who can be received. At the end of 1946 we had on hand some 300 applications. It may be of interest to note that the largest number usually comes from El Salvador. Honduras comes next, then Costa Rica. Guatemala supplies a good number, Panama less, and Nicaragua very few. Applications from Colombia are increasing annually. We receive an occasional one from Ecuador, Perú, Venezuela, Cuba, Chile; and quite a few from the Dominican Republic.

We check up as fully as possible, at long range, on all applicants, and then some member of the staff visits annually all, or most, of the Central American countries to interview the applicants personally. Those who are selected undergo a rigid medical examination before leaving their respective countries. This examination must be carried out by a physician appointed for the purpose by the school.

At the end of 1946, we had 154 students in the school. The



following table gives the distribution by countries and by years:

<u>Country</u>	<u>1st Yr.</u>	<u>2nd Yr.</u>	<u>3rd Yr.</u>	<u>Post Grad.</u>	<u>Total</u>
Colombia	3	2	2	-	7
Costa Rica	7	5	10	2	24
Cuba	-	1	-	-	1
Dominican Republic	3	3	3	-	9
Ecuador	1	-	2	-	3
Guatemala	8	8	5	-	21
Honduras	19	11	1	11	42
Mexico	-	-	2	1	3
Nicaragua	3	3	4	1	11
Panama	4	4	5	2	15
Peru	1	-	1	-	2
Salvador	4	6	4	-	14
Venezuela	2	-	-	-	2
Total	<u>55</u>	<u>43</u>	<u>39</u>	<u>17</u>	<u>154</u>

A tentative quota is fixed for each country each year, after consultation with Mr. Turnbull. In 1946 a total of 58 new students was received.

#### THE FIRST GRADUATION

On 2 March 1946 the first group of students to receive diplomas met in the Salón de Actos, where there were ceremonies of the customary sort, including a commencement address by Mrs. Doris Zemurray Stone (representing the Board of Regents); a brief talk by the Hon. Edwin J. Kyle, Ambassador of the United States of America to Guatemala (a noted authority in the field of Agriculture); and one by Sr. Angel Hernández, Minister of Education of the Republic of Honduras. After the ceremonies, the guests - who numbered about 300 - were entertained at a barbecue luncheon and a dance offered by the student body. The graduating class was made up as follows:

Mexico	1
Guatemala	3
Honduras	43
El Salvador	5
Nicaragua	4
Costa Rica	3
Panama	4
Total	<u>63</u>



We have followed the careers of these students since graduation. Seventeen remained at the school for a post-graduate year of practice in specialised branches. Most of the others are working on their own farms; though several are employed in the agricultural service of their respective governments (El Salvador, Panama) and one is managing Montelimar; probably the best estate owned by President Somoza of Nicaragua. Two have gone to colleges in the United States for further technical education.

#### THE TRAINING PROGRAM

During 1946 this was reorganised as follows: Instead of assigning the boys to the three departments (Livestock, Field Crops, and Horticulture) without regard to their year, we put all the first year boys in Horticulture for the entire year; all of the second year boys in Field Crops; and all of the third year boys in Livestock. This makes for simplicity in operation and eliminates the possibility of a boy reaching the end of his third year without having had adequate training in each one of the departments. As far as possible, the arrangement by years was made to correlate with classroom studies: that is, while the boy is working in field crops during his second year, he is synchronously studying them in class; and while he is working in livestock during his third year he is doing classroom work in animal husbandry.

In order that each student may make the most out of his time here - in order that he may know some of the basic facts just as promptly as possible; to understand the relationship between the various branches of agriculture; and to be able to take advantage of everything he sees during his entire three years - we added two "Orientation Courses" to the curriculum with the beginning of the



new school year on 1 June 1946. All first year boys now have one lecture per week in the course called "Orientación Agronómica" and a similar program in "Orientación Ganadera".

Other than this, the classroom program was changed very little from that of 1945. We are attempting, and shall continue our efforts, to relate all classroom work as closely as possible to field practice. The courses given during the school year 1946-47 are the following:

First Year. Since we find that the great majority of students come poorly prepared in mathematics, we give them a course in this subject. This consists almost wholly of practice in the solution of the sort of problems which confront an agriculturist everyday.

