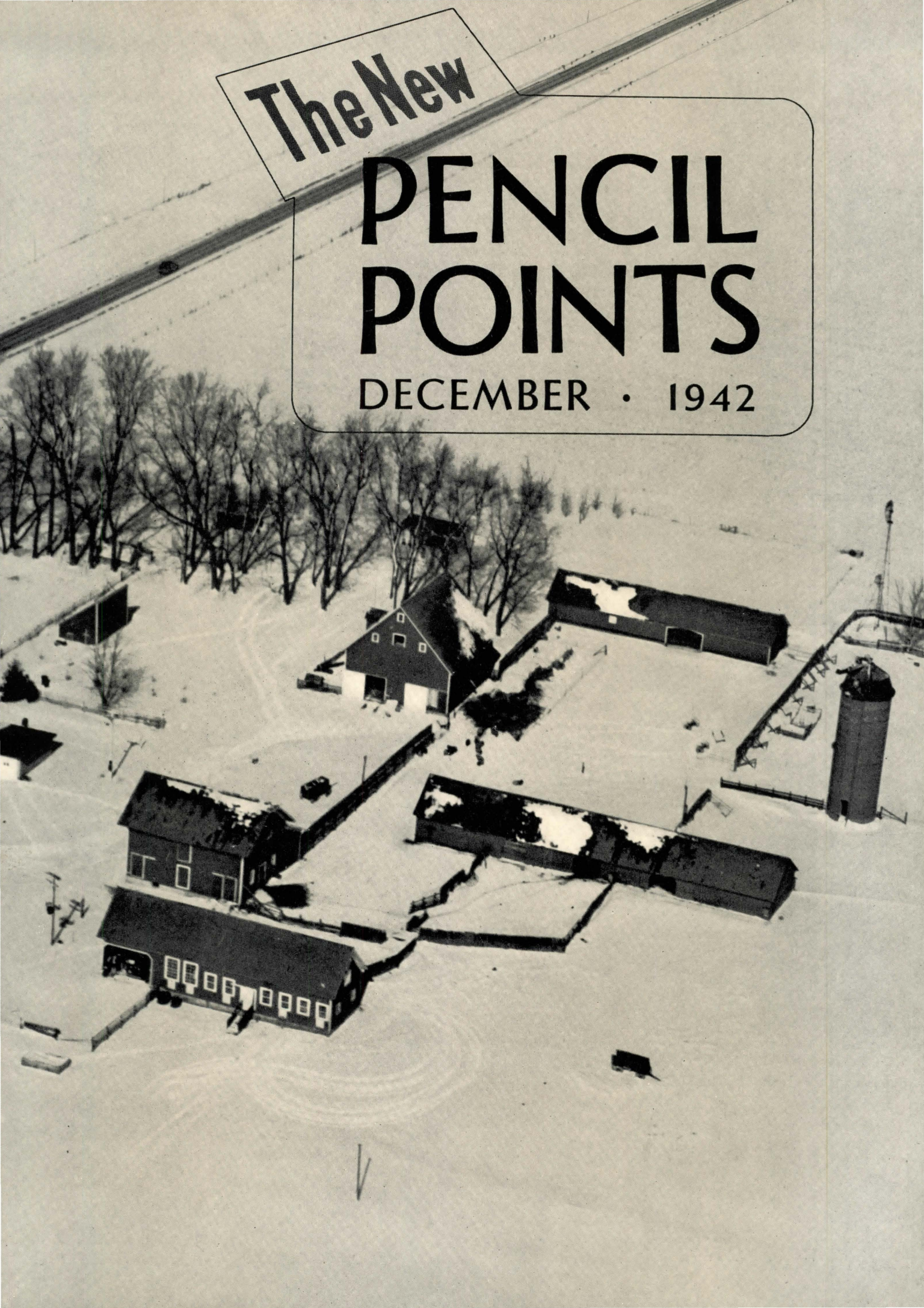
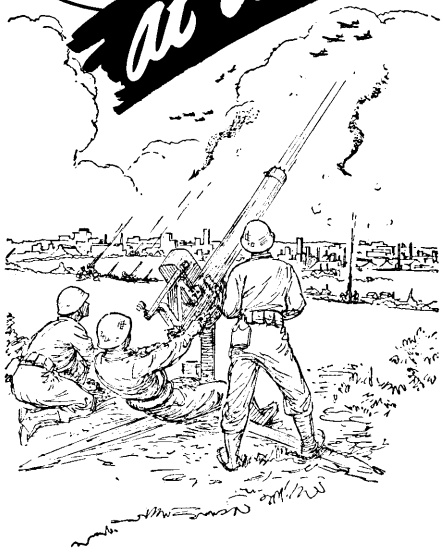


The New PENCIL POINTS

DECEMBER · 1942

STEAM Heats America—at war!



TO blast the enemy out of the sky . . .

20,000 anti-aircraft guns in 1942 . . .

35,000 anti-aircraft guns in 1943 . . .

That is America's promise to the Victory Program—and America is going to beat that promise.

We are building a new America of huge new plants . . . enlarging facilities to insure ever-increasing production of weapons needed so urgently by our armed forces.

Behind this tremendous building program is steam. For steam serves America in war, as in peace. Steam, harnessed and brought under control with Webster Steam Heating Equipment, provides the heating comfort essential to all-out production.

Today, we are engaged in direct war work, but manufacturing facilities are still available to supply Webster Steam Heating Equipment for plants serving the war effort.

Essential repairs for Webster Systems are available on A-10 priority, under W. P. B. Emergency Repair Order P-84. Orders should be limited to actual needs.

Warren Webster & Company, Camden, N. J.
Representatives in 60 principal Cities

Webster Steam Heating

This is one of a series of advertisements that will tell the public of the part that Webster Steam Heating and the Webster organization plays in the war effort . . . appearing regularly in leading business, industrial, engineering and technical publications.

L. A. Cherry, of Cherry, Cushing & Preble, Consulting Engineers, Buffalo, N. Y. Member of American Society of Heating and Ventilating Engineers. M. E., Vanderbilt University.

"*The reduction of wasteful overheating* with modern central steam heating controls is an important contribution to the war effort," says L. A. Cherry. "It saves needed fuel and takes some of the burden off the transportation system. By keeping heat loss as small as possible, a building owner reduces his own overhead expense and increases the comfort and working efficiency of building occupants. When compared with the results achieved, the cost of modern central steam heating controls is very reasonable. Operating cost is low because simplicity of equipment assures easy adjustment."

As consulting engineer for Our Lady of Victory Homes of Charity, Lackawanna, N.Y., L. A. Cherry specified the Webster Moderator System of Steam Heating for the Administration Building in 1938, the Infants' Home in 1939, the Hospital Building in 1940, the Orphans' Home in 1941, the new Nurses' Home in 1942. The heating of Pierce's Proprietaries Building, in Buffalo, is also "Controlled-by-the-Weather" with a Webster Moderator System according to plans made by this engineering firm.

WARREN WEBSTER & COMPANY

CAMDEN, N. J., EST. 1888, PIONEERS OF VACUUM STEAM HEATING

Here Enters The Architect

This Christmas month, more than any we remember, is one for planning ahead. In a year of war, we have accepted changes which were bitterly resisted thirteen months ago. Controls have hit us hard. We cannot be the same again. What have we, as professional men, accomplished, and to what can we look forward?

In this year, a substantial number of architects have come to recognize a talent which all successful members of the profession possess: the ability to coordinate many diverse factors to produce the designed result, to control to achieve the desired purpose. Though not peculiar to the architect, this is yet an essential part of his stock in trade, to a degree perhaps greater than in any other calling. It entails seeing clearly what is needed, and then satisfying that need with a plan, with men, materials, equipment, and direction.

Those who have recognized in themselves this ability have had a comparatively easy time adjusting themselves to war. One architect writes us that, in the last war, he found his training fitted him for rounding up, from all over the Northeastern States, materials and parts for large marine engines. Today, he has again dropped his practice to lay out equipment and facilities for cartridge production—a task which, he finds, starts as an "architectural" problem to be studied at 1/8 inch scale.

Others, who have designed huge industrial, housing, and military projects, have found this same talent for coordination more necessary than ever.

With victory, what?

