

Das Bundesland Bayern weist sowohl auf der Ebene der Regierungsbezirke als auch der Planungsregionen zahlreiche Differenzierungen auf. Monozentrale Gebiete stehen multizentralen Gebieten, Regionen mit guter verkehrlicher Erschließung und ausreichender zentralörtlicher Versorgung stehen Regionen mit niedrigem Verbund des Verkehrsnetzes und lückenhafter zentralörtlicher Bedarfsdeckung gegenüber. Zur Überwindung von Strukturschwächen in der Bedarfsdeckung wurden im zentralörtlichen Entwicklungskonzept der bayerischen Staatsregierung zusätzlich Kleinzentren ausgewiesen, die jedoch, berechnet man ihren Bedeutungsüberschuß, häufig noch keine Konzentration von zentralen Gütern und Diensten aufweisen, die sich deutlich aus dem zu versorgenden Umland heraushebt.

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## AGRARIAN REFORM AND THE GROWTH OF NEW RURAL SETTLEMENTS IN VENEZUELA

with 8 illustrations

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*Zusammenfassung:* Agrarreform und das Wachstum neuer Siedlungen in Venezuela.

Moderne Maßnahmen zur Agrarreform, die auf örtlichen Erfahrungen mit Kolonisierung und ausländischer Hilfe – insbesondere israelischer – in den Jahren 1962–1966 basieren, ergaben in Venezuela eine neue Art von Siedlungslandschaft. Über 1000 ländliche Siedlungen wurden zwischen 1960 und 1970 im ganzen Lande für einheimische Farmer errichtet; ohne Zweifel die intensivste, ausgedehnteste und am gleichmäßigsten durchgeführte Expansion geplanter landwirtschaftlicher Siedlungen in ganz Südamerika. Das Programm hat Venezuelas Siedlungslandschaft nicht nur sichtlich Neues hinzugefügt. Mit ihm wurde auch begonnen, einem der am schnellsten wachsenden Bevölkerungsteile des Kontinents größere Nahrungsmittelquellen zu erschließen.

Since the 1950's, urban settlements in Latin America have expanded at rapid rates primarily because of the attention given to industrial development. However, the impact of expansion has brought into question the ability of these settlements to survive as initially intended. The emergence of slum quarters known as *cinturones de miseria*, which now ring many of the urban centers, and the inability to provide employment for hordes of rural migrants, have signaled a breakdown in the normal function of many Latin American cities. This failure, coupled with inadequate food supplies, has compelled nations to shift top priorities from industrial programs to far-reaching agrarian reform. By making rural living more attractive, both

socially and economically, Latin American countries are desperately trying to stem at least partially the urban tide and establish a better balanced economy through productive new settlements in unused or underused areas. With the exception of Uruguay, all South American countries have gradually expanded agrarian reform measures to include short term efforts for speeding the transfer of modern technologies to existing farm settlements, long term projects involving various types of rural settlement, and proposals for the construction of urban facilities where they have been lacking. In short, programs have been designed to alter existing settlement forms and to establish new ones more suitable to current economic conditions.

While the rural to urban movement is far from being restricted to any one area in South America, this paper discusses the problem more specifically as it applies to and is being recognized by the government of Venezuela where the urban-rural imbalance has been most acutely aggravated. Access to special reports, both governmental and private, field work carried out in many new settlements, both in Venezuela and in neighboring Colombia whose border population is spilling over into Venezuela, as well as in Israeli areas from which Venezuelan technical assistance has been received, and the lack of an integrated picture of the settlement results of Venezuelan agrarian programs furnish the basis for this investigation<sup>1)</sup>.

Venezuela is one of the most successful countries to adopt major reforms since the 1950's if viewed from the position, form, and regional structure of new planned agrarian settlements, and by contrast with plans of its immediate neighbor, Colombia, whose overall program has not been as marked or as thoroughgoing. This is true even though between 1800 and the end of World War II Colombia's population increased twelvefold (1 million to 12 million) and was by then double that of Venezuela. Both countries have benefited vastly from the pharmaceutical revolution and the subsequent control of malaria. Actually, the control of malaria has given Venezuela a much greater

increase in more accessible level areas of lower altitude than Colombia. With this acreage advantage and what appears to be a vastly improved governmental approach to agrarian reform, the rural-urban population imbalance may be headed for adjustment. Fortunately for Venezuela, the added habitable areas came at an opportune time for the current population explosion (Fig. 1). However, to ignore the long and costly

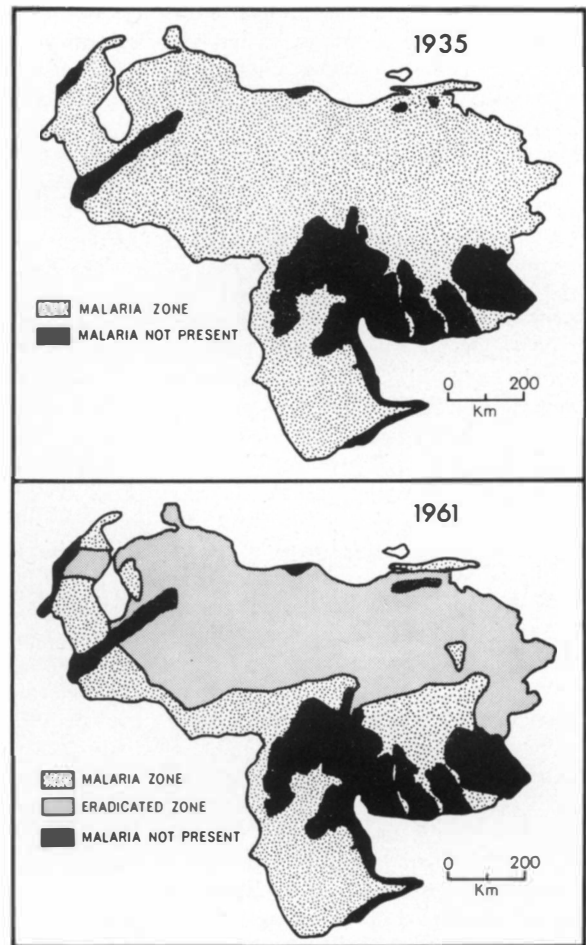


Fig. 1: Malaria Zones in Venezuela. Source: MARRERO, L., *Venezuela y sus Recursos: Una Geografía Visualizada*, Madrid, 1964, p. 237

<sup>1)</sup> Few geographers have written about the results of agrarian reform in Venezuela, especially where settlements are concerned. Four publications which touch upon the subject are:

1. BORCHERDT, C., "Die neuere Verkehrserschließung in Venezuela und ihre Auswirkungen in der Kulturlandschaft," *Die Erde*, Vol. 1, 1968, pp. 42-76.
2. —, "Junge Wandlungen der Kulturlandschaft in Venezuela," *Geographische Zeitschrift*, Vol. 55, 1967, pp. 142 bis 161.
3. CRIST, R. E., and NISSLY, C. M., *East from the Andes*, Gainesville, 1973, pp. 17-38.
4. OTREMBE, E., "Die venezolanischen Anden im System der südamerikanischen Cordillere und ihre Bedeutung für Venezuela," *Mitteilungen der Fränkischen Geographischen Gesellschaft*, Vol. 10, 1963, pp. 94-107.

struggle through the first half of the 20th century of Venezuela's agrarian gropings would be to ignore truly honest efforts—as well as grossly ineffective planning mistakes and small successes—from which developed the present program, a program that bids well for the future of the country's rural settlement structure. The review of early settlement that follows limits itself to the essential factors of only the more significant of the many trial and error attempts.

### Early Government Colonization

**Colonia Tovar.** Colonia Tovar, established 45 km west of Caracas in 1843 by the geographer Augustín Codazzi, is one of the few early successful settlement attempts<sup>2)</sup>. The nucleus of the settlement was formed by 50 German families from Hamburg, Bremen, and Baden. Only perseverance, poverty, and total isolation prevented these hardy settlers from capitulating in the face of unbelievable odds.

By 1923, Colonia Tovar had grown to some 750 residents who raised wheat, barley, and potatoes with moderate, if local, success. Some four decades later two events altered the slow development of Colonia Tovar. The first of these was the arrival of numbers of refugee families from Germany following World War II, who stimulated agriculture and industry in the colony. The second impetus was the construction of a modern paved road from Caracas. The road brought about "discovery" of the colony by Venezuelan tourists and an economic boom during the 1960's<sup>3)</sup>. By 1974 the population had grown to over 1,400 in the originally settled zone, and to approximately 6,000 in the neighboring region. Malaria campaigns with new medicines and insecticides had by then so reduced fear of disease that plantings of subtropical and tropical crops like coffee, citrus, and bananas were commonplace on downslope areas. Small industries dealing in wood products and ceramics, and a rapid response to tourism were reflected by additions to the colony center of various new commercial buildings, especially hotels, restaurants, and import stores. Today, the prosperous settlement has the appearance of a German *Bergdorf* (mountain village), is the seat of a full-fledged Venezuelan *municipio* (county), and has begun to serve distant markets such as the capital with its products.

Other nineteenth century attempts with both foreign and Venezuelan settlers all failed to survive. Problems of isolation, insecurity of land titles, and the ravages of malaria are singled out in the meager literature on these colonies as reasons for failure. Most of the residents probably left for existing urban settlements<sup>4)</sup>.