Since practically all of our reference books are in the English language, and some of our teaching in the second and third years is done in this language, we give them a heavy course in this subject. During the vacation months of 1946 our teacher of English, Mr. Allen B. Arnold, went to Harvard University for intensive training in the teaching of Basic English. The results which have followed the use of this method are more than satisfactory. Incidentally it may be noted that English is the most popular of all subjects here.

Since biology is the fundamental natural science which underlies the practice of agriculture, all first year students are given thorough but necessarily elementary training in this subject by Dr. Archie F. Carr Jr.

Second Year. The teaching of Basic English is continued throughout this year. We find there are marked differences in conversational ability among the students; but all of them learn to read English sufficiently by this year so that they can study text books in this language, and many of them learn to speak fairly well.



Replacing the work in biology, the students this year have a course in physical sciences, given by Dr. Carr. The first semester is devoted to the elements of chemistry, with special reference to agricultural chemistry, and the second semester to physics and physical geography.

The third subject taught during this year, under the direction of Mr. Popenoe and Mr. Villegas, is called "Cultivos Tropicales". It commences with a study of the fundamentals of agriculture (as applied to the tropics); after which all of the principal tropical crops are reviewed, and several weeks are devoted to a discussion of promising new crops for Tropical America.

Third Year. The most important course during this year is the one in Animal Husbandry, which is supervised by Mr. Hogaboom. This includes a study of breeds and breeding methods; hogs and poultry; and simple veterinary medicine. José Blas Henríquez and Carlos Herrero assist in giving this course.

Mr. Villegas gives a course in Farm Management, based on one of the best North American texts, but adapted to the tropics. This course is largely concerned with farm accounting.

The course in Rural Engineering is carried out mainly in the field and shops. There is one lecture per week, given by Mr. Hogaboom, Mr. Shank and Mr. Popenoe; and one entire afternoon each week for work in the field. The boys are taught to use the level and plane table; to know how to lay out simple drainage and irrigation systems; to use water economically; how to plan, and what materials to use, in simple rural constructions; how to build and maintain farm roads; how to make brick and tile; and how to manage tractors and simple farm machinery. Toward the end of the course Mr. Shank gives them lectures and field work in forest conservation, forest management,



and reforestation.

### BUILDINGS AND EQUIPMENT

By the end of 1945 we had pretty well completed our construction program as originally outlined. For this reason, and because we wished to devote all our time to developing the training program, we did very little construction work in 1946. At the beginning of the year we finished a small building designed to house our primitive sugar mill and the equipment of the field crops department. One professor type residence and its service building (combination laundry and servant quarters) and a shed for the sawmill were also constructed during the year. Some alterations were made in the Mess Hall kitchen but more will be required. In October we built a 20-foot extension on the light plant building and in November completed the installation of a complete new hydro-electric unit. The new unit consists of a 24" Type "G" Pelton Water Wheel direct connected to a 37.5 KW (47 KVA) General Electric 2300 volt A. C. generator and a General Electric switchboard. Also during November the 1035-foot temporary wood stave penstock piping was removed and replaced with spiral welded steel pipe. At the time we built this plant, we had to use wood stave pipe, made locally, for the penstock; and we had to piece together the plant itself by using equipment picked up on the North Coast. The old generating unit will now serve as an auxiliary.

In November a portable sawmill was installed and will be used for working up our own lumber. Selective harvesting, tied in with the forestry program, will supply material for this mill.

As a result of the termination of the war, we began to receive about the middle of this year some of the equipment we had ordered



one to two years previously. Two John Deere tractors put us in good shape from this angle. We obtained a new Ford Sedan, a new Ford truck, a new Ford pickup and a new International Pickup to replace our badly run-down rolling stock, most of which had been obtained here second-hand during the war. We also received a few important items of farm equipment, such as a disk harrow, an ensilage cutter, and a hammer mill.

During the year we reviewed our needs, and included in our 1947 budget funds for a Science Building, to house the research library, herbarium, forestry and zoological collections; the provision of additional housing on a small scale; enlargement of our facilities for raising pigs; and a few other items. All of these items were approved.

#### METEOROLOGY

It was not until the middle of this year that we were at last able to set up complete equipment for the recording of meteorological data - rainfall, maximum and minimum temperatures, relative humidity, and miles of wind per day. We have standard U. S. Weather Bureau instruments, hence the observations should be accurate. Previously, we have been able to record rainfall only - which, however, is the item of greatest importance to us.