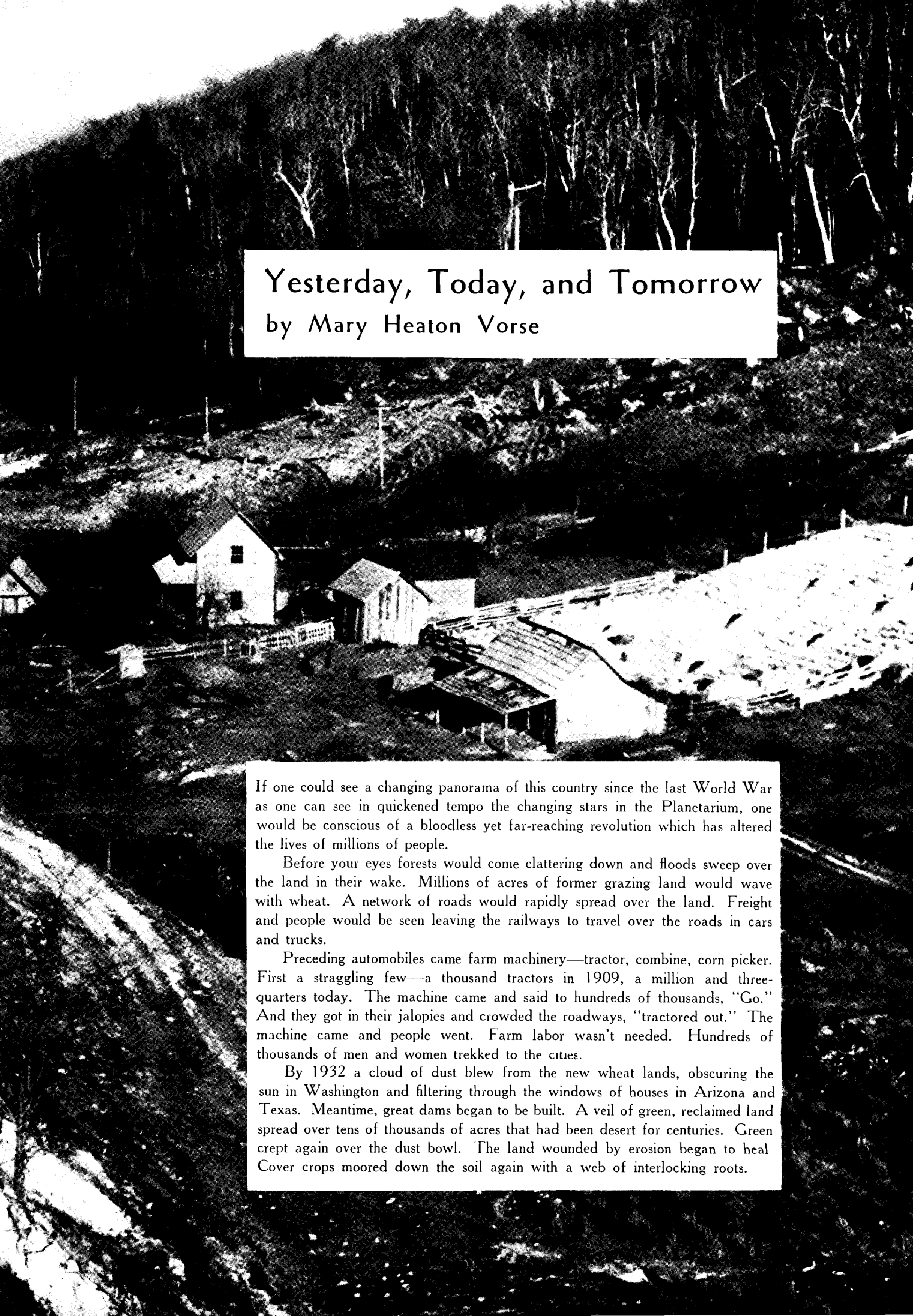
Controls, certainly, of some sort—if we are not to experience over again the chaos of 1921 and 1929, and the depressed 30's. The British Beveridge report, and their Ministry of Works and Planning, with its comprehensive program for rebuilding Britain not in the image of the past but rather as the flower of the future, point one way along which we can proceed. As our problems differ, so let our plan differ—but let us have a plan!

To plan, we must know what we plan for. Hence, in this issue is surveyed a great neglected part of our country—the rural region—to see what it contains, and, above all, what it needs. It, too, is undergoing vast changes, some obvious and, like all change, resisted; others subtle, almost unperceived. Some of its needs exist wherever men exist: the need for shelter, and for medical care, to name only two. Some are strictly rural effects of American technological advance: of developments in electricity, chemistry, biology, and other sciences as they affect rural areas; development of methods and machines which enable the countryside to produce more with less labor.

If the countryside is so to produce, and in producing contribute its share to our growing civilization, and if the countryman is to benefit from his efforts, all these developments have to be coordinated—or, as we said before, *controlled to achieve the desired purpose*. Here enters the architect.

This is part of the planning which must be done now, if we are to build sensibly, pleasingly, well and profitably when we have won this war. It is a hard part, for it is made up mostly of small units, difficult, obscure, relatively profitless when segregated though sufficiently imposing in the aggregate. Nowhere do faulty planning and meretricious design show up more unfavorably than in the country; the inevitable correctness of natural growth mocks men's mistakes.

Yes, this planning ahead is far from easy, but it must be undertaken. Otherwise, after victory will come anticlimax.



Yesterday, Today, and Tomorrow

by Mary Heaton Vorse

If one could see a changing panorama of this country since the last World War as one can see in quickened tempo the changing stars in the Planetarium, one would be conscious of a bloodless yet far-reaching revolution which has altered the lives of millions of people.

Before your eyes forests would come clattering down and floods sweep over the land in their wake. Millions of acres of former grazing land would wave with wheat. A network of roads would rapidly spread over the land. Freight and people would be seen leaving the railways to travel over the roads in cars and trucks.

Preceding automobiles came farm machinery—tractor, combine, corn picker. First a straggling few—a thousand tractors in 1909, a million and three-quarters today. The machine came and said to hundreds of thousands, "Go." And they got in their jalopies and crowded the roadways, "tractored out." The machine came and people went. Farm labor wasn't needed. Hundreds of thousands of men and women trekked to the cities.

By 1932 a cloud of dust blew from the new wheat lands, obscuring the sun in Washington and filtering through the windows of houses in Arizona and Texas. Meantime, great dams began to be built. A veil of green, reclaimed land spread over tens of thousands of acres that had been desert for centuries. Green crept again over the dust bowl. The land wounded by erosion began to heal Cover crops moored down the soil again with a web of interlocking roots.

On the farms themselves, from the Tennessee Valley throughout the country, electric lights glimmered where there had been no lights before. Tasks of all sorts were being performed by electric power. Machines demanded larger farms. Farms of more than 500 acres increased 37% in the decade from 1930 to 1940. The immemorial way of the farmer had altered.

All over the country crops were changing. In the South the acreage of export crops—tobacco, cotton, and wheat—shrank twenty million acres. The Northeastern farms, with one-third of the consuming public on their doorsteps, specialized more and more in perishable and bulky objects, and these farm areas furnished not only food but recreation to city dwellers.

Acreage in the corn belt shrank 8 million acres, but the amount of grain produced was the same, and soy beans and hay claimed 8 million other acres. The wheat belt moved eastward, and 15 million acres went out of wheat. And then the hogs moved from Iowa, Illinois, and Missouri to Indiana and Ohio.

As we take a bird's-eye view of the land in 1942 we find we have 6,096,-799 farms. Of these, analysis shows that a million farms are lived on by retired and part-time farmers, or by summer residents. Another million are sub-marginal, producing for subsistence, selling little on the market, and operated to a surprising extent by widows, the aged, and infirm.

Another two million, of the less-productive, unmechanized sort, are owned largely by operators over fifty. As the owners die off or retire, their farms will in many instances be taken over by neighboring farmers in the trend toward large holdings. About a quarter of a million are corporation-owned factory-farms, estate and hobby farms, or farms owned by institutions.

The farms which produce the staples and live stock are the remaining two million, the most important and productive group. "They are," says the Secretary of Agriculture, "the expanding dynamic group, quick to adopt new methods."

These take advantage of the almost miraculous progress in farming methods which has been made in the last quarter of a century. So in spite of all the changes, in spite of the factory and corporation farm, the backbone of farming is the family-sized unit, large enough and with resources enough to maintain a family in decent comfort.

My husband's family farm in the Shenandoah Valley in Virginia was such a place. It had 120 fertile acres of rich valley land. The cash crops were hogs and dairy products, and a nice penny was made from the large flock of turkeys, and the apple and English walnut orchards. There was a wood lot and a fine small fruit and vegetable garden. We smoked our own hams and bacon; ducks and guinea fowl and chickens diversified the ample table. Through the spring-house flowed the brook in which watercress grew. For those days our farm was modern. My husband and my sister-in-law had put in a furnace and modern plumbing, but we still drove horses to Berryville 7 miles away. We had no electric light, we had no telephone or tractor. The separator was still worked by hand.

Then, in 1919, a coal strike and an excessively severe winter plunged us back into the dark ages. When I went to visit my mother-in-law we were again burning wood in the stoves. The colored boy brought water in pails. It took the live-long day to do the mere housework of the farm. When I arrived on my visit, so penned-up had my sister-in-law been with the ever-recurrent tasks

that she had not had time even to drive out to find a girl to help. And how incessant and how grilling is the work upon a farm under the old conditions! It is hard to realize for anyone who has not experienced it. Through great areas of the country, terrifying isolation added its toll to hard work. Loneliness, in the ranch house and on the prairie farm and in the fold of New England hills, drove women insane. Monotony enfolded them in melancholia. Today, such remoteness has vanished.

When water was piped into the kitchen sink, women had their first great liberation. No other gain in woman's status was ever such a liberator, yet this revolution is far from accomplished. When a farm survey was made in 1934 it was discovered that in almost three-fourths of the farm homes in the country, water was carried 250 feet by hand. Running water was lacking in 83.6%, and only 9% of the farms had indoor toilets. While this figure has changed somewhat in the last eight years, liberation by water remains incomplete. People bought cars before they put water in kitchens; the first thing that a farm family will buy, even before farm machinery, is some sort of a jalopy.

"My family's so pore," explained a farmer's wife applying for relief, "we ain't been able to send the children to school wantin' shoes. We're so pore when the windows broke we stuffed 'em up with rags. Why, we're so pore we ain't a shed even to put our car under!"

Next to be bought is a radio. These two things have brought spiritual miracles to the isolated and ignorant. Music, news, and entertainment flowed through the air. Church and store, movie and school were suddenly accessible. Radio and car revolutionized the lives of hundreds of thousands of farm dwellers.

Contrast the work done on our Virginia farm with that of a similar farm which has been electrified. I have one in mind where the ample kitchen has been completely electrified, with the exception of the stove. Where our clothes were washed in a soapstone tub—and lucky we were to have it, with hot water running in it—an electric washer now washes and wrings their clothes. The family is a large one and the younger members of the family pile the dishes into the dish washer. The clothes naturally have their ironing machine; and the mixer and grinder cut the kitchen work in half. A vacuum cleaner "practically does everything but de-flea the dog." There is also an electric attachment to the sewing machine.