**Mendoza.** As early as the late 1930's, the continued influx to the cities of poverty stricken rural peasants made the problem a national one in Venezuela. Emergency colonization measures resulted. Five new agricultural settlements were created between 1936

and 1938; of these only Mendoza, near Ocumare del Tuy, Miranda, survived. However, within a few years the colony was ringed by Venezuelan *conuqueros*, or slash and burn squatters, in a fashion not unlike that of modern urban cinturones de miseria, and the region became essentially a poor zone dominated by subsistence farming.

### *Instituto Técnico de Inmigración y Colonización (ITIC)*

It is evident that partially planned colonies may survive for quite different reasons and have strikingly permanent results of a positive or negative nature as far as productive contributions to the economy are concerned. This reasoning, and the increasing urgency with which national land settlement needs were viewed by Venezuelan legislators, resulted in formation in 1938 of the autonomous *Instituto Técnico de Inmigración y Colonización*, or simply, the ITIC.

**Chirgua.** The ITIC continued the policy of its predecessors involving primarily use of foreign colonists and just after its establishment brought some 50 Danish families to Chirgua, in the state of Carabobo. Here again, poor planning spelled the doom of another well meant effort. One report specifically states that houses were placed so close together in this colony, that is, in village fashion, that serious disputes among the pioneers were engendered—obviously a problem that arises even today when colonist background and settlement form are not considered together<sup>5)</sup>.

**Other colonies.** Discouraged with its record and with the high cost of the program, the ITIC began a reorganization based on participation by colonists in building viable settlements. Of thirteen colonies thus founded, most are still extant, but are mainly small, subsistence-oriented group settlements just beginning to turn their attention to commercial agriculture with government aid programs<sup>6)</sup>. Again, this approach was not the final answer to Venezuela's reform problems.

Following this experience, an imaginative new plan was conceived by which it was decided to try cost sharing among various government agencies for planning and managing colonies. An accord was made in 1946 among the *Corporación Venezolana de Fomento* (CVF), the *Ministerio de Agricultura y Cría* (MAC), and the ITIC to establish new agrarian communities called *comunidades agrarias*. Fourteen settlements were organized in eleven states, including El Cenizo, Tru-

<sup>2)</sup> Anonymous, "La Colonización en Venezuela," *Cultura Venezolana*, Vol. 11, No. 89, 1928, pp. 238–250, esp. p. 245. See also KOCH, C., *La Colonia Tovar. Geschichte und Kultur einer Alemannischen Siedlung in Venezuela*, Basel, 1969.

<sup>3)</sup> *Corporación Venezolana de Fomento*, *La Colonia Tovar*, Caracas, 1967.

<sup>4)</sup> *Ministerio de Agricultura y Cría*, Dirección de Planificación Agropecuaria, *La Colonización Agraria en Venezuela: 1830–1957*, Resumen, Caracas, 1960, p. 9.

<sup>5)</sup> *U. S. Government M-Project*, Studies of Migration and Settlement, Report Series No. R-41: Danish Colonization Project in Venezuela, by H. F. ULRICHSEN, March 25, 1944, esp. pp. 1–31.

<sup>6)</sup> *Ministerio de Agricultura y Cría*, *op. cit.*, p. 11. See also ARÉVALO JIMÉNEZ, J., "Anotaciones sobre el riego en Venezuela," *Boletín del Instituto Agrario Nacional*, Vol. 8, No. 23, Caracas, 1957, with regard to other colonies.

jillo, one of the largest undertakings, which was assigned 100,000 ha of land. Unfortunately, political changes in the late 1940's brought about elimination of the uncompleted project and most of the land appears to have been sold or given to private parties<sup>7)</sup>.

*Instituto Agrario Nacional:  
Regionally Planned Irrigation Settlements*

By the time the first modern reform laws were created in Venezuela between 1945 and 1948, it was generally conceded that rural living had to be made more attractive to capable Venezuelans by means of centralized long range planning. Hence reform laws were designed to create the *Instituto Agrario Nacional*, whose initials have given it the acronym IAN. New regulations included the corporate experiences and ideas learned during the development of planned settlements by previous government agencies, and leaned strongly in the direction of communal undertakings. The emergence of the new national rural settlement program sponsored by IAN can best be understood by first interpreting certain economic and political factors which were prominent at the time.

As early as 1925 petroleum displaced coffee as the number one Venezuelan export, a position it has held ever since. Thus, Venezuela was able to earn foreign exchange funds relatively easily. Unfortunately, the easy flow of black gold resulted in a disastrous decline of Venezuelan agriculture. Actually by the end of the 1930's, a number of farm products had disappeared from the list of her former exports<sup>8)</sup>. Important items such as cotton, tobacco, and rubber were among those eliminated. The increase in revenue from oil duties further hastened the decline of farm production by creating sufficient jobs to draw rural workers toward oil fields and cities, by developing support directly or indirectly for well over half the nation's labor force, and by gradually generating enough wealth so that by the early 1970's Venezuela could import up to a full quarter of its basic foodstuffs. By contrast, a weakened rural economic sector was left which presently absorbs 40 percent of the labor force but produces only five percent of the gross domestic product<sup>9)</sup>. The nation is therefore self-sufficient in only a few major farm commodities such as sugar, manioc, sesame, beans, rice, some fresh vegetables, tropical fruits, and eggs. On the other hand, potatoes, flour, milk, beef, ham, fish,

lard, maize, and all fully processed foodstuffs must be imported. Small wonder that the lure of flowing riches caused a major Venezuelan urban influx—but at what expense to sound rural prosperity and a balanced economy. Once again, rural prosperity became a national priority in government planning. This policy was at first carried out with foreigners as indicated above. And since rural population densities were extremely low, it was felt that foreign blood would bring instructive farm techniques to Venezuela's lagging rural production and more quickly help integrate a vast, empty interior with the rest of the country<sup>10)</sup>.

But unfortunately, while the ITIC was occupied with establishing its earlier foreign-oriented agricultural settlements, the Venezuelan *conuquero* or native subsistence farmer, was almost totally neglected. All of this, in spite of the fact that political rumblings of rural unrest had been in progress as early as the late 1930's. Now even the ITIC was forced to recognize this revolt of the peasants and belatedly assigned public and private land to members of peasant unions, or *sindicatos agrícolas*, before the program collapsed in 1948<sup>11)</sup>.

A new political regime passed the so-called *Estatuto Agrario* in 1949 to initiate reform action. This statute again blatantly ignored the increasing threat of *conuquero* political power, and presented still another crash program to stimulate domestic food production by creating special rural irrigation settlements. These were to take part in the so-called *Plan Arocero*, initiated to eliminate Venezuelan dependence on foreign countries for its rice needs. The first important result of this program was the formation of the colony of Turén, located in the western Llanos state of Portuguesa—the best known of these projects. This single settlement, which concentrated on estate type holdings run by European refugee colonists, accounted for nearly 75 percent of the budget and 45 percent of the settlers administered by IAN during the period 1945–1957<sup>12)</sup>. A new large scale plan to develop land near the Colombian border reflects serious government concern with Colombian refugees who have spilled across the international frontier. Since Turén, all similar large scale programs and various lesser irrigation projects (discussed below) have been oriented toward small farms operated by former *conuqueros*—a major change in policy brought about during the 1960's by rapid and effective political organization of the nation's growing

<sup>7)</sup> Interview with Dr. Pompeyo Ríos, former Director de Tierras, ITIC, Caracas, August 2, 1968.

<sup>8)</sup> SIEWERS, E., "The Organization of Immigration and Land Settlement in Venezuela: I," *International Labor Review*, Vol. 39, No. 6, 1939, pp. 764–772.

<sup>9)</sup> WING, JR., H. E., *Land Reform in Venezuela*, Inter-American Development Bank, Washington, D. C., 1970, pp. 2–3.

<sup>10)</sup> ADRIANE, A., "La Colonización en Venezuela," *Revista de Fomento*, Vol. 12, No. 15, 1939, pp. 285–296.

<sup>11)</sup> POWELL, J. D., "Venezuelan Agrarian Problems in Comparative Perspective," in TAYLOR, JR., P. B., ed., *Venezuela: 1969, Analysis of Progress*, Houston, Texas, 1971, pp. 55–73.

<sup>12)</sup> WING, JR., H. E., *Land Reform in Venezuela*, *op. cit.*, p. 4.

number of peasant farmers<sup>13</sup>). Thus, by 1960 the political power of the peasant had forced reluctant government recognition. What had started as European manned colonies with large holdings had developed by this time into native-owned small farms.

Turén. The geographical position of Turén was selected because of availability of large amounts of public land, recent eradication of malaria, nearness to markets, and favorable soils and slopes. In this instance, numerous homes were built in groups of four at road intersections. These small group settlements had no administrative organization but were designed to permit socializing and mutual assistance. Such aspirations were far more feasible where settlers of the same nationality were brought together as was the case in lots settled during 1951–1952. The following year, in what appears to be a desperation move to hasten results, the plan was altered and three foreigners, each from a different country, and one Venezuelan, were grouped together as new lots were settled<sup>14</sup>). The object was to speed assimilation of foreigners and to train Venezuelans in more modern farm techniques, but the crash program failed because planned ethnic diversity turned out to be so great that cooperation was impossible. Violence even broke out in some places, so that (as had been experienced earlier by the ITIC) lack of coordination of both colonist origins and settlement form once again played havoc with progress in part of the colony<sup>15</sup>). Soon thereafter colonists of similar background were again allowed to be neighbors, and harmony was restored. Within a short time a group of excessively tiny holdings, the *microparcels*, was also reorganized so that most are now ten ha in size.