The rainy season this year set in rather late, but distribution on the whole was very satisfactory. Rainfall by months was as follows:

January	.74 inches
February	1.96
March	.27
April	.15
May	4.35



June	4.22
July	3.44
August	5.19
September	8.16
October	5.92
November	2.21
December	<u>.46</u>
TOTAL FOR THE YEAR	<u>37.07 inches</u>

For comparison, we have the following figures for previous years:

1942	42.85 inches
1943	31.37
1944	47.27
1945	50.79

#### MAJOR CHANGES IN PERSONNEL

About the middle of the year, our organization was greatly strengthened by the arrival of Thomas W. Dunn, a former United Fruit employee who had been on leave of absence with the United States Navy. Mr. Dunn took charge of the business management of the school, supervising the accounting, the purchase and handling of supplies, and the business office generally. Shortly after his arrival, Mr. Wadsworth C. Jones, who had been on loan from the Tela Railroad Company to handle our accounting, was transferred back to Tela.

Mrs. Alice Louise Dunn, who arrived with her husband Thomas W. Dunn, was added to the staff of the Medical Department. Under the general supervision of Miss Flanagan, she has had charge of the Infirmary.



Also at the middle of the year, Dr. Louis O. Williams, accompanied by his wife, arrived to take up the field work in connection with the activities of the Central American Nutrition Foundation. This work is described under a separate heading.

In September the staff was enlarged by the addition of Paul J. Shank, who, except for wartime service in Ecuador with the Foreign Economic Administration, had been with the United States Forest Service for about fifteen years. Employment of Mr. Shank, who brought his family with him, was the result of Mr. Zemurray's interest in providing assistance to the Central American countries along lines of forest conservation and reforestation. Mr. Shank will not only teach forestry to our students; he will cooperate with the Research Department of the United Fruit Company in its program of reforestation and will be available for consultation by the various governments. His program is not yet fully developed, but it is expected that he will eventually take up extension work along forestry lines.

Mr. John H. Heuer, who had come in 1945 to head our Horticultural Department, resigned in September, for family reasons, and returned to his home in Florida. There were no major changes during the year in the teaching staff. We are still rather short of well-trained teachers and hope to add one or two more in 1947.

#### RELIGIOUS SERVICES

During this year, arrangements were made for holding religious services regularly at the school. There is now a group of young Franciscan friars from the United States headquartered in Tegucigalpa, where they operate a primary school; and members of the Order do missionary work in outlying parts of the Republic. This group offered to send one of its members to the school on alternate



Sundays to say Mass.

While attendance at Mass is not obligatory, there has always been a good number of students present, as well as quite a few members of the staff. The Franciscans, who are highly popular with the boys, seem peculiarly appropriate for supervising the religious activities of this school because of the well-known agricultural background of their Order. Midnight Mass on Christmas Eve was especially impressive, the Assembly Hall having been decorated for the occasion in traditional Honduran style, with pine needles on the floor, pine boughs along the walls, and many candles.

#### ANIMAL HUSBANDRY

In many parts of tropical America, the raising of livestock is the most important branch of agriculture. In only a few, however, has dairying received as much attention as the production of beef cattle. Hog raising, though highly profitable, has received even less attention than dairying, while poultry raising is in most regions still in a primitive state. Milk goats have received practically no attention at all.

Because of this situation, and the great interest in animal husbandry on the part of progressive farmers in this region (two-thirds of our students are more interested in this branch than in any other) the school has, from its inception, devoted much time and effort to the development of its Department of Animal Husbandry. Assistant Director Hogaboom, professionally trained in this field, has supervised our program, which is aimed to follow practical lines rather than to specialise in some of the refinements, such as the formation of pure-blood herds.

Dairy Cattle. During the year we imported two Guernsey bulls



from Oklahoma, bringing our total of this breed to three. We also have one registered Jersey bull and one registered Holstein. At the start, it was planned to build up our dairy herd by purchasing the best native cows available in Honduras, then breeding these to imported bulls with a view to forming a dairy herd of grade cows, such as can be handled by the small farmer of Central America, who is not yet prepared to provide proper feeding nor housing conditions for pure-blooded stock.

This program, started in 1943, has resulted in a herd of some 75 heifers, which is increasing annually. The first of these heifers calved during the year under review. Special attention is devoted to handling the calves, our students being trained in their early care and the treatment of the common ailments and diseases. We have been gratified at the results achieved.