"It took some doing to get all these things," said my hostess whom I had met at a meeting of the women's club in the town ten miles distant. "Ed's like the rest of the farmers. He will buy any kind of contraption for the farm, but he lags on things for the women. Before I could get my new kitchen, I got my electric brooder for my chickens." My hostess was an expert chicken farmer and had gradually increased her flock until they contributed materially to the farm income. This could only have been made possible by labor-saving devices.

Her electric brooder and the lighting of the hen houses, she explained, had increased poultry and egg production 25% without increasing labor. Poultry raised in lighted houses feed longer, grow faster, and produce more eggs. Like many other women she likes gardening and, except for the plowing and planting, she and the children attend to a great deal of the garden. "My poultry is just an example of what can be done with electricity. In some dairy farms around here where they have electric milking machines and cream separators and coolers, the size of the herd which an individual farmer can take care of is just doubled, and by heavy feeding they can get 10% more milk from the same animals."

In the workroom back of the kitchen is the pressure canner. The lists of things canned, meat and vegetable, preserve and pickle, are as long as Mr. Heinz'. Row on row of jars live up to the government's program which asks the farmers of the country to raise as much as they can of their own food during war time.

Ever since the last war European countries, such as Germany, have planned to make themselves independent in food supply. In 1936 German sources reported, at the third World Power Conference in Washington, that rural electrification was adopted in Germany "to assure a subsistence of the German people on the products of their own soil and to prevent the flight from rural districts to larger cities." This rural electrification "was made possible only

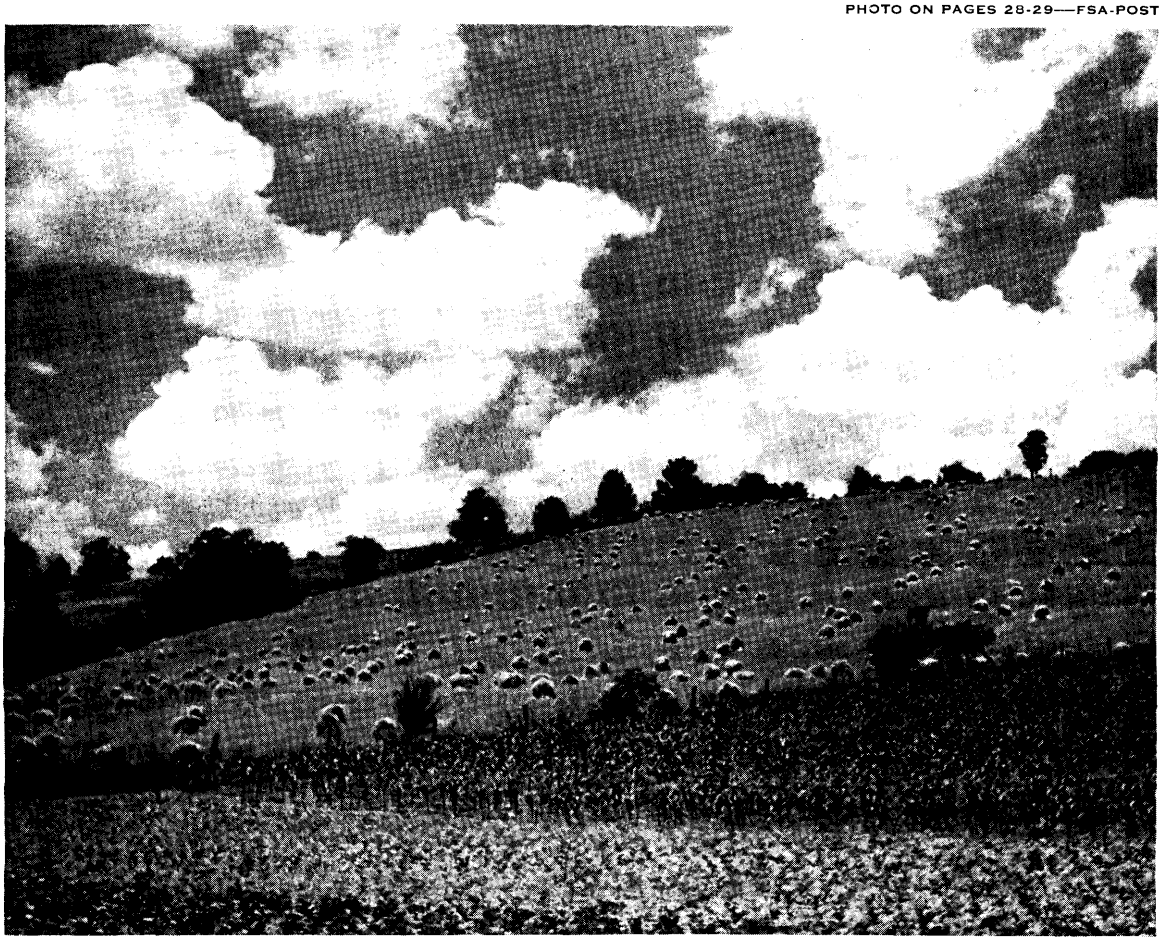
because industry and agriculture cooperated closely, and because the government has shown great interest in the solution of the problems encountered and has energetically assisted." Two years after Hitler came into power Germany had already electrified 80% of its farms and had nearly completed her 100% electrification when war was declared. How far behind America lagged is shown by the fact that, when German farms were 80% electrified, only 10.9% of the American farms—that is to say 750,000—were electrified.

The Rural Electrification Administration was created by executive order on May 11, 1935. By June of last year 34.9% of the farms were electrified —or 2,126,150—an enormous jump. Now, with farm labor shrinking and the need for food increasing, electrification is needed more than ever, but priorities on electrical appliances and machinery have slowed it down. No lesson of starvation had taught us the need of electrification as it had Germany. The completion of our electrification program will have to wait for the post-war period.

According to the Department of Agriculture, between two and three million farm houses are needed today in the United States, over and above the millions of dollars worth of repairs. There are many thousands of farm houses in use today which the Department of Agriculture considers "below the standard not only of the 20th Century but of the 19th or 18th Century. They would not have been considered decent houses at the time of the American Revolution. They are not only far below our American standards of living, they are even worse than the houses of many Chinese peasants." To wipe out such conditions is one of the many aims of the postwar program. When the three million houses are built, it is hoped by the Government that these will conform to the minimum standards recently laid down by the Department of Agriculture Inter-bureau Coordinating Committee on post-defense programs.

In building all new farm houses care will be taken not to imitate urban houses. The kitchen will be extra large, the work spaces of porch and work room beyond will allow for processing food and similar work. When this program goes into effect something will have been done about the rural slums.

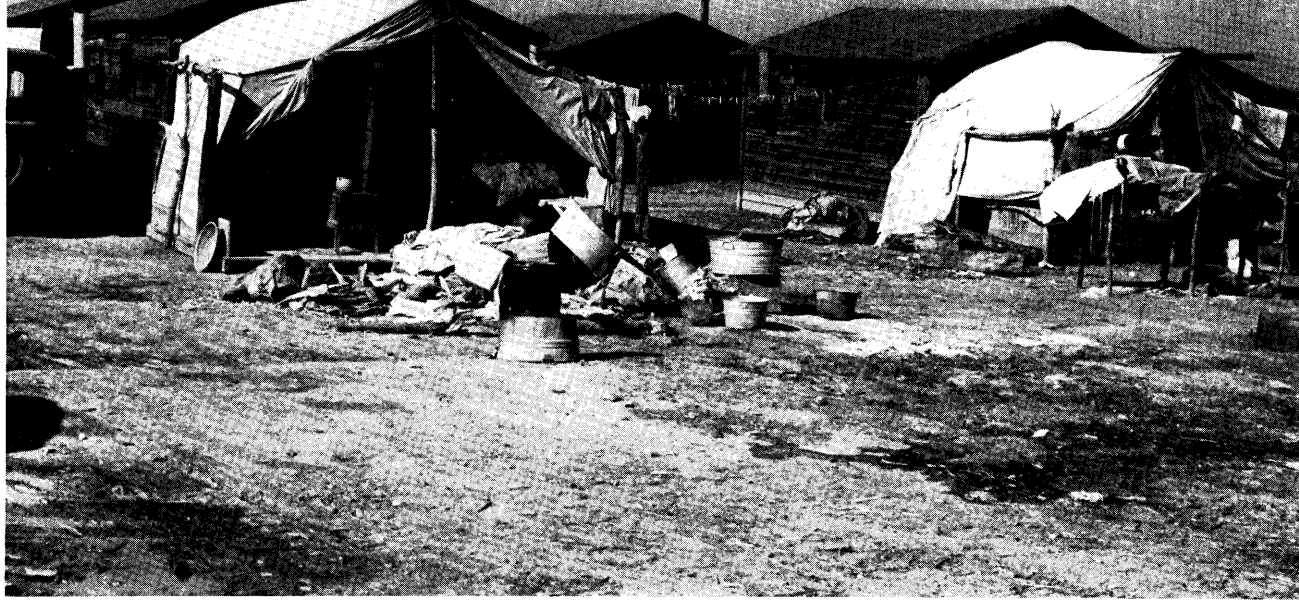
PHOTO ON PAGES 28-29—FSA-POST



Farm Labor: After Shelter Comes Health

As a nation, we have heard much of the plight of migratory farm labor, and of measures taken by the Farm Security Administration to alleviate it, by establishing labor camps. These were in themselves health measures of a sort; and provision of adequate food, of facilities for bathing and simple personal and household cleanliness are obvious sanitary measures. But by 1938, FSA had determined that food, shelter, and plumbing were not enough. Medical services were an absolute necessity.
Agricultural workers' health and medical associations were formed under FSA as early as April, 1938. By late 1940, these existed in most of the States in the Union. (Republican Vermont had one in each county!) For migratory workers, membership is offered gratis; in other cases, farmers pay