Commercial crop production at Turén is primarily a mechanized operation in which sesame is rotated with maize or rice. Yields suggest that it is more profitable to raise the sesame-maize combination. In the case of sesame-rice, although simple harvest data lead to apparently favorable conclusions, close inspection of the more meaningful production-investment ratio reveals a decrease in yields with increased size of holding. This revelation points at worst to poor farming practices, and at best to an optimum holding size beyond which the sesame-rice combination gives lowered returns<sup>16</sup>).

Drainage difficulties in the area are intimately related to field forms and it is fortunate that most of the fields in Turén were originally of a long-lot type. The latter possesses a shape which fits naturally and economically better along lengthy irrigation ditches. However, approximately one-third of the lots, the microparcels, had been planned in tiny block form. Since the Southeast Asian method of contour irrigation of several lots with one water inlet and one outlet is not practiced in Venezuela, and in any case requires almost precision cooperation, these small lots will undoubtedly be the last to receive proper drainage treatment, and will be the most costly to repair on a farm to farm basis. All things considered, Turén provides a good example of the need for prior consideration of field forms in planning viable agricultural settlements, especially where potential drainage problems exist.

Another serious problem at Turén has been the sizeable and persistent indebtedness of its colonists—a factor which has had side effects manifested by discontent and by a relatively high percentage of changes in parcel occupation. Debts incurred by 725 colonists as of 1961, i.e., some ten years after the colony was founded, stemming from excessive machinery costs and poorly adjusted farm sizes, amounted for farming alone to almost 10,000,000 Bs, exclusive of housing and land costs<sup>17</sup>). At the time of the study no debts had been fully repaid by settlers with microparcels; in fact, “only infamously small amounts of the value of land and housing” had been paid<sup>18</sup>). There is little doubt that indebtedness added substantially to the strife which early arose between native Venezuelans and foreigners in the colony.

Certainly indebtedness has been a major, but not the only, contribution to instability at Turén. Lack of definitive land titles, and mounting internal strife have added to the list of negative factors. Greater initial attention to coordinating settlement form and size with settler origin could have prevented some of the problems. If earlier attention to transportation and improved field forms and farm methods had also been included, Turén might have succeeded years sooner and would have needed far less costly corrective action.

So once again, the main effort at Turén must be included in a long list of earlier colonization attempts that started bravely enough, but because of inherent weaknesses in planning failed as a model for solving Venezuela's agrarian problems. A most hopeful factor, however, was that the Turén venture finally included the Venezuelan *conuquero*—if only to emphasize how

<sup>13</sup>) Unless otherwise specified, information has been obtained in the field from IAN officials during numerous visits between 1967 and 1975.

<sup>14</sup>) MILLER, E. W., “Population Growth and Agricultural Development in the Western Llanos of Venezuela,” paper presented at 63rd annual meeting of the Association of American Geographers, St. Louis, Missouri, April 12, 1967.

<sup>15</sup>) GRAZIANI, O., Unidad Agrícola de Turén, Informe, Caracas, 1962, pp. 8, 9, 61.

<sup>16</sup>) CASTELLANOS, P. J., Estudio Económico de 55 Parcelas de la Unidad Agrícola Turén, Edo. Portuguesa, unpublished thesis, Universidad Central de Venezuela, Facultad de Agronomía, Maracay, 1968, p. 22.

<sup>17</sup>) GRAZIANI, O., Unidad Agrícola de Turén, Informe, *op. cit.*, p. 13.

<sup>18</sup>) GRAZIANI, O., Unidad Agrícola de Turén, Informe, *op. cit.*, p. 14.

much scientific help he needed to become a successful farmer.

**Guárico.** In spite of the political breakthrough in recognition of the *conuqueros* in the final period of the Turén program, the Instituto Agrario Nacional gave attention to another grandiose irrigation scheme. Begun in 1954, it resulted in the so-called *Sistema de Riego del Río Guárico*. By it some 110,000 ha situated between the Guárico and Tiznados rivers in southwestern Guárico state were to be made available to farming (Fig. 2). MOP (Ministry of Public Works)

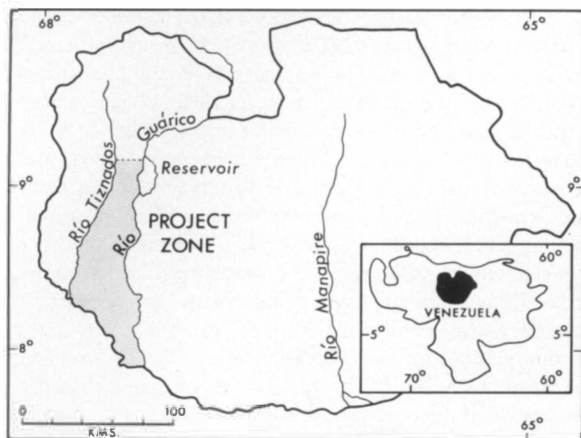


Fig. 2: Río Guárico Irrigation Zone. Source: Ministerio de Agricultura y Cría; Recursos Agrícolas del Guárico Occidental, Caracas, 1956

and MAC were to establish an irrigation net and colonization<sup>19)</sup>. Within three years an enormous reservoir two-thirds the size of Lake Valencia was built and a ten-km long irrigation canal carried water to 500 farm lots averaging 200 ha each. Finally, some 1,500 families were added on smaller holdings because of land pressure from *conuqueros*. Cattle raising on the larger farms, and production of rice, sesame, maize, vegetables, and orchard crops on the smaller ones became the main interests here. Modern housing and services such as electricity, water, and warehouses, were provided for carefully selected settlers. An administrative center of imposing proportions was built with offices, laboratories, guest house, repair shop, granary, and a 21 ha park. Construction of a frigorífico, experiment station, and large scale reforestation were included with this project. Although the program began with large holdings, since the overthrow of the Jiménez regime it has incorporated more and more small scale farmers. Hence Guárico represented both a transitional settlement type and a portent of a major new settlement trend in Venezuela.

**Centro-Occidente de Cojedes.** Subsequent to the Turén and Guárico endeavors nothing much was accomplished in agrarian reform in Venezuela until the end of the dictatorship of Jiménez in 1958. A clamor was then set up by the original leaders of the *conuqueros* for the return of the land to peasants. For this reason, and because the rate of population increase in Venezuela had begun to approach three percent per year quite without warning, the area between the Tirgua and Cojedes rivers in the state of Cojedes was selected as part of a three-stage, large scale irrigation district for small farm (microparcela) settlements, as well as for a few large farms (macro-parcelas), thus reversing former ideas about settlement planning. The first sector, referred to by Venezuelans as the Centro-Occidente of the state of Cojedes, contained some 70,000 ha for development (Fig. 3). The objective of the plan was to provide organization of *conuqueros* and to promote modernization of farming in the region. Two phases of activity occurred, the first of which involved six settlements, 747 farmers, and 15,300 ha of land. The second phase dealt with five settlements, 424 farmers, and 11,000 ha.

The remaining lands were ultimately to be distributed to large and medium sized farms (34,310 ha), and to forests (9,000 ha). Farm and forest products were primarily intended for markets at San Carlos, 48 km away, Acarigua, 125 km, and Valencia, 140 km.

The terrain in west central Cojedes is similar to that found in other parts of the region—almost flat, covered with low forest, and in need of drainage. New settlements for the first phase were established between 1959/1960 with holdings of ten, fifteen, and twenty ha per family<sup>20)</sup>. Again, in the face of all earlier experiences, planning mistakes were made during the early years of the new political regime, such as construction of irrigation canals without proper attention to drainage, failure to promote crop rotation cycles, use of trial and error methods of proportioning crop land, pasture land, and irrigation land. Variations in soil and drainage conditions, and problems of settler illiteracy have also emphasized the need for a good deal of readjustment of original plans. But in spite of early errors, and of inadequate planning and high per farmer operational costs, two factors stand out: the project represented the first kind of planning carried out by IAN which dealt primarily with *conuqueros*, and the country's politicians recognized the urgent need to produce immediate results on the land. In fact, the initial years of the new era were devoted primarily to placing *conuqueros* on their own farms. Fortunately, this was not difficult since adequate *baldíos*, or state owned lands, were plentiful, and *terratienen-tes*, or large estate owners, saw little future in keeping

<sup>19)</sup> Ministerio de Agricultura y Cría, Recursos Agrícolas del Guárico Occidental, Caracas, 1956.

<sup>20)</sup> Instituto Agrario Nacional, Proyecto de Desarrollo Integral de la Región Centro Occidental del Edo. Cojedes, Caracas, 1966, pp. 13–14.

property for which the government was authorized to pay good sums. Add to this situation the broad scale elimination of malaria in the 1950's, the vast wealth at hand from the oil industry, and the population explosion of the 1960's, and it is obvious that Venezuela was finally in an unusually good position to develop a major new rural settlement direction, with emphasis on its own landless. Foreigners were not excluded by the turn of events, but were restricted to a maximum of 25 percent of the population of new *asentamientos rurales*, as the rural settlements were called.