Milk and Milk Products. José Blas Henríquez, a Honduran trained in the United States, has continued to handle the dairy during the year, training the boys in milking both by hand and with the milking machine. Much attention has been given to the proper handling of milk and the manufacture of butter and cheese. All of the butter used by the school is made by the students, who have also been trained to pasteurise milk and deliver it properly bottled to the Mess Hall and staff.

Swine. Late in 1944 we imported six registered Duroc Jersey and six registered Hampshire pigs from the farm of Louisiana State University at Baton Rouge. These have been in charge of Carlos Herrero, a Costa Rican member of our staff trained at Mississippi A&M College. Experience during 1945 and 1946 has convinced us that the Hampshire breed is more adaptable to our conditions and we have



gradually eliminated the Duroc Jerseys.

In order to assist in the general improvement of swine production in Central America, we have sold, to date, 86 young pigs for breeding purposes. The price charged for these is nominal -sufficient only to assure that purchasers are really interested and will care for the animals. All receipts go into the Student Benefit Fund.

Our installations for breeding and rearing pigs are excellent and the subject of much comment on the part of visitors. More important still, the boys are learning how to feed and care for pigs properly, and how to combat the common diseases and parasites. They are also trained to make ham,bacon,and sausage.

Poultry.At the end of the year we had a flock of about 500 laying hens, all raised at the school from our original flock of Rhode Island Reds and White Leghorns imported as baby chicks from Louisiana. Our inability to obtain an incubator from the United States has handicapped this branch of the work, but we expect the situation to be remedied early in 1947. Our flock, which is under the care of Carlos Herrero, is in excellent condition and we expect to increase it to more than double the present size, as we do not yet have sufficient hens to supply all the eggs needed by the Mess Hall.

Milk Goats. Having in mind the possibility that good milk goats might prove highly useful to the small farmer in these countries, we obtained locally several animals of the Nubian breed, and early in 1947 will receive a shipment of Toggenburgs from the United States. The Nubians have done well during the year.

The Silo. In 1945 we built a trench silo, which was filled for the first time in the autumn of that year and opened in February



1946. Silage was composed entirely of corn fodder, the only material we had available. It turned out in excellent condition and was extremely useful in maintaining our milk supply at a satisfactory level during the dry months of February, March and April. The capacity of our silo is sufficient to meet the requirements of 100 cows during three months. It was again charged in October of the year under review, mainly with corn fodder, but we were able to use small quantities of kaffir corn and pigeon peas in addition. Plans have been made to increase the proportions of material other than corn in future years. Both students and visitors have taken great interest in the silo. So far as we know, ours is the first one to be used effectively in Honduras, and there seems to be an excellent future for these accessories in tropical America. In fact, we believe silage as important during the long dry season in these countries as during winter in the United States.

A development during the year in the Livestock Department has been the installation of simple equipment for utilizing by-products of the slaughter house, to make products such as tankage, blood meal and bone meal. Not only does this provide desirable training for the students; the products are of much use in the preparation of livestock feeds.

#### SOME NOTES ON CROPS, INCLUDING PROMISING NEW ONES, AND RECENTLY-INTRODUCED VARIETIES OF OLD CROPS

Since the foundation of the school, we have aimed to make it combine the functions of an educational institution and an experiment station. The introduction and testing of new crop plants, or new varieties of old ones, should serve a double purpose: not only do we assist in the agricultural development of the tropical American republics, but our students become familiar with new crop potential-



ties and take home with them an appreciation of the need for crop improvement and crop diversification. In this work we have the hearty cooperation of the Research Department at La Lima, which supplies from Lancetilla and elsewhere material for planting. Our field work has been under the direction of Jaime Villegas and Luis E. Morcillo.

Naturally, our first objective, aside from the training of students in agricultural and horticultural practices, is to produce as much as possible of the food consumed by the school. In this we have been highly successful during the year, and will be still more successful as our orchards come into bearing. It will always be impossible for us to produce the wheat flour required by the Mess Hall, and it may be impracticable (as it has been to date) for us to produce our entire requirements of such staples as corn and beans. To do so would take too much of the students' time away from other important activities; and if we employ hired labor to do it, the cost will probably be greater than if we buy these products on the open market.