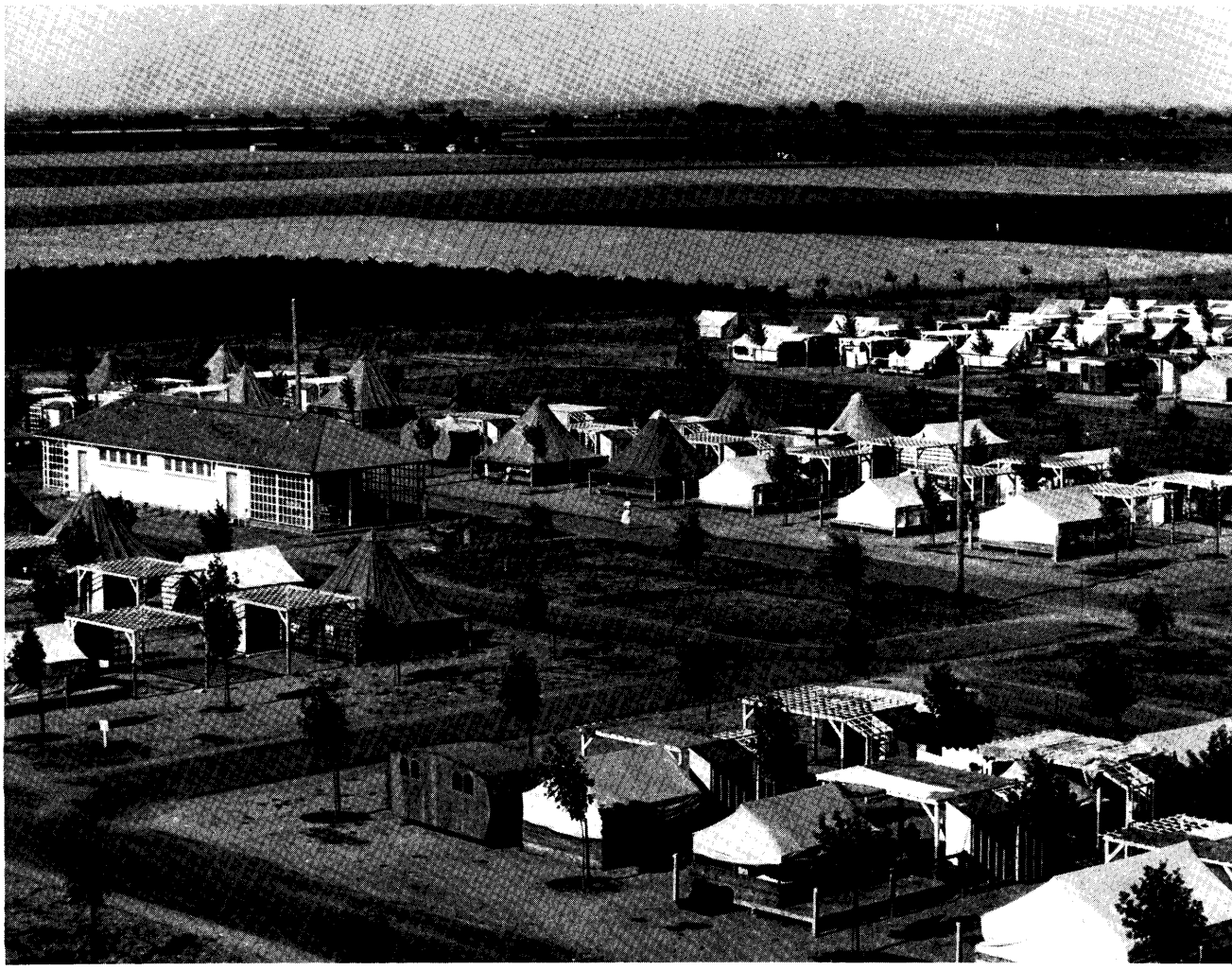
FSA PHOTOS BY LANGE

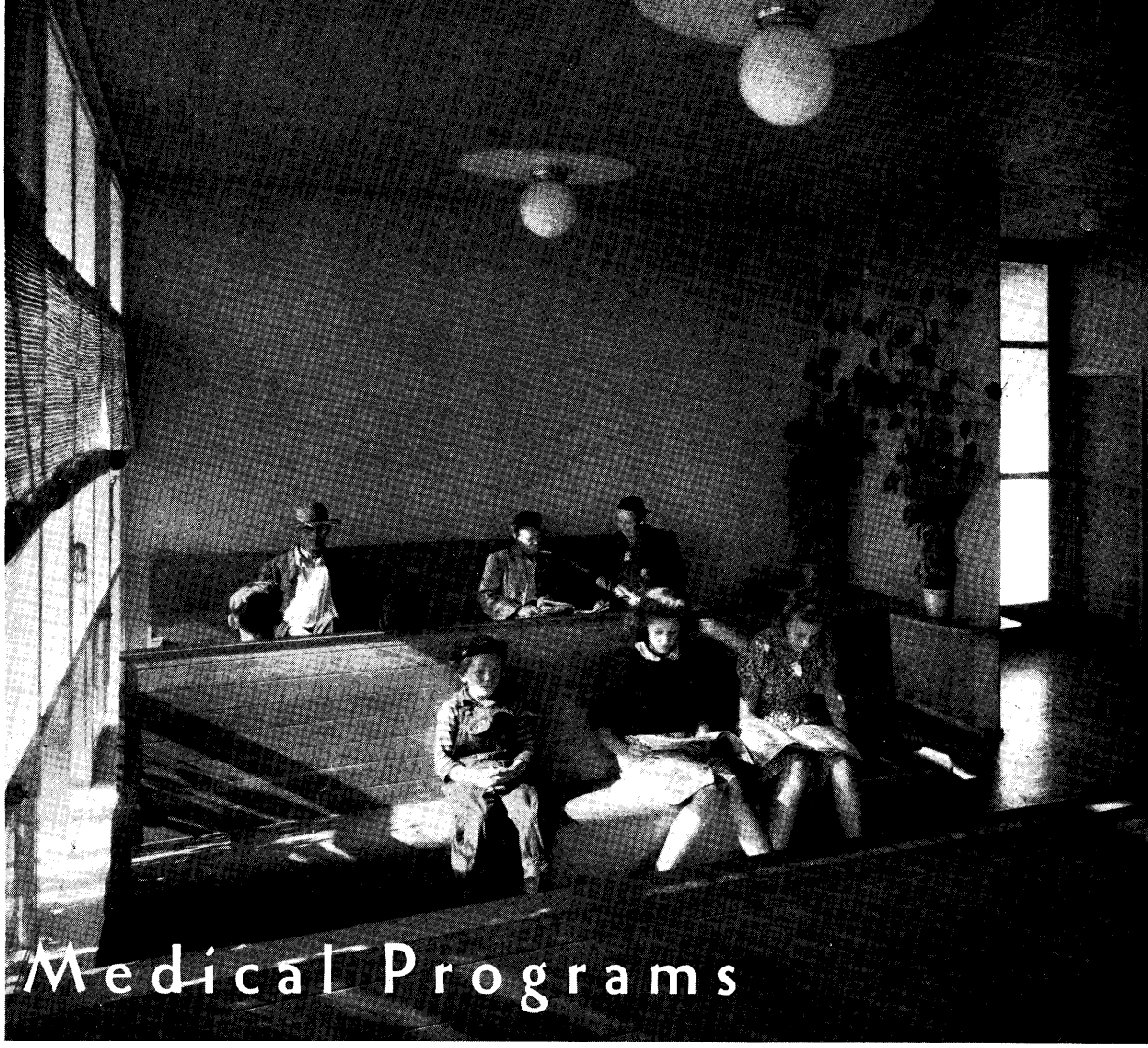


low membership fees which, when pooled, have enabled country doctors to collect about 65 percent of their fees—whereas the rural practitioner once could collect only 40 percent on an average, often only 20 percent, occasionally as much as 50 percent.

It happens that the most easily pictured architectural developments which resulted from this program are in California, whence came FSA's most spectacular successes with farm labor camps. The war has greatly affected the program: doctors have been drafted. So have many of the able bodied men who have not drifted to war production jobs; this leaves for farm labor the infirm and imported (Mexican) workers. And both these factors are to some extent alleviated by the existence of the FSA Medical Programs.

Photographs show squatter camps near Corcoran and Porterville, Calif.; and an FSA migrant workers' camp at Shafter, Calif.