*Las Majaguas*. With such an auspicious atmosphere, IAN was able to focus its efforts on complete regional settlement planning within only three years following the start of its modern land distribution program. Fully aware of the expensive and somewhat disastrous trend of events in the Centro-Occidente of Cojedes, new IAN officials began to look outside their country for technical assistance. Partly because of the previous emphasis on communal colonization in Venezuela from the period of the ITIC when planning was begun at places like Chirgua, and partly because of the successes in this kind of planning by the new nation of Israel, leaders from Venezuela established a rapport with Israeli officials which led to a technical assistance agreement. The major result was the arrival in Venezuela in 1961 of an experienced regional settlement planner by the name of Itzhak Abt. Abt, and a group of Venezuelan officials, drew up a new development program for the Las Majaguas, Portuguesa area, just west of the Centro-Occidente of Cojedes (Fig. 3)<sup>21</sup>). In 1962 a Venezuelan team of officials from all government agencies involved with the direction and planning of new settlement travelled to Israel to study modern land opening techniques. *CORDIPLAN*, the presidential coordination and planning agency, then contracted with Israel for a five-man advisory group which resided in Venezuela four years (1963–1966), and steered land settlement toward its present form. The group worked in the Center for Training and Applied Research in Agrarian Reform, known as *CIARA*, a subdivision of *CORDIPLAN*.

One of the first tasks of the Israeli group was to select a regional settlement plan appropriate to the Las Majaguas area. A large dam and irrigation network had been started in 1958 and was almost ready by 1963 for operation over a 30,000 ha zone. This suited the Abt team which had built a body of modern settlement methods after an intensive period of establishment of new irrigation farm settlements in Israel between 1949 and 1951.

According to the original Israeli technique, groups of three to five small settlements with 80–100 farms each were placed as near to one another as possible. A common service center was built in the middle of the group, and the whole settlement was called a *garin* (nucleus). As the *garin* settlements became established, their success prompted formation of even larger scale planning whereby similar kinds of farms were placed together in different *garinim* and coordinated with only one specialized service center. The system was subsequently improved by extending planning to the regional level.

At this point, four to five *moshavim* (cooperative settlements) consisting of about 80 farms were demarcated in an area. A common service center, or village, with multifaceted cooperative, school, clinic, garage, temple, and some recreational facilities was built for these settlements which together were referred to as composite rural communities. Finally, an urban center was constructed for farm settlement zones whose composite rural communities had acquired a total of several thousand people. The urban settlement became the location for processing industries for the crops of the region and for central place functions of a higher order. Fodder mixers, slaughter houses for chickens and turkeys, meat packing, and fruit and vegetable canneries have all been established and lend an aspect of regional vertical integration to these settlement networks. Even tourism has been added to economic development in some advanced zones.

An important aspect of the evolution of *regional* settlement planning in Israel is that previous experience with strife caused by too much mixing of farmers with varied backgrounds dictated the wisdom of settling only one ethnic group in each *moshav* while promoting frequent contacts with different ethnic groups in all central place communities by means of extension meetings, children's schooling, etc.

The Israeli team leader sent to Venezuela had been involved at the regional planning level during development of the settlement program at Lakhish, Israel (Ashkelon), where settlements were constructed on 28,000 ha of good agricultural land in 1949—about the same size, therefore, as the Las Majaguas project<sup>22</sup>). Moreover, the Israeli settlers were Orientals who knew nothing about *moshav* principles—a factor which was also true of Venezuelan *conuqueros*.

In Venezuela, a modification of Israeli settlement ideals has also been applied to former haciendas where officials have not wanted to break up large blocks of functioning farmlands. Such estates are individually operated in both countries. However, in the *moshav*

<sup>21</sup>) For reports of Abt's work in Venezuela, see LAUFER, L., *Israel and the Developing Countries. New Approaches to Cooperation*, New York, 1967, pp. 96–103, and KLAYMAN, M. I., *The Moshav in Israel. A Case Study of Institution Building for Agricultural Development*, New York, 1970, pp. 294–311.

<sup>22</sup>) See, for example, BLAKE, G. H., "The Making of Ostem: A Study of Rural Planning in Israel," in *Southampton Research Series in Geography*, No. 2, 1965, pp. 35 to 59.



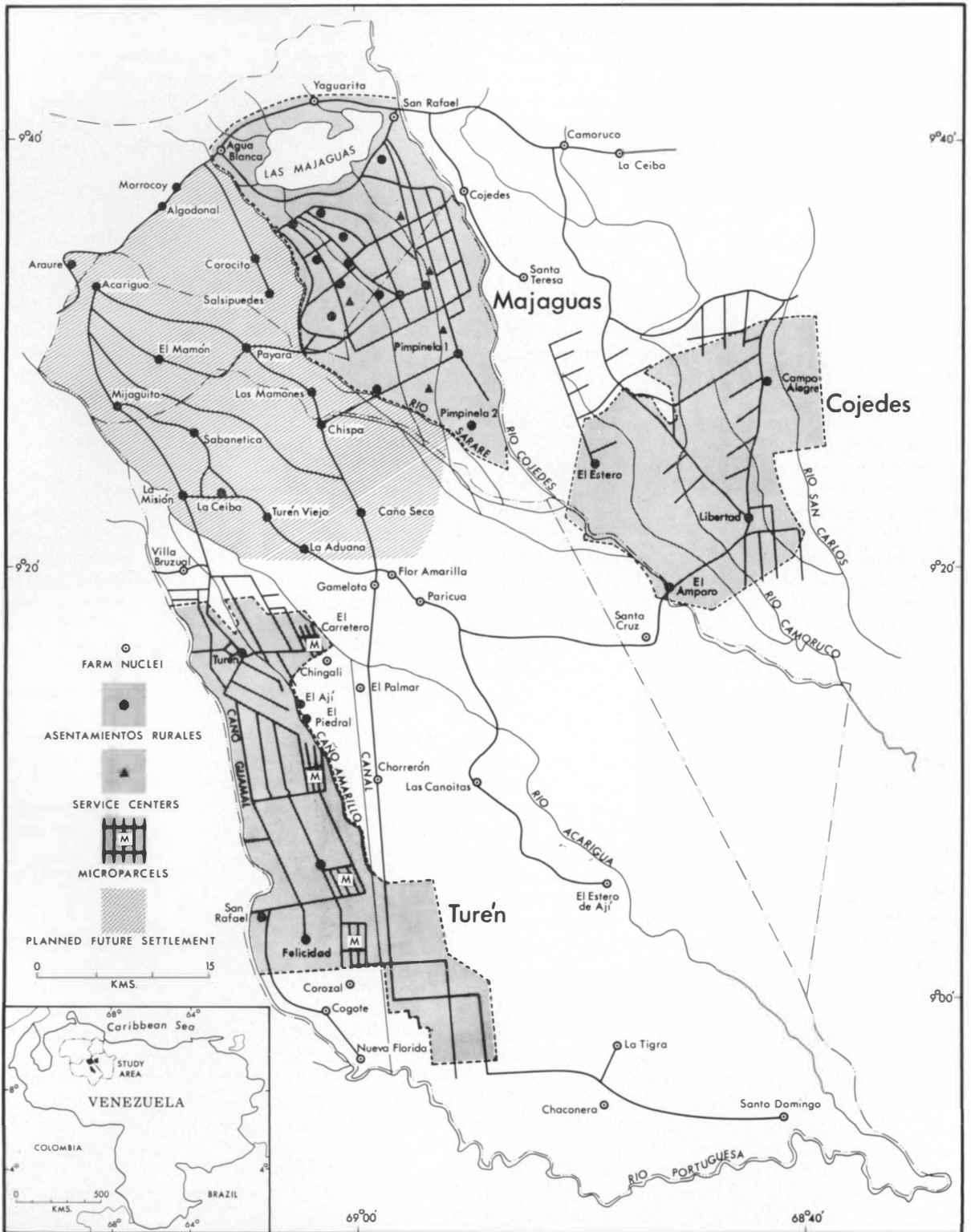


Fig. 3: The Llanos Settlements of Turén, Las Majaguas, and Cojedes. Sources: Instituto Agrario Nacional; Sistema de Riego Cojedes-Sarare, Primera Etapa (En Desarrollo), Caracas, 1967; Instituto Agrario Nacional: Unidad Agrícola de Turén, Caracas, 1953, and others



mentioned earlier, land is mostly cultivated cooperatively (*moshav ovdim*), although on some moshavim small amounts of land may now be cultivated individually (*moshav shitufi*). Since the characteristics of the two types of moshavim coincided better with planning ideas developed during the early years of the ITIC and maintained by IAN, this variety of Israeli settlement has been copied much more frequently in Venezuela.

The moshav idea called primarily for small farms, which satisfied the attention in Las Majaguas that was being directed toward the peasant farmer. Stimulus to shift away from medium and large farm development with foreign immigrants toward aiding the rural poor of the country mounted rapidly with the intensification of rural-urban migration and the spiraling population increases occurring in Venezuela just at the time the Israeli team began to function.

The area selected for the Las Majaguas colony extended across 30,000 ha of almost level, forested land between the Cojedes and Sarare rivers (Fig. 3). A second zone, known as Las Palmas, is similar and is scheduled for development during the 1970's on 60,000 ha of land between the Sarare and Acarigua rivers which border the colony of Turén. Settlers for the Las Majaguas area, almost half of which has been cleared as the first stage in the program, have occupied two-room cement-block houses constructed in small, rectangular group settlements scattered over the irrigation zone. To date, six such group settlements, called *centros poblados*, or *caseríos*, have been built with populations averaging about 100 families. Each center has grid pattern streets, a school, community water supply tower, and electrical plant. The distance from each centro poblado to the fields is set at a maximum of 2.5 km which farmers can walk without too much loss of time. In addition, five agricultural *centros de servicios*, or service centers, are planned. These are to have garage facilities and to dispense farming supplies such as insecticides. Plans call for the construction of eight more centros poblados and for ultimate provision of a larger urban settlement for every four centros poblados.