#### FIELD CROPS

Corn. This being the most important subsistence crop in Central America, we are anxious to devote as much attention as possible to its cultivation and improvement. Two years ago we introduced the variety Venezuela No. 1, a selection made by Dr. Derald Langham, working for the government of Venezuela. This variety has almost doubled the yield per acre in its country of origin, and has done the same thing here. We are therefore increasing our plantings and distributing seed. Though experience has shown that North American corn varieties are usually unsuccessful in the tropics, we have made



two plantings of hybrid corn from the Middle West, both of which have been complete failures.

Sugar Cane. We have a collection of some 25 varieties, which we are testing to determine which are best suited to the climate and soil of this area. We will then reduce the number we plant for production of panela of crude sugar for the Mess Hall, keeping, at the same time, the experimental collection intact so that we can supply propagation material for trial in other regions where climatic and soil conditions are different. Using a small mill purchased locally and boiling pans made in our shop for temporary use, the students turned out 22,000 pounds of crude sugar in the spring of this year. This is more than we need and more than we will normally make. We sold 12,000 lbs. in Tegucigalpa for some \$800.00, which amount was put into the Students Benefit Fund.

Rice. After testing half a dozen imported varieties, we found that the one grown commercially in this region succeeds best with us, and this year produced about 6,900 lbs which will meet the requirements of our Mess Hall for a large part of the coming year. It has to be threshed by hand, as we do not yet have mechanical equipment for this purpose.

Yuca or Cassava. This root-crop is a popular item of the Central American diet. We have grown all we could use; and in addition have under trial eleven varieties introduced from Colombia, in the hope of finding one of better quality than the local form.

Sweet Potatoes. These are not a very important article of diet in this part of the world, due in part to the poor quality of the varieties which have been cultivated. Three years ago Mr. Hogaboom brought from Costa Rica a North American variety, either Nancy Hall or Porto Rico, which has been a great success here. The



students like it, and we use it extensively in the Mess Hall; and in addition, sweet potatoes are excellent food for pigs. The Livestock Department is making an exhaustive study of the possibilities in this connection.

Potatoes. We have grown two varieties, one (undetermined) which is commonly cultivated in this region, and the other, Chippewa, imported from the United States. We have been able to supply most of our requirements, and are bringing together much information regarding improved cultural practices.

African Oil Palms (*Elaeis guineensis*) Because of the widespread interest throughout Central America in the possibilities of this crop - new to tropical America, so far as its commercial potentialities are concerned - we made a five acre planting in 1943. During the present year the palms, which have made very satisfactory growth, though perhaps not so rapid as in the warmer and wetter climate of the coast, came into flower for the first time. A few fruits will ripen in 1947.

#### FORAGE CROPS

Gandul or Pigeon Pea (*Cajanus indicus*) We have greatly expanded our plantings of this crop during the year, as we are finding many uses to which it can profitably be put. It is one of our best green manure crops; the seeds can replace beans, to a certain extent, in the Mess Hall; and both seeds and foliage are valuable as stock feed because of their high protein content. An article summarising the results of our experience to date was published in "Honduras Agrícola".

Engorda Caballo (*Desmodium* spp.) Experiments with these plants have convinced us that they may be useful as high-protein forage for cattle and we have increased our plantings during the year. The livestock Department is investigating best methods of utilization.



Sorghums. Kaffir corn has been cultivated on an extensive scale as feed for livestock. We have had several other sorghums under trial, especially with a view to providing ensilage, and will expand our plantings of at least one of the sweet varieties during the coming year.

Forage grasses. Trial plantings of Rhodes grass (Chloris gayana) have not shown much promise and we have practically eliminated our small acreage in this crop. Elephant grass (Pennisetum purpureum) does not seem well adapted to this dry climate, and we are keeping only a small plot for further study. Guatemala grass (Tripsacum laxum) has shown up very favorably during the year, as a "soiling crop" for stall feeding, and we are extending the plantings.

#### COVER CROPS AND GREEN MANURES

Because of the great need of crops which can be used to increase the organic matter content of the soil we have been conducting extensive trials with a number of species. During the year we had excellent results from the use of pigeon peas, velvet beans, rice beans (Phaseolus calcaratus) and Dolichos lablab. At present we feel that all four of these have logical places in our program. We have not been so well satisfied with the Crotalarias, Indigoferas, and cowpeas.

#### FRUITS

Plantains. Experiments have shown that the commercial plantain is practically a failure here. A variety known as chato and majoncho which is cultivated widely on poor soils by farmers in the interior of Central America, was planted to supply the Mess Hall and came into bearing during the year. Our five acres of this crop will practically