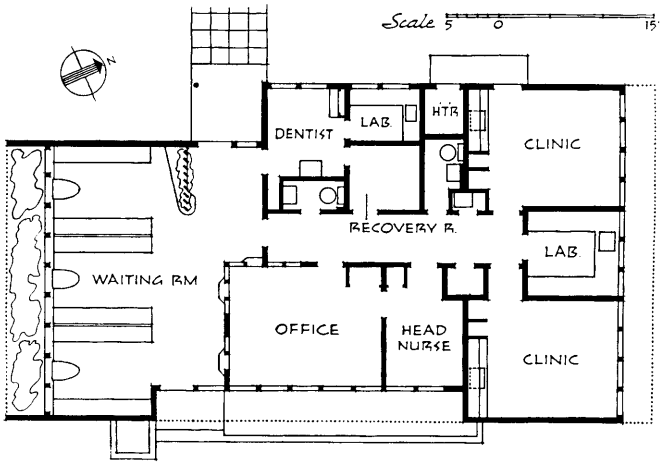


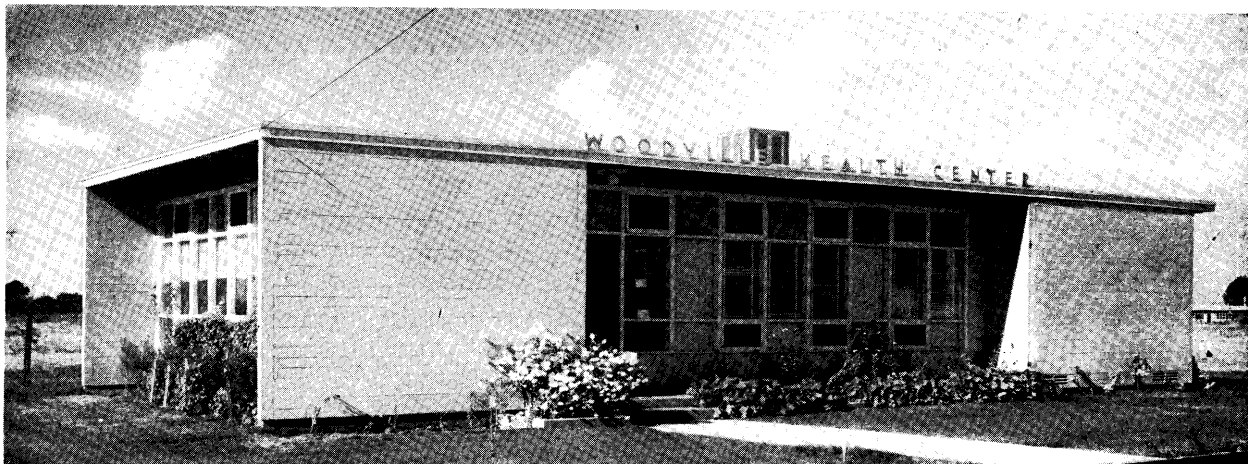
F. S. A. Medical Programs

Clinic Building, Woodville, Calif.

Vernon DeMars, District Architect

Nicholas Cirino, District Engineer





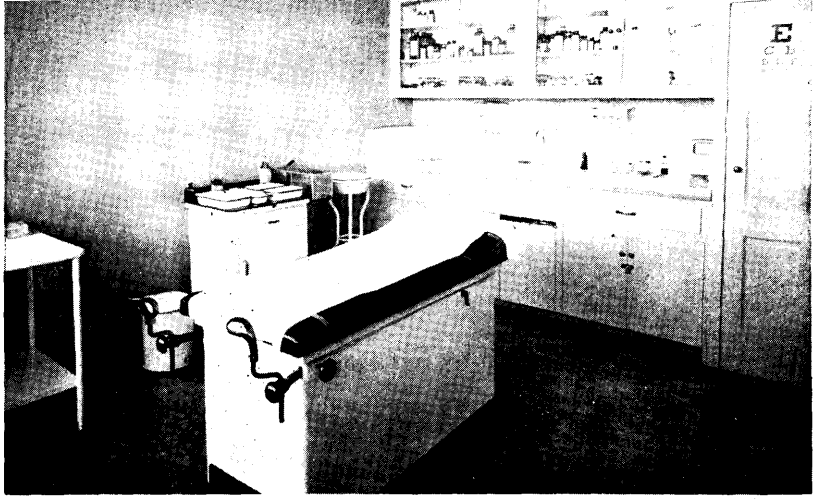
The clinic building, of which this example at Woodville is typical, is one form of architectural expression of the social need which FSA is trying to satisfy. In at least one case, such a clinic has eventually grown into a complete hospital.

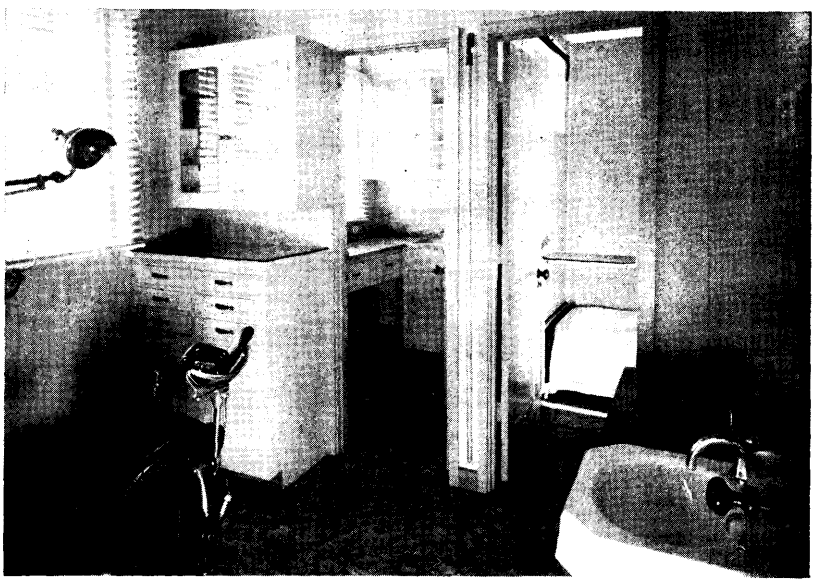
Construction of the Woodville Clinic is of frame, with painted, resawn, shiplap boarding on the exterior and plywood on the interior. Ceiling of the office is V-jointed fir. The wood grille in the waiting room furnishes structural support and will, if the building is expanded, screen the entrance to the future hospital. The office is so located that it can control traffic in the event of such a development.

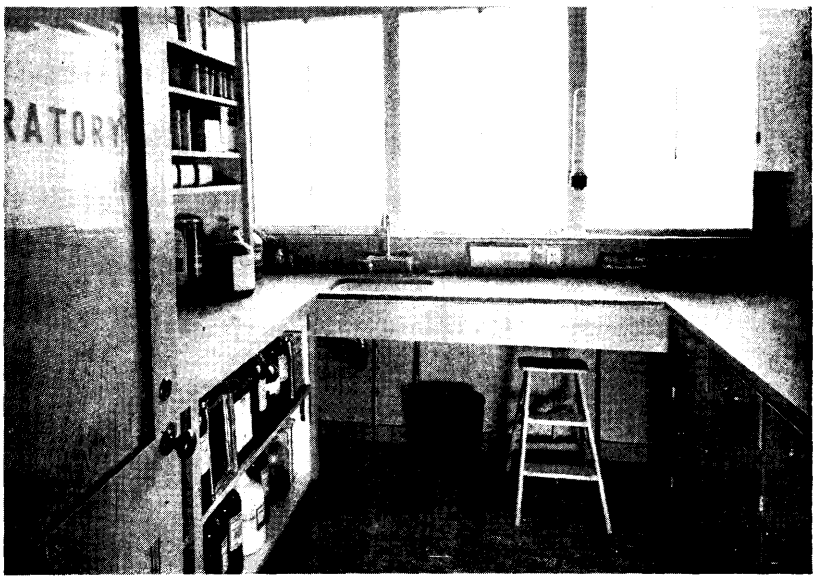
The building is heated with a butane warm air system, distributed through a plenum chamber over the central hall. Cooling is accomplished by an evaporative cooler (visible on the roof in the exterior photo) through the same ducts.

Photo on opposite page shows the interior of the waiting room. Waiting rooms in most FSA clinics and hospitals in this region have been similarly designed, to develop a sort of FSA trademark for medical centers, and to provide surroundings which the migrant worker will recognize and, hence, not fear.

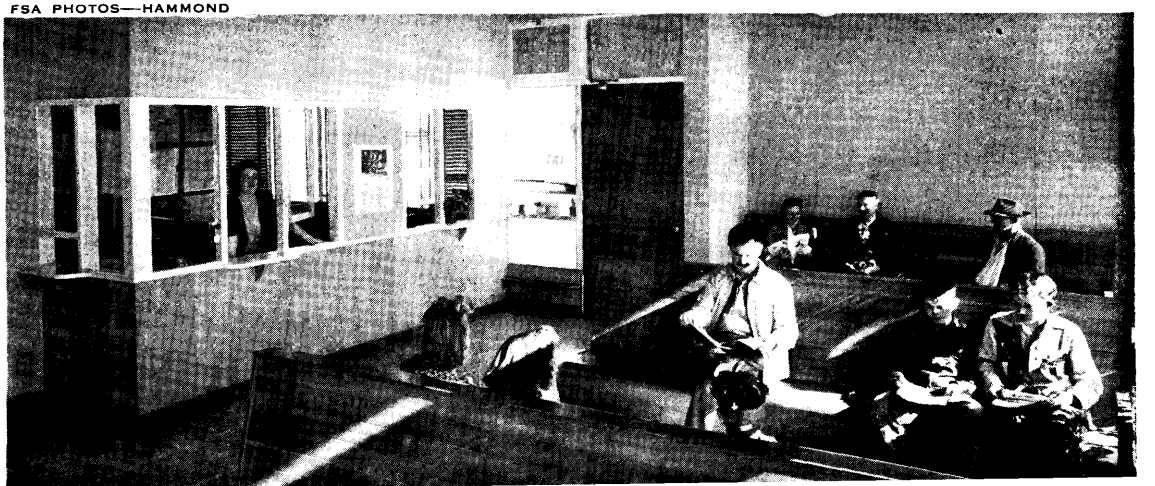
Photos on this page, top to bottom: Clinic treatment room; dental office suite; laboratory; waiting room and office.