Beyond the centros poblados over 200 families have been assigned lots with small dairy operations and have been given houses and livestock shelters on their own land. In the livestock areas four families are located at crossroads so that only one electric transformer and one well are needed for all four houses. No centros poblados exist yet in the dairy zone, but urban facilities are planned for the near future.

Venezuelan urban slum centers were specifically singled out for aid in the new program. In a zone designated as Pimpinela (Fig. 3), 500 parcels were set aside at the beginning of the program to absorb poverty-stricken residents from Caracas. This was an experiment to alleviate directly the country's rural-urban migration problem from the largest cinturón de

miseria by trucking settlers from city to farm colony. However, by 1970, over 60 percent of the assigned lots had been abandoned and the idea was dropped<sup>23</sup>). Four years later these lots were being assigned to *conuqueros* after the fashion of all the others. Apparently, the lure of the large city is too great to re-orient even rural Venezuelans once they have lived there for several years.

The earliest cropping system in use at Las Majaguas consisted of raising "summer" rice followed by sesame, maize, or yuca on ten ha lots—a size based on requirements of 8,000 Bs per year income, or the amount needed to match urban incomes under prevailing conditions. Until 1969, land was fallowed after the first cycle when "winter" rice and other crops could be planted. At that time sugar cane began being raised by some during the fallow period. The need to diversify was evident from falling market prices and from losses by disease, especially of rice and sesame. Gradually sugar cane has, with direct government subsidization, replaced all other crops so that in 1974 it occupied about 50 percent of the cropped land. Citrus trees, cacao, African oil palm, and a variety of other crops could be raised, but the attraction of sugar cane profits seems too high for wise planning. Fortunately, dairy and meat prices remain stable and high in the country so that more emphasis on future livestock farm settlement is under way.

From the beginning, dairying has been financially more rewarding in Las Majaguas. Although dairy farms are small (ten to fifteen ha) and use only creole cattle, earnings are already approximately 8,000 Bs per year. This is ten times what the average rural family made a decade ago. The greater economic prosperity is reflected by the external additions made on numerous houses and stock shelters. Unlike crop farmers, dairy operators receive a regular cash income from milk sales and this advantage has not only permitted additional construction, but the formation of a private cooperative which now competes with a similar government organization.

Unfortunately, Las Majaguas is not without internal problems. One of these has to do with the fact that authorities who have assigned land to *conuqueros* have ignored the lessons of Turén and the advice of Israeli planners since their departure by placing people of different regional backgrounds in the centros poblados. This practice brought about serious settler disputes and unrest between 1971 and 1974. Another difficulty concerns high water tables which present drainage problems similar to those in Turén. A third obstacle centers around the use of farm implements on a cooperative basis. Large amounts of irrigated and

<sup>23</sup>) EDFELT, R. B., The Venezuelan Agrarian Reform; A Case Study in the Western Llanos (Las Majaguas), unpublished master's thesis, University of California, Los Angeles, Department of Geography, 1970, p. 28.

drained farmland and improved pasture necessitate purchase of complicated machinery. For a variety of reasons, maintenance has been so poor that independent groups have been formed which now rent privately owned equipment. One can only conclude from experience in other parts of Latin America that the appearance of successful private competition in this expanding program may be the first important sign of future independence from federal support and control<sup>24</sup>).

Recent suggestions on the per family expenditures by the Las Majaguas project indicate that the amount is twice that required for creating an urban industrial job<sup>25</sup>). Even so, the total effort must not be judged strictly on a cost basis. The value of improved health and human dignity to a balanced economy cannot be measured entirely in cash units. On the contrary, the overall success of the project may indicate that cost estimates of new rural settlement undertakings should not necessarily be compared to those of urban types.

**Delta del Orinoco.** During the 1960's a large scale irrigation settlement project was undertaken in eastern Venezuela. It is known as the *Delta del Orinoco* plan and has as its ultimate goal the development of half the Federal Territory of Delta Amacuro. This Territory is subject to extensive flooding but has good soils and water communication potential. At present it is occupied by an estimated 34,000 people, including some indigenous groups. Plans underway since 1965 call for completion of a series of flood dikes by the *Corporación Venezolana de Guayana* (CVG) Fig. 4). It is estimated that a total of approximately 1,000,000 ha will be protected from floods when the project is finished and that something less than half this land will be utilizable for agriculture. Eighty percent of the population in the region lives within the protected zone and almost all of the asentamientos rurales assisted by IAN and other agencies are being constructed in it. By 1970 the government had begun work with 12 settlements, as may be seen on Fig. 4. Some 45 others were in the early planning stages<sup>26</sup>). Progress in the Delta region has been slow, partly because of some political opposition from competing regions in the country. Hopes to make the area another rice producer "like the Mekong Delta" have not yet materialized, but the favorable location on the market periphery of Ciudad Guayana is promising.

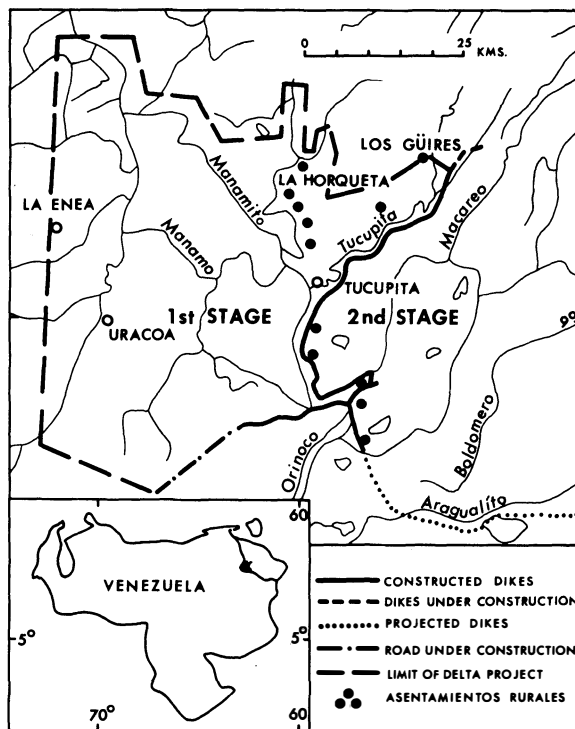


Fig. 4: New Settlement in the Orinoco Delta Region. Source: Corporación Venezolana; Informe Anual, Caracas, 1968, p. VI, 88

**Sur del Lago.** Still another large scale irrigation project has been planned in Venezuela to date. It is one of the most extensive and will cover 540,000 ha of land at the southwest edge of Lake Maracaibo, in the state of Zulia<sup>27</sup>). As may be seen from Fig. 8, the area already has a number of IAN asentamientos. The size of the *Sur del Lago* project, as it is called, reflects growing government attention to a major border problem with Colombia. In the state of Zulia, it is estimated that there are already some 300,000 Colombians, or almost 30 percent of the total population. These people have taken advantage of IAN programs to the extent that they have pretended to be Venezuelans by acquiring *cédulas* of identity when the Venezuelan authorities have time to issue them. At best this border problem is an international one that will eventually be met through mutual interests.

**Others.** Since the 1960's IAN efforts at establishing asentamientos have been extended to other special irrigation projects originally begun by the National Irrigation Plan of 1949 but neglected during

<sup>24</sup>) EIDT, R. C., *Pioneer Settlement in Northeast Argentina*, Madison, 1971.

<sup>25</sup>) Interview with Dr. J. L. Mendez-Arocha, Cordinador General del Comité Coordinador del Sistema de Riego Cojedes-Sarare, August 3, 1968.

<sup>26</sup>) *Instituto Agrario Nacional, Gerencia Técnica y Oficina de Planificación*, Listado de Asentamientos y Núcleos Espontáneos a Nivel de Estado, Distrito y Municipio, Caracas, 1970, pp. 114-117.

<sup>27</sup>) VENTURINI, O., "Aspectos geográficos de la colonización del piedemonte noroccidental de los Andes Venezolanos (Zona del El Vigía)," *Revista Geográfica*, Instituto de Geografía de la Universidad de los Andes, Mérida, 1970, pp. 73-95.

the Jiménez regime. The location of these smaller projects may be seen in Fig. 8. Practically all of them have, like most of their larger counterparts, emphasized small farms whose settlers have been former *conqueros*.

#### *Instituto Agrario Nacional: Isolated Group Projects*

Over the years the leaders of IAN have gradually attacked the problem of building a national network of agrarian small group settlements. These settlements are mostly independent of the irrigation projects described above and are more evenly dispersed throughout the country. Such settlements have approximately 100 families and may be started when a group of farmers petitions the *Federación Venezolana Campesina* (FVC)—a government supported peasant organization that has replaced the early *sindicatos*, *ligas*, etc., since 1965. If the FVC considers such a petition valid, it is forwarded to IAN. The next step is a land survey on either government *baldío* land, or private lands if necessary. Actually, almost a fifth of the settlements are on expropriated private land. Farmers who receive parcels must demonstrate competence within the first year of operation in order to receive an official property title. Prospective settlers attend agricultural schools where they are taught elements of dairying, ranching, and crop raising with or without local irrigation. University trained female sociologists called *demonstradoras* work with the womenfolk and demonstrate modern concepts of hygiene, cooking, and family care. These “home teachers” have a sizeable impact on the local community. Village management development projects such as those undertaken by the Philippine Rural Reconstruction Movement have not as yet materialized<sup>28</sup>.

**Barbacoas, Anzoátegui.** An example asentamiento rural of the isolated type is that of Barbacoas, Anzoátegui, located near Barcelona, east of Caracas. The settlement was begun in 1962 on 920 ha of level land along an asphalt road leading to markets at Barcelona (30,000 inhabitants, ten km) and Pto. La Cruz (60,000 inhabitants, fifteen km). Most of the land has been divested of its original savanna forest. Two main soil types exist: one is light and permeable; the other is heavy and has low permeability. Original settlers were mainly former petroleum workers and some *conqueros*, and totaled approximately 200 families. Principal crops are cotton, maize, beans, melons, and tomatoes.

Planning for Barbacoas was first implemented in 1962 when the colony was established, but a reorganization occurred in 1964 under the direction of an

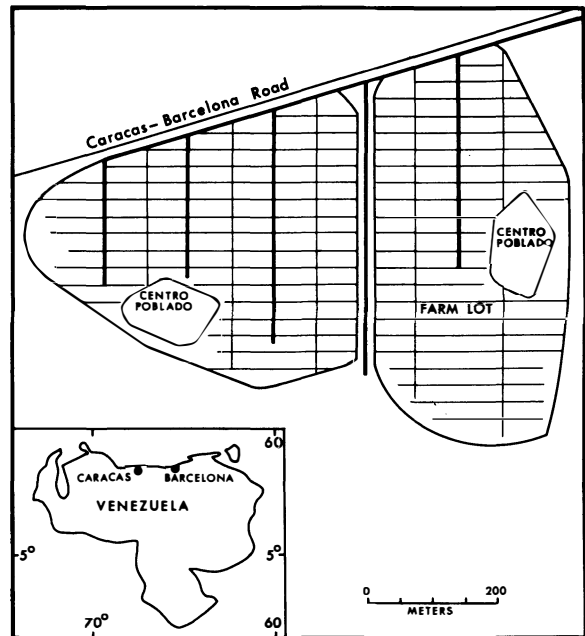


Fig. 5: A Planned Farm Settlement Established with Israeli Technical Assistance. Source: Instituto Agrario Nacional; Proyecto de Desarrollo Integral del Asentamiento “Barbacoas,” Caracas, 1966, 2nd ed.

Israeli technical advisor named Izhak Rosner<sup>29</sup>). Funds for various local projects, including irrigation from the nearby Río Neverí, and flood control on the Río Aragua, were earmarked in the original plans from IAN, MAC, MOP, and BAP (*Banco Agropecuario*), and had been carried out by summer, 1974.

The settlement was begun with one residential center, but a second was soon planned so that no one would be farther than the usual 2.5 km from fields (Fig. 5). Unfortunately the second center was isolated from the first when the new *autopista* between Barcelona and El Tigre passed through in 1971. Since then the second center, with only ten percent of the families, has languished. A primary school and an agricultural training school were established in the first centro by the Ministry of Education. MAC also maintains a regional agricultural extension training office there with an experimental irrigation station. By 1974 a church, a store, and a bar had been added, and the community was prospering.

Field sizes were originally based on five ha per family, a size about half the normal for new agrarian reform settlements, although it is claimed that the equivalent of eight ha of harvests could be obtained annually. Because of the favorable market conditions

<sup>28</sup>) PRICE, H. B., ed., and YEN, Y. C. J., and FELICIANO, G. M., Rural Reconstruction and Development; A Manual for Field Workers, New York, 1967.

<sup>29</sup>) Instituto Agrario Nacional, Oficina de Programación y Presupuesto, Proyecto de Desarrollo Integral del Asentamiento “Barbacoas,” Caracas, 1966, 2nd ed.

near the asentamiento, yearly earnings from such small parcels were high enough to satisfy colonists—an illustration that flexible holding sizes are desirable in agrarian reform. Although holdings had been extended to ten ha per family in 1974, it is argued in Barbacoas that small initial field forms had the advantage of guaranteeing full use of family labor sources compared with the opposite which has been true of the larger, more mechanized field forms in use at places like Turén.

Production is planned by a directive committee and is carried out by individual families. The latter also have adjacent to dwellings a private garden for subsistence crops and space for raising fowl. Marketing is a cooperative venture. It is evident from the organizational scheme that the moshav shitufi of Israel has served as the model here. There are no centros de servicios in Barbacoas because the settlement is small and is located close to two cities with major facilities. A future sub-center has been planned with garage for agricultural machinery repairs, a warehouse, and a colony administration building. The latter is supposed to be used by the community for meetings.

Crop production at Barbacoas has been determined by market conditions and has been characterized by rice, cabbage, sesame, maize, tomatoes, beans, and bananas on the heavy soils, and by onions, red pepper, maize, peanuts, beans, sesame, melons, and bananas on the lighter soils. The families which took part in the reorganization of the colony in 1964 were scheduled for a three year rotation of crops which has been haphazardly followed. By 1974 favorable cotton prices had brought about increased planting of that crop everywhere, illustrating that official farm plans must remain flexible.

No up-to-date statistics were available to the author on production achievements in this particular colony, but with the 25 percent literacy rate recorded of earliest settlers, the difficulties encountered with tractor repairs, drainage problems, and the belated aid from modern instruction, the simple fact that the colony is prospering and growing is indeed encouraging. That production has increased as it has elsewhere in such asentamientos is seen from overall statistics: acreage up from 960 ha in 1970 to 5,000 in 1974. Education and growth of families, whose numbers have more than doubled in twelve years (440), have obviously progressed to the advantage of the nation's agricultural system.

### *Problems and Results*

Any preliminary geographical assessment of Venezuela's modern rural settlement program must be made according to the degree of success involving (a) position, form, and regional structure of new settlements, and (b) general living conditions, volume and speed with which commercial farm products from new settle-

ments appear on the national market, and overall scope of the program.

**Position.** As far as position is concerned, the majority of new settlements in Venezuela have been advantageously located along good roads, a feature which has assured market accessibility. A problem has arisen in that a few new settlements located too far from some form of urban life have suffered up to 30 percent permanent loss of residents, according to local estimates. A reverse aspect of the problem is that a small percentage of new rural settlements has been located so close to large existing urban communities that residents have been tempted to escape to the city. Whether departure is part or full time, in either case there is a corresponding decline in efficiency reflected by weakened performance in the rural sector. It is evident that a happy medium must be met whereby all new rural settlements are well situated by means of thorough planning.

**Form.** The form of the new settlements, which involves both shape and size, has created more widespread problems than position. Difficulties having to do with both settlement and field forms have been continuous since earliest times. Of the two prominent forms of asentamientos rurales, rectangular and linear, the latter is becoming more common because of the growing emphasis on home gardening and poultry production. Settlers in Venezuela's program have begun to learn that they can increase personal income by up to ten percent if turkeys and chickens are raised just as is done in the moshav shitufi of Israel. This has brought about objections to the traditional Latin American plaza village form and the adoption of the linear shape. The latter permits poultry raising behind houses which face each other along the market road. Such settlements can also expand more easily when successful, although expansion brings on the need for central service facilities. In order for settlers in expanded units to remain near stores and offices, curvilinear forms are now being considered. Another change in settlement form has appeared in a few places where residents are gradually buying holdings of neighbors who have decided to abandon their farms. Although purchase of anyone else's land is illegal, it does occur, and is a problem which should be stopped before splintered holdings begin to dominate. Just the same, it is possible that the average size of farm holdings in new settlements (ten ha) should be increased for highly successful settlers. Legal sale of extra land to qualified people might help prevent departure of some of the most capable families. Much more careful selection of settlers and elimination of pull factors that detract from the land are needed so that permanent rural settlement will be found more attractive.

It should be noted here that a major shift in settlement form has been caused in the neighboring country of Colombia by purchase and consolidation of small holdings by terratenientes who step into newly opened