FSA PHOTOS—HAMMOND



Basic FSA Medical Unit: Mobile Clinics

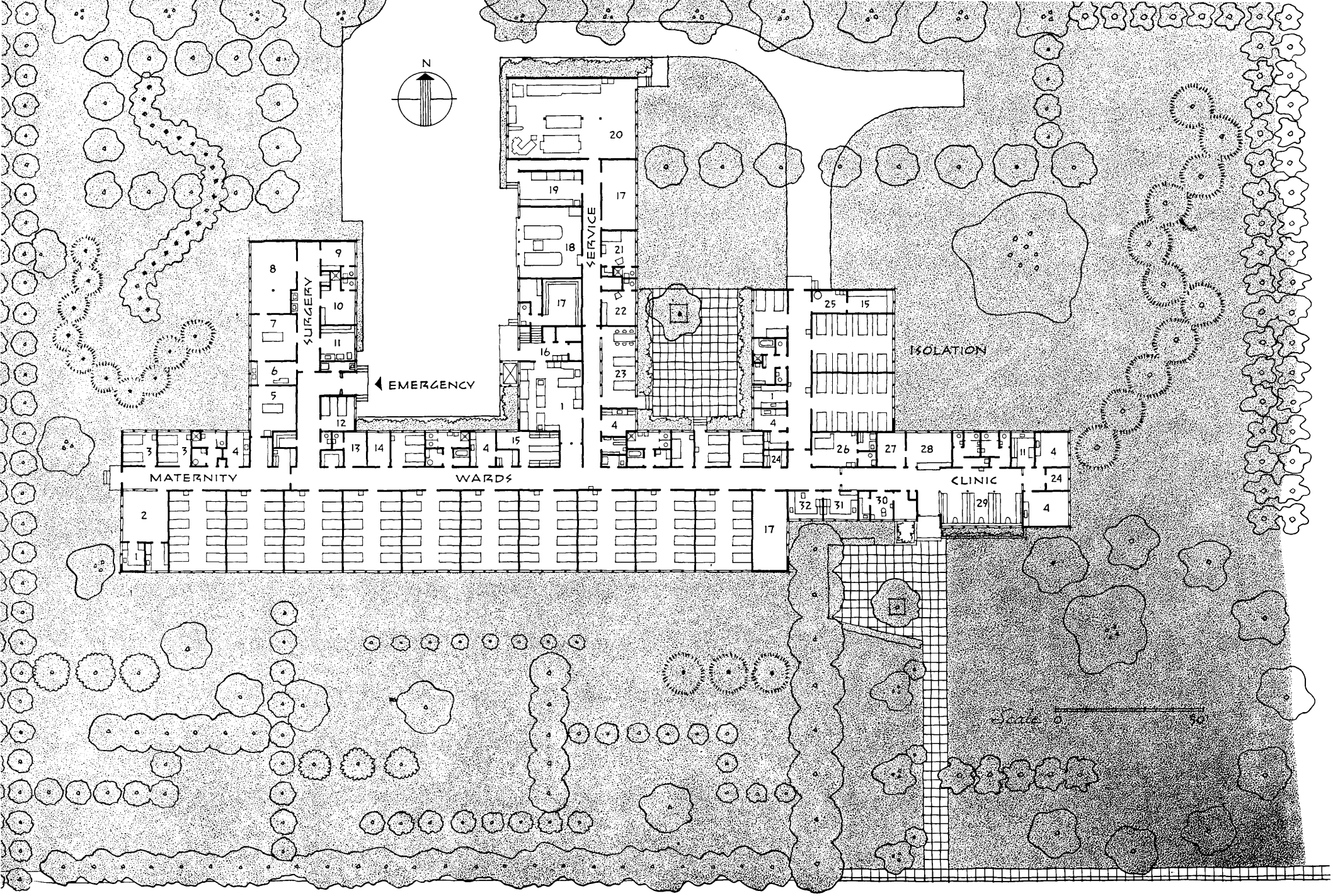
FSA-LANGE

FSA

Photo on opposite page shows administrative and health services trailers at a temporary FSA camp in California's Imperial Valley. On this page are the interior and exterior of a typical health services trailer.

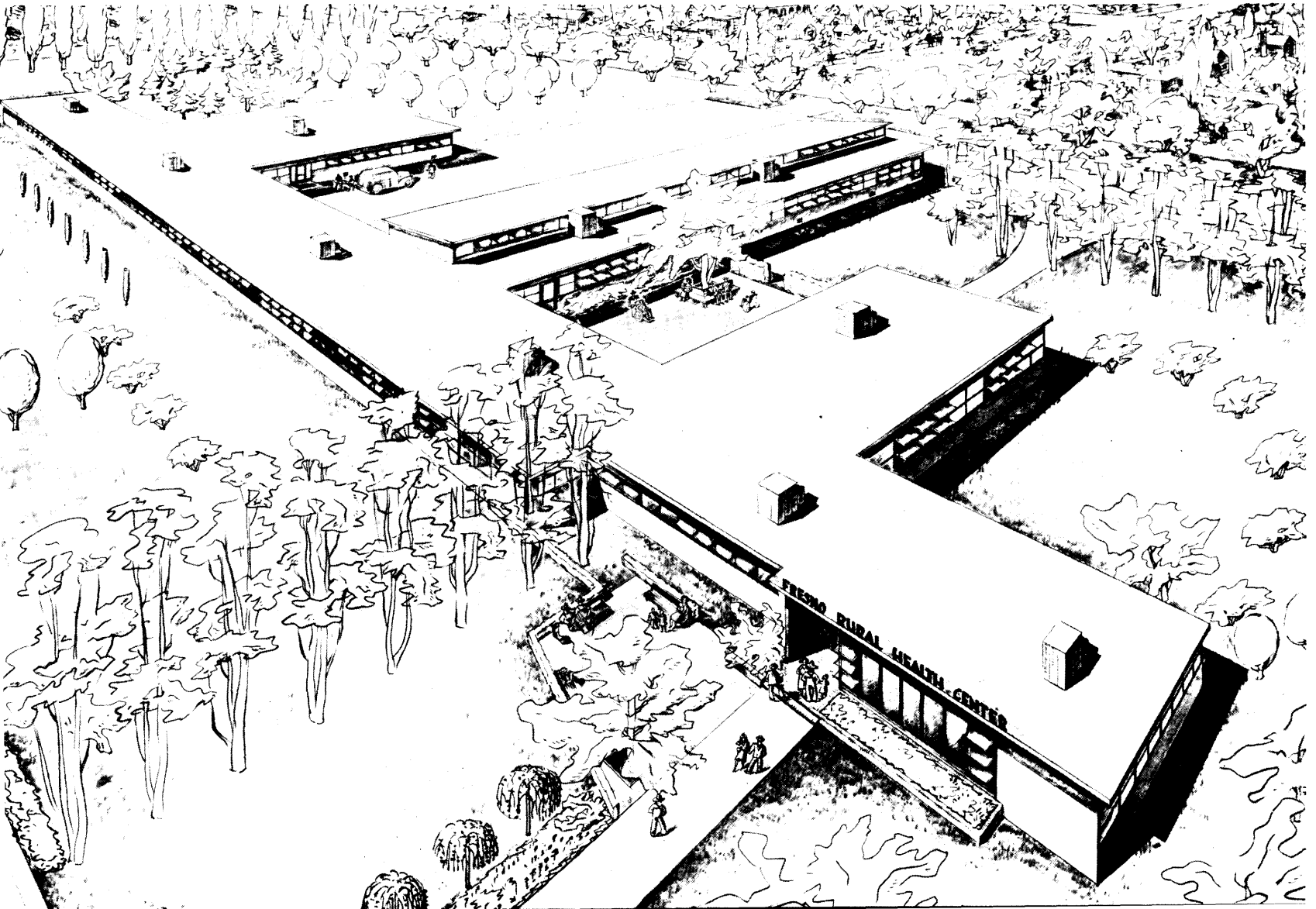
FSA-ALBEE

Some of the FSA camps follow the harvests as the workers do. For these, mobile trailer units have been established for headquarters and health administration. While such facilities are not by any means the equal of urban institutions, they are a tremendous advance over those formerly enjoyed by country doctors, who often had to operate on back porches. From these trailers, too, is disseminated information on nutrition, and on preventive medicine—a service which once was completely lacking in rural areas. All this program, including the efforts of privately endowed foundations and county health organizations, is still far behind similar programs in our cities.


N
SURGERY
SERVICE
EMERGENCY
ISOLATION
MATERNITY
WARDS
CLINIC
Scale 0 50

100-Bed FSA Rural Hospital, Fresno, Calif.

The Fresno Hospital, whose construction has been held up due to the war, was designed as a general hospital with extensive convalescent facilities. A great rural problem is the need for rest, shelter and proper nutrition, whose lack has increased susceptibility to numerous ailments. Wards here accommodate 8 persons each. Increased size, which can still be handled by one nurse, provides greater facilities at only slight increase in cost. Construction cost, exclusive of fees and equipment, was estimated at $125,000, or $5.40 per square foot, or $1,250 per bed—a most favorable comparison with usual hospital costs.



1, Kitchen; 2, Nursery; 3, Labor; 4, Treatment; 5, Delivery; 6, Sterilizing; 7, Operating Rm.; 8, Future Operating Rm.; 9, Nurses Preparation; 10, Surgeons Preparation; 11, Work Rm.; 12, Pass-out; 13, Staff Doctor; 14, Head Nurse; 15, Linen; 16, Cold Boxes; 17, Storage; 18, Boiler Rm.; 19, Shop; 20, Laundry; 21, Resident; 22, Nurses; 23, Staff Dining Rm.; 24, Nurse; 25, Wardrobe; 26, X-Ray; 27, Superintendent; 28, Office; 29, Waiting Rm.; 30, Dentist; 31, Pharmacy; 32, Laboratory.