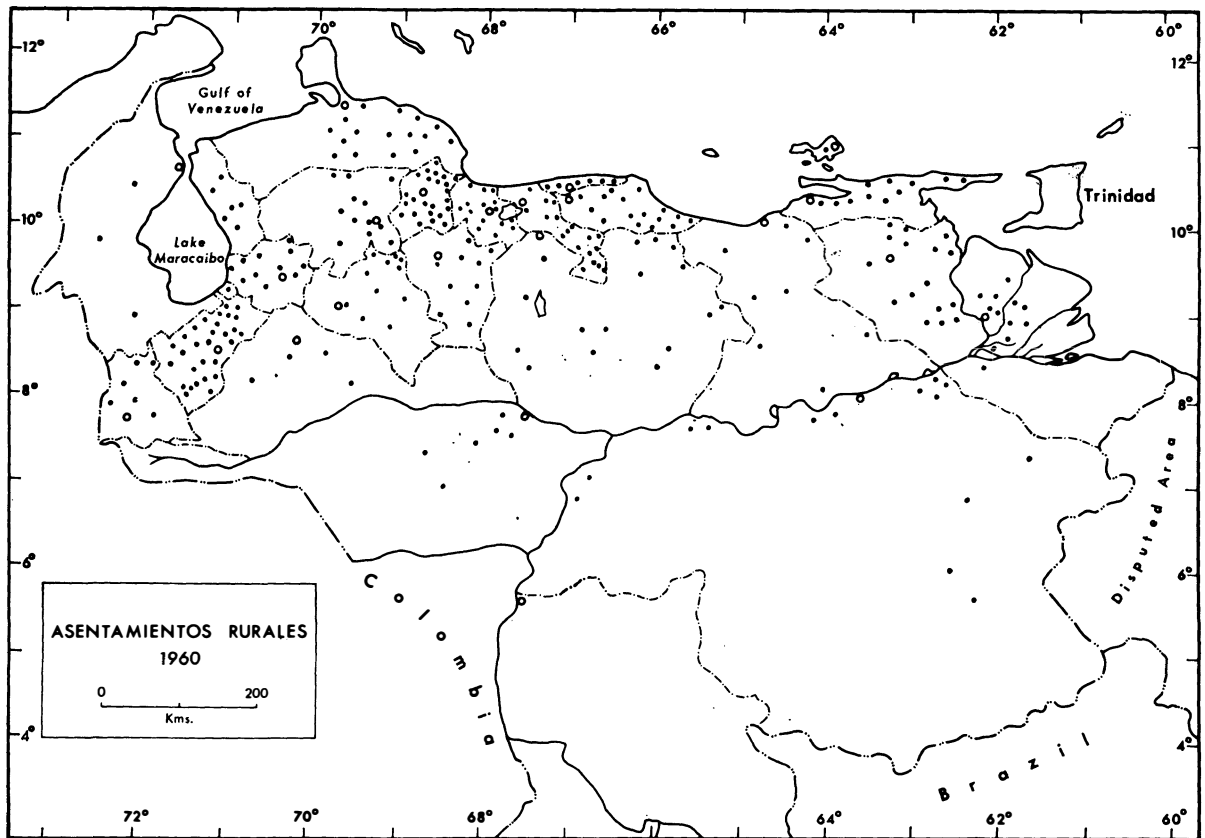


Fig. 6: Small Scale Agrarian Reform Settlements Established as of 1960. *Source:* Instituto Agrario Nacional; Listado de Asentamientos y Núcleos Espontáneos a Nivel de Estado, Distrito y Municipio, Caracas, 1970

areas just as they begin production<sup>30</sup>). For practical purposes, however, the terratenientes in Venezuela disappeared during the Gómez regime and do not seem likely to reappear in the traditional sense. The discovery of oil likewise displaced the usual Latin American attention to rural land accumulation by the urban wealthy. Furthermore, Venezuelans are proud of the fact that, unlike other countries with agrarian reform, no official working in the IAN program has the right to acquire land for personal use. The fact that the campesinos are effectively represented by their own agency (FVC) is also a healthy sign of checks and balances which will operate to preserve the present form of the new settlement program.

**Regional Structure.** The problem of an inadequate regional settlement structure is not acute in large scale irrigation zones where planning of various necessary settlement types has been more comprehensive from the start. Lack of an adequate dis-

tribution of higher order settlements among asentamientos rurales, however, means that the latter cannot operate as efficiently as they should. The need for higher order settlements is illustrated by comments from settlers to the effect that it is impossible for people in asentamientos rurales to attend religious services. Against strong settler opposition, authorities have tended to discourage establishment of functions within asentamientos which divert government funds to non-farm operations. Yet such functions could logically be provided in less numerous higher order settlements each of which should serve groups of vicinal asentamientos. Entertainment facilities are not part of the village structure either, so settlers must seek them at home or at nearby centers having low order urban functions. These pre-existing settlements have benefited considerably from their new status whenever asentamientos rurales have been built close enough to them. As clinics, schools, stores, and other facilities found in the planned centros of large scale irrigation settlements such as Turén, Las Majaguas, and others, are not often part of the picture in the rest of the country unless by chance, one can only conclude that absence of sufficient regional settlement planning is a negative element of the asentamiento program. Nevertheless, the appear-

<sup>30</sup>) EIDT, R. C., "Comparative Problems and Techniques in Tropical and Semi-Tropical Pioneer Settlement: Colombia, Peru and Argentina," Yearbook, Association of Pacific Coast Geographers, Corvallis (Oregon), Vol. 26, 1964, p. 37.

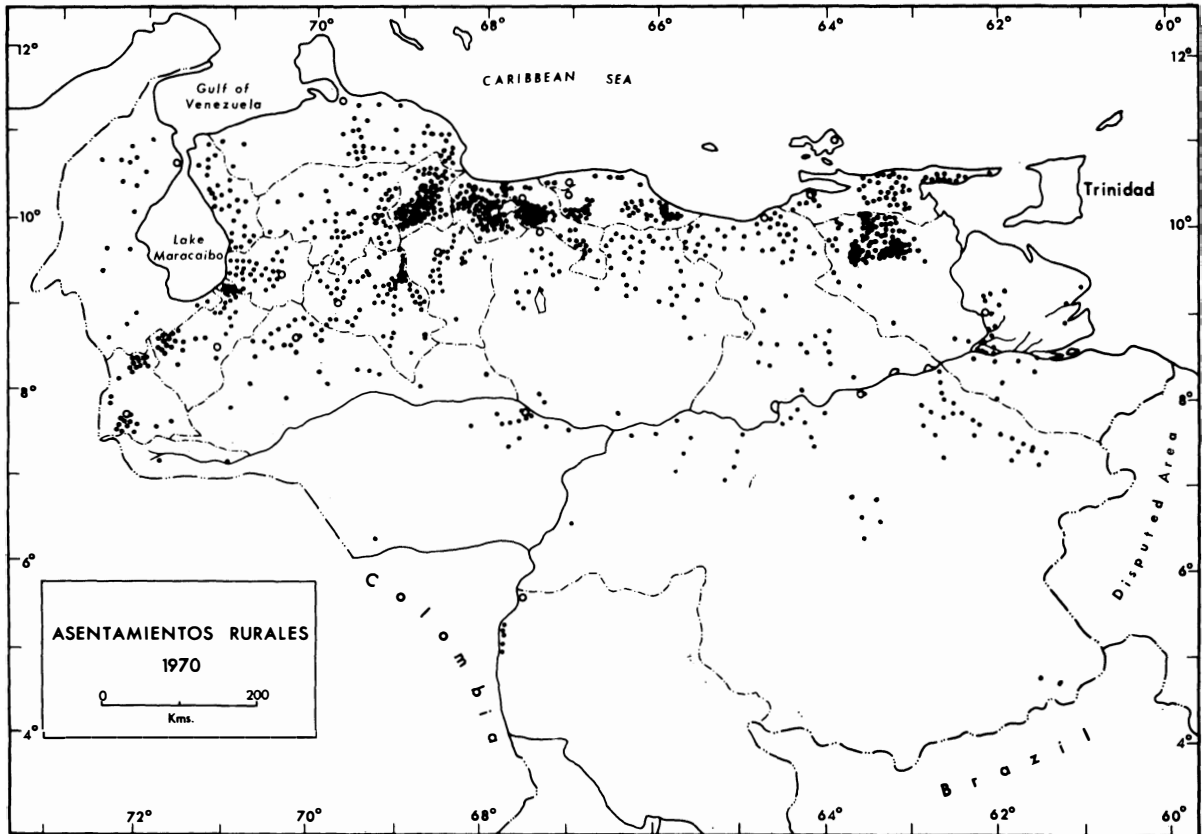


Fig. 7: Small Scale Agrarian Reform Settlements Established as of 1970. Source: Instituto Agrario Nacional; Listado de Asentamientos y Núcleos Espontáneos a Nivel de Estado, Distrito y Municipio, Caracas, 1970

ance of socially undesirable slum enterprises adjacent to the new farm settlements as has recently occurred in Colombia<sup>31</sup>) is less to be expected in Venezuela than increased emigration to cities. The reasons for this are that government settlements are better controlled in Venezuela, and that citizens have much better accessibility to large urban centers in the country.

**Living Conditions.** According to IAN estimates, slightly over 30 percent of the nation's farm population has made major advances in living conditions because of the program. The people involved are former *conuqueros* who have previously never had uncontaminated drinking water, medical care, electricity, or knowledge of productive methods of farming. About one-third of the beneficiaries of the settlement program have been able to increase their pre-asentamiento rural incomes, and, although there are critics of the smallness of the percentage, they fail to consider the benefits to health, general morale, and

farm efficiency for all participants, to say nothing about the short existence of the program.

**Farm Production.** Already the asentamiento rural program is to be credited with having brought about a significant rise in commercial crop production. Since the 1970's, the new settlements have made Venezuela self-sufficient in sesame, rice, sugar cane, manioc, beans, a few other crops, and eggs. Between 30 and 50 percent of the total production of these important commodities comes from the asentamientos. One external factor which could impede this contribution, however, is the high world price of sugar. This has prompted an obvious monocultural trend at Las Majaguas which has already resulted in a decline in the significance of other crops. In spite of that, impressive national production increases have been achieved, and they have been achieved even though only a fourth of the asentamientos are mechanized<sup>32</sup>). It is not unreasonable to conclude from this fact that most of the increases in Venezuela are the result of expanded overall land use rather than from intensification of

<sup>31</sup>) EIDT, R. C., "Modern Colonization as a Facet of Land Development in Colombia, South America," Yearbook, Association of Pacific Coast Geographers, Corvallis (Oregon), Vol. 29, 1967, pp. 21-42.

<sup>32</sup>) PROPERT, J., and BODILLO, A., "La Reforma Agraria en Venezuela," lecture, August 19, 1968, Universidad Central, Caracas.