Construction of the Fresno Hospital was to be of frame, with walls plastered inside and out, insulation board on ward ceilings for acoustic purposes, and mineral wool insulation under the entire roof. The one-story scheme was selected because nonfireproof construction could thus be used, and costs accordingly kept to a minimum. Evaporative air coolers are to be mounted on the roof. Air will be distributed, by means of plenum chambers over the halls, through rooms and above the ceilings to vents in the eaves. Heating is to be provided by a hot water system, with radiant ceiling panels.

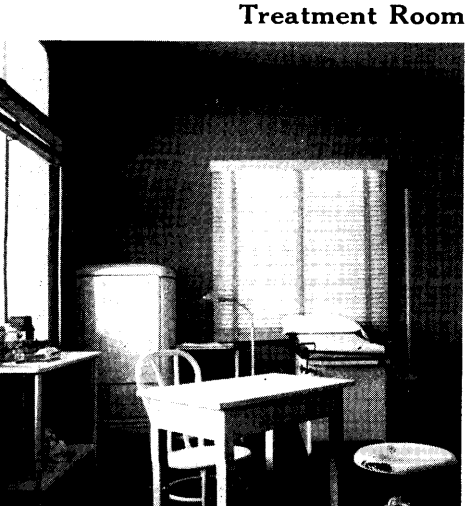
FSA Rural Medical Center: Burton Cairns General Hospital and Convalescent Center, 11 Mile Corner, Arizona

Vernon De Mars, District Architect
Nicholas Cirino, District Engineer

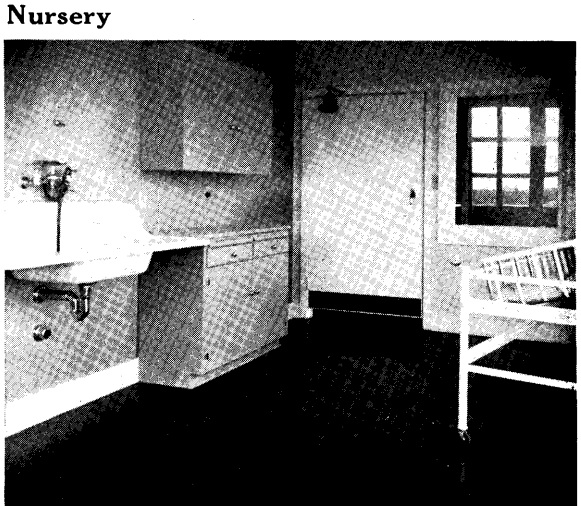
Rated as a 60-bed hospital, the Cairns Center has grown steadily since the original clinic building was constructed. This is now incorporated into the Center (the most northerly unit) as an out-patient clinic. The Center was planned and equipped as a convalescent institution to supplement local hospital facilities, which were inadequate. In spite of agreements whereby serious illnesses, surgical cases and obstetrical cases were to be sent to other local hospitals, all types of ailments came to the Center; it had to be re-equipped, and its staff had to be reorganized. In December, 1941, a surgery was opened, climaxing the Center's growth.

Construction is wood frame, with a composition roof and heat-reflective aluminum surface. This inexpensive construction, made possible by the use of a one-story scheme, resulted in the low total cost of $63,238 (excluding furniture) or $1,054 per bed. Heating is provided by thermostatically-controlled, forced-air units with butane gas fuel. Costs of a central butane gas plant and distribution system, and a standby generator plant, are included in the above figures. Humidity is automatically controlled in the operating and delivery suite.