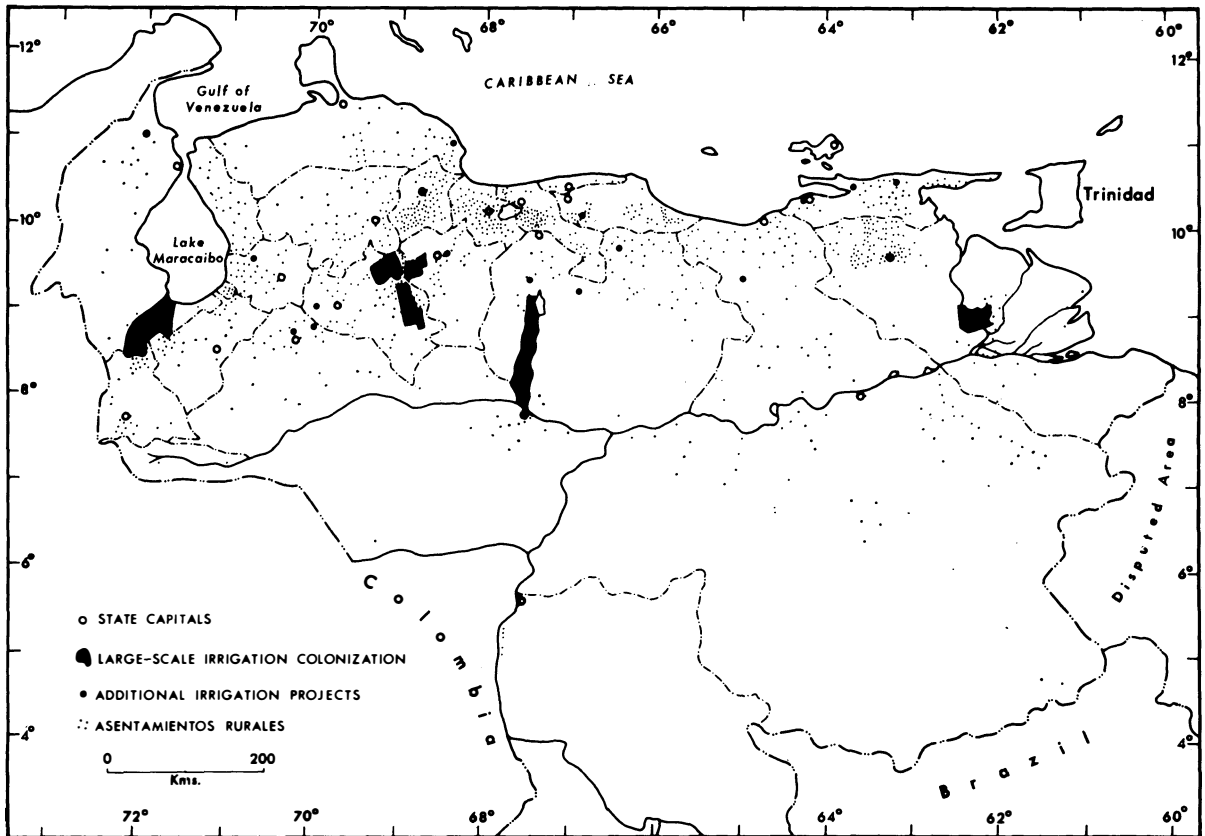


Fig. 8: Large and Small Scale Agrarian Reform Settlements, 1970

yields. Because field evidence suggests that mechanization is slowly increasing, it may also be reasonable to assume that further production gains can be anticipated as the program matures.

**Program Scope.** Available statistics reveal the exact number of rural settlements presently receiving IAN and other agency assistance, but do not permit simple breakdown between large and small units because both are now included under the general term *asentamientos rurales*. Moreover, a small percentage of pre-reform settlements which receive assistance is also included. Notwithstanding these difficulties, it is possible to state that since the beginning of agrarian reform more than 1,000 of the new rural settlements have been built. Their location, general distribution, and growth for the decade 1960–1970 are illustrated by comparing Figs. 6 and 7. Government statistics also indicate that over half a million people were settled in them by 1974.

Although only ten percent of the land available to the reform program is currently allotted, and only 50 percent of that is now in use, the new settlement sites themselves are easily noticed when traversing the country in any direction (Fig. 8) — a fact which underscores the difference between the Venezuelan program of agrarian reform and that of all other South Ameri-

can countries. Changes since the 1950's when the program began, point to the fact that *asentamiento rural* activity was initially concentrated in the western Llanos but that after 1963 a preponderance of attention was devoted to the mountainous parts of the nation (excluding the disputed Guayana region). In fact, over two-thirds of the agrarian reform efforts have been concentrated in the Andes and Coast Ranges<sup>33</sup>). However, as the Delta-Amacuro Territory is being opened for settlement and as a zone of major importance between Ciudad Bolívar and Ciudad Guayana is undergoing rapid development, the most recent trend of agrarian settlement effort appears to be shifting toward the eastern Llanos, thus making the program truly national.

Field and archival research in modern Venezuela make it evident that substantial accomplishments in agrarian reform have been made by means of establishing an entirely new rural settlement complex. It is also clear that this complex is national in scope, and represents a unique result of cultural contact between the Old and the New Worlds. That Venezuelan group settlement concepts with the aid of Israeli field prac-

<sup>33</sup>) WILKIE, J. W., *Measuring Land Reform*, UCLA Latin America Center, Los Angeles, 1974, pp. 94–95.



tices have transformed a centuries-old Latin American settlement pattern in only 25 years is not only bringing harmony to the total Venezuelan settlement structure, but may well serve as an experimental model for other countries with large native populations whose rural settlements could be modernized in the hopes of improving food production.

#### Acknowledgements

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## BERICHTE UND KLEINE MITTEILUNGEN

### EIN HYDROLOGISCHES QUERPROFIL DURCH DIE ZENTRALEN ALPEN auf Grund von neuern Werten über den Wasserhaushalt in schweizerischen Forschungsgebieten

Mit 3 Abbildungen und 2 Tabellen

VALENTIN BINGGELI

*Summary:* A hydrological cross-section through the central Alps.

The aim of this paper is to present a detailed discussion of the hydrological asymmetry which exists between the north and south sides of the central Alps. This phenomenon has been recognised generally and for larger drainage basins, particularly since the pioneering work of OTTO LÜTSCHG. Table 1 presents subsequently calculated values for the hydrological balance in certain parts of the Swiss Alps which illuminate the closer relationships in quantitative form. On the basis of these figures an attempt is made to also portray the hydrological asymmetry in graphical form.

The asymmetry is shown in particular by fig. 2 with linkages between runoff  $A$  and mean district altitude  $H$ , in which the line of regression of the south side of the Alps is reversed in order to maintain a profile-like picture. The mean altitude for the north-side districts is 1,549 metres above sea level and an accompanying runoff of 121.3 cm per annum. The corresponding figures for the south side of the Alps are: district altitude 1,661 metres, runoff 166.2 cm. In spite of this clearly indicated variety in the hydrological balance of alpine areas fig. 3 also shows, with balance diagrams for individual typical test areas, the form and extent of hydrological asymmetry.

In den Werken von OTTO LUETSCHG (1872–1947) „Zum Wasserhaushalt des Schweizer Hochgebirges“ wurden die Grundlagen der moderne Hochgebirgs-Hydrologie gelegt. Seither sind in deren Fortführung eine ganze Reihe von Untersuchungen durchgeführt worden, die für einzelne Flußgebiete hydrologische Bilanzen gemäß der Gleichung:

Niederschlag = Abfluß + Verdunstung aufstellen lassen<sup>1)</sup>.

Aus den dadurch ermöglichten Vergleichen sei im folgenden bloß ein Aspekt herausgegriffen, und wir verweisen für die vollständige Zahlensammlung wie Zitierung auf eine demnächst erscheinende umfassendere Arbeit<sup>2)</sup>.

Gegenstand der vorliegenden Miszelle ist die Ungleichheit im Wasserhaushalt von Nord- und Südseite der zentralen Alpen, fortan als „hydrologische Asymmetrie“ bezeichnet. Bekannt war bisher die allgemeine Erscheinung für allgemeine Verhältnisse und größere Flußgebiete. Neue Untersuchungsergebnisse über Niederschlag und Abfluß einzelner typischer Testgebiete erlauben heute eine detaillierte Darstellung der Zusammenhänge. Die Belege dazu finden sich in Tab. 1. Darüber hinaus war unser Ziel, die hydrologische Asymmetrie der Alpen in Querprofilen auch bildhaft aufzuzeigen (Abb. 2 und 3).

<sup>1)</sup> Die Arbeiten stammen vorwiegend aus den Forschungsprogrammen der folgenden Stellen: Geographisches Institut der Universität Bern (Prof. Dr. F. GYGAX), Abteilung für Hydrologie und Glaziologie der ETH Zürich (Prof. Ing. P. KASSER), Eidg. Amt für Wasserwirtschaft, Bern (Ing. E. WALSER), Schweizer. Anstalt für das forstliche Versuchswesen, Abteilung Hydrologie, Birmensdorf-Zürich (Dr. H. M. KELLER) und Schweiz. Meteorologische Zentralanstalt, Abteilung Niederschlag (H. UTTINGER).

<sup>2)</sup> BINGGELI, V.: Hydrologische Studien im zentralen schweizerischen Alpenvorland, insbesondere im Gebiet der Langete. „Beiträge zur Geologie der Schweiz – Hydrologie“ Nr. 22, Bern.