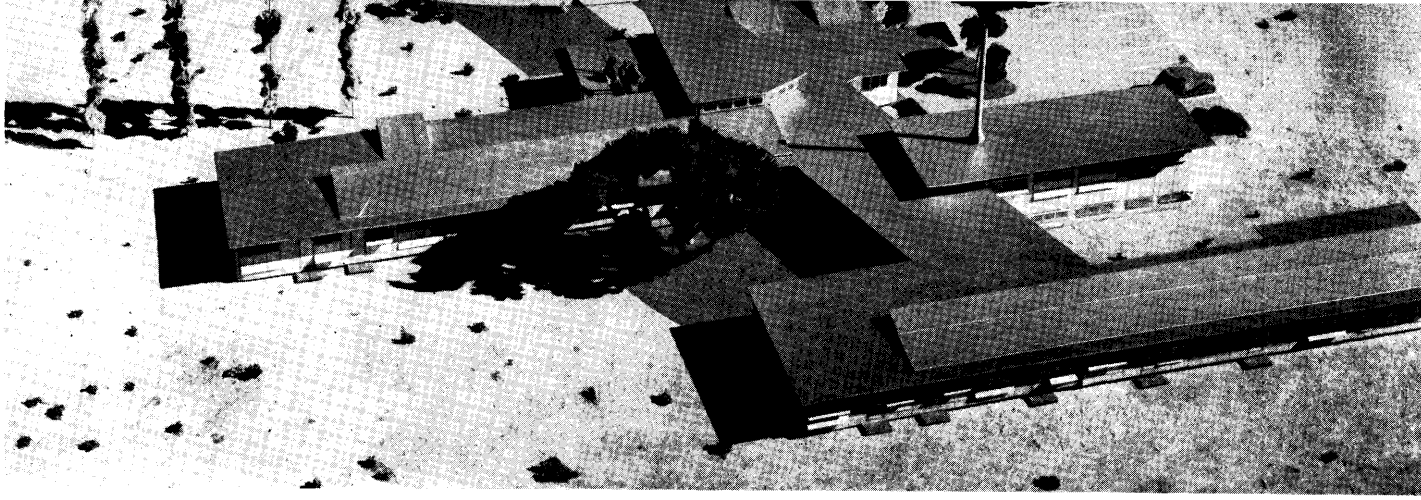
Treatment Room

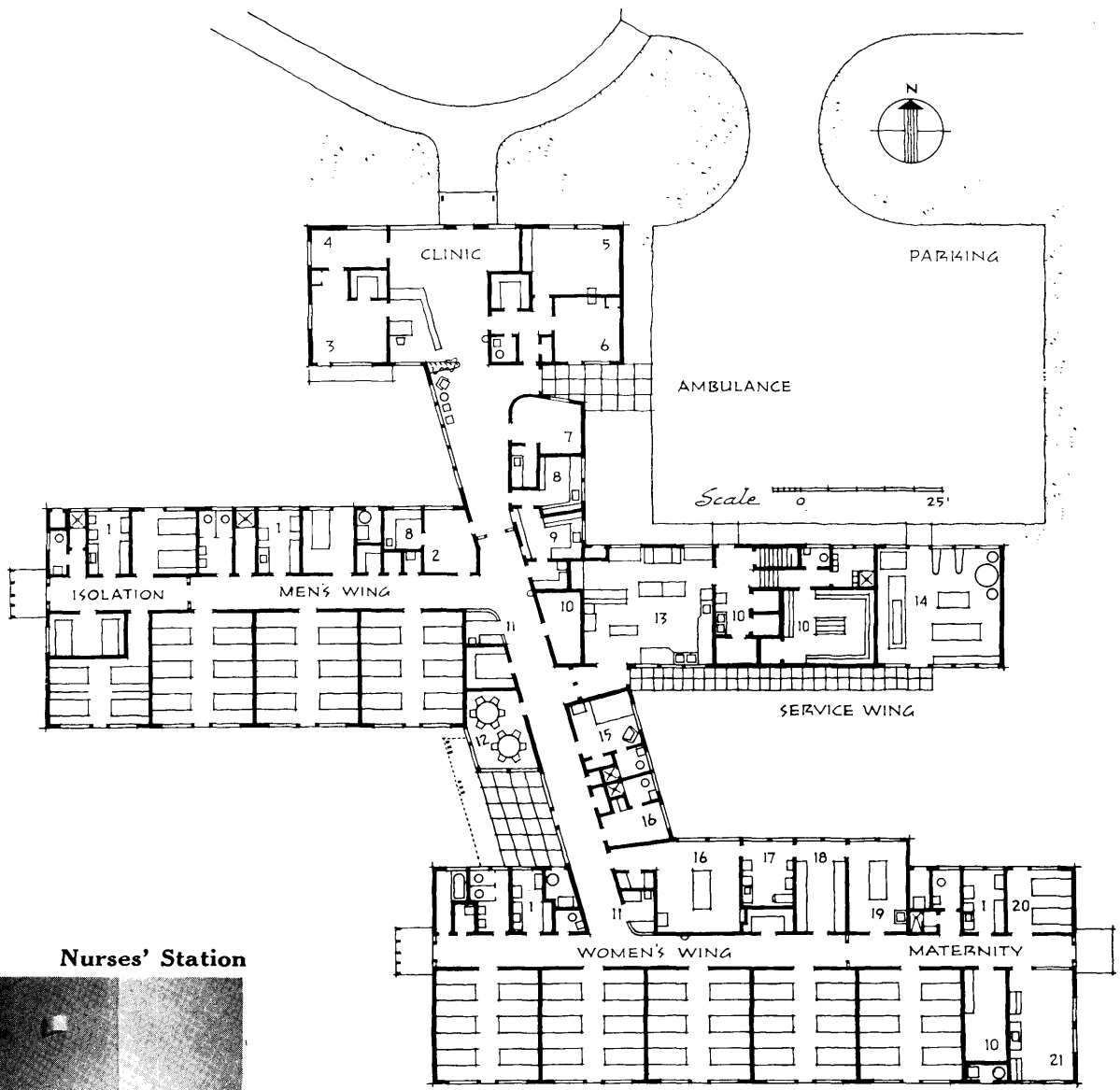


Nursery

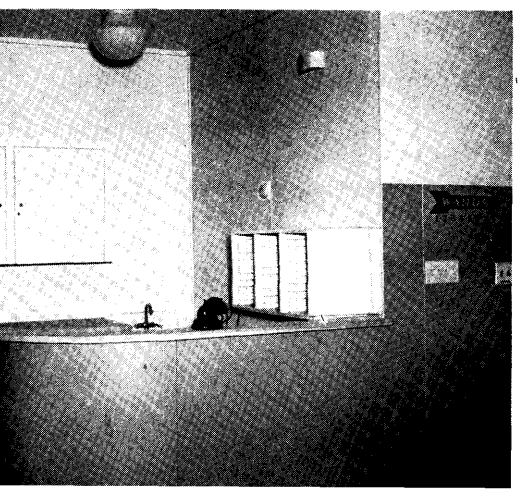


Ward





Nurses' Station



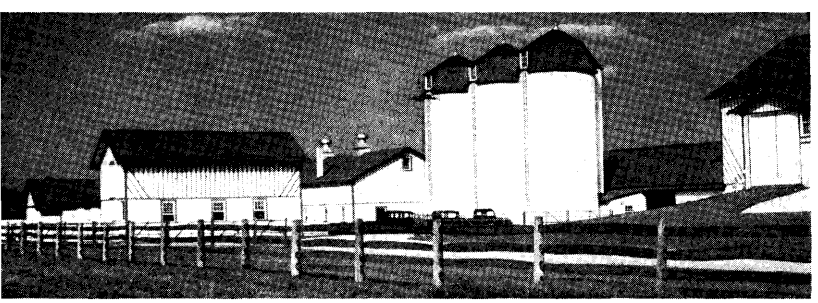
1, Utility; 2, Dentist; 3, Office; 4, Consultation; 5, Treatment; 6, Doctor; 7, X-Ray; 8, Lab.; 9, Pharmacy; 10, Storage; 11, Nurse; 12, Staff Dining; 13, Kitchen; 14, Laundry; 15, Resident; 16, Operating; 17, Sterilizing; 18, Work Room; 19, Delivery; 20, Labor Room; 21, Nursery.

Farm Buildings Are Architecture

By Talbot F. Hamlin

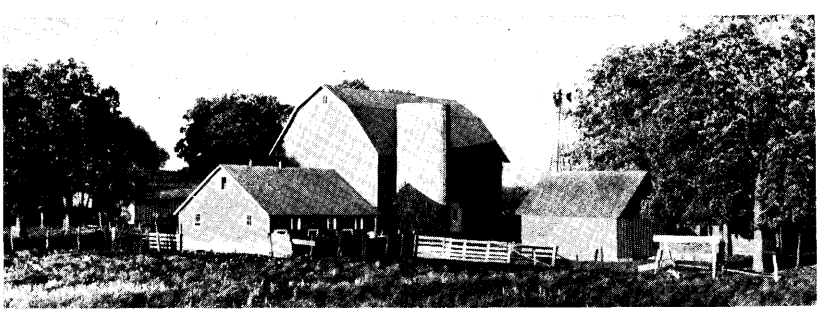
ROTHSTEIN

In the compact groups of New England farms—with house leading to shed, and shed to barn, without a break —one reads the fact of the New England winter, as in this Windsor County, N. H., dairy farm.



POST. WOLCOTT

In the great Pennsylvania barns—frequently built with stone ends or basements, often set on a slope—there is embodied something of the rolling Pennsylvania countryside; this example is in Bucks County.



POST. WOLCOTT

Comparing this closely-organized Iowa farm group with those above, the variety due to regional requirements is easily recognizable.

I

One of the common elements of pleasure in a country drive is delight in the shapes and groupings of the barns and stables of the farms by which one rolls. Again and again they seem to have that simple directness, that unconscious feeling for proportion and for placing, which makes them a real folk architecture. Even many of the newer and cruder buildings, though they may lack that innate sensitiveness to proportion which distinguishes some of the earlier work, still state their message clearly and definitely; they are an excellent local vernacular of building.

The reason for this fundamentally satisfactory quality is not any question of mere quaintness or picturesqueness. It is founded in something much deeper: on the basic fact that these buildings, many of them, are simple and direct expressions of necessary functions set forth in appropriate and economical materials. One feels behind them the dignity of human need, the power of that most necessary of all human enterprises —the growing and gathering of food.

Naturally, too, since farming varies from region to region, and materials are different in north and south, in east and west, there is in good farm building almost always a vivid, interesting, and natural regionalism. This regionalism *is* natural, not forced—a question of climate, of agricultural ways, of available materials. In it there is, I believe, a lesson to be read of the desirability of a similar natural regionalism in architecture of other kinds. Compare, for instance, the simple, stone-ended barns of Pennsylvania with the low-pitched roofs and adobe walls of the Southwest. No wonder agricultural buildings seem often to be as much a part of the land on which they stand as do trees and rocks.

ALL PHOTOGRAPHS FROM FSA

LEE

Hay and cow barn in New Mexico, built of the cheapest second-hand materials, yet has a definite architectural quality of proportion.

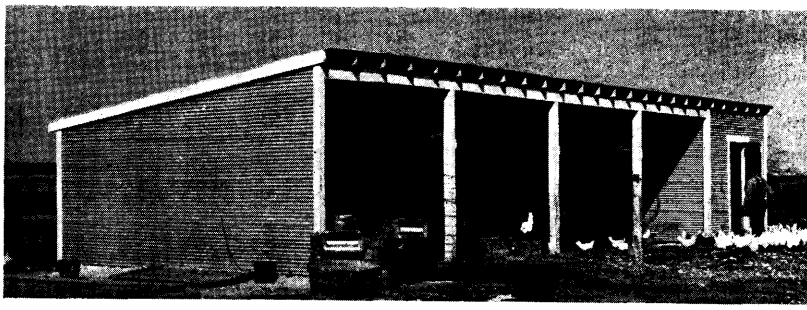
II

The character of farm buildings, like their shapes, is a natural development of the functional requirements. Little conscious attention had been given to esthetic quality; nevertheless the forms that have developed are beautiful, and as varied as the functions the buildings serve and the climates they have to withstand. The simplest, cheapest materials, put together with little skill, result in forms which are effective because they are meaningful. Cost has nothing to do with this problem. Corrugated iron, dirt, slabs, shingles, all falling into place in accordance with a definite need and a definite climate, seem necessarily to have a kind of order that is the first requirement of architecture.

LEE

Dugout house at Pie Town, New Mexico, cost 30 cents (for nails) and was built in 10 days; two small sleeping rooms were added later.

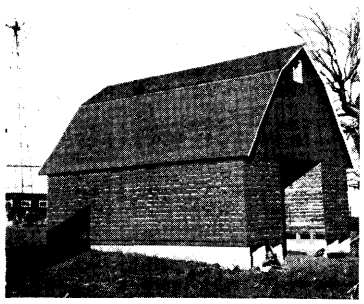
The same quality follows through all the different types of farm buildings. Corn cribs, for instance, have a character unlike that of any other buildings; their necessary combination of lightness, to allow a thorough ventilation of their contents, and their strength to withstand the weight of the corncobs stored in them, together with the necessity for ease of loading, develop extraordinarily interesting forms. The old simple types, trapezoidal in end elevation, with low-pitched gabled roofs, were excellent for the small family holdings of the early East, but, in the great corn districts of the central country, larger, more efficient, more easily loaded cribs were necessary.



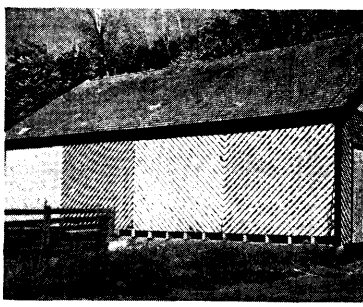
LEE

Machine shed and chicken house at El Indio, Texas, has a queerly modern quality; it is the result of a simple development out of the needs involved and an economy which has enforced rigid elimination of non-essentials.

Tobacco barns, too, need ventilation, but here the necessity of hanging the leaves on racks develops different effects. All up and down the Connecticut Valley and through the tobacco districts of the Carolinas and Kentucky, these barns are to be found; the sharp rhythms of dark and light given by their open doors, through which the golden brown leaves within can be seen, are a characteristic note in the landscape. But

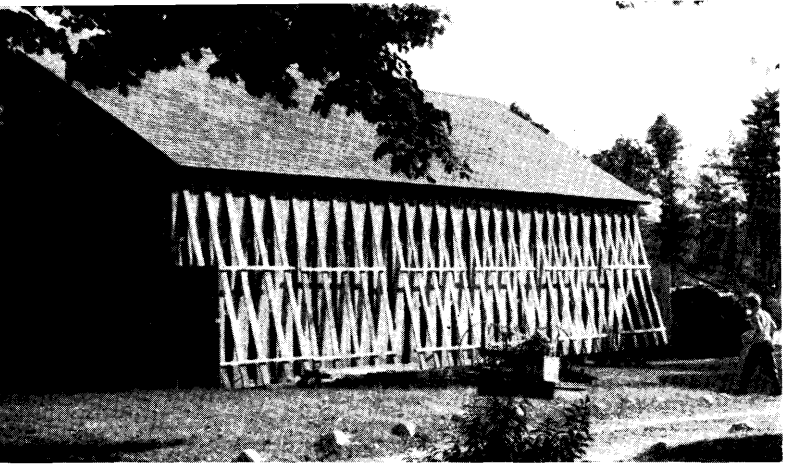


ROTHSTEIN



ROTHSTEIN

Two corn-cribs in Grundy County, Iowa—a central passage flanked by great bins and covered with a roof which permits additional feed storage. Simple differences in wall treatments above and below, proportions, amplitude and lightness—and in the one at the right, the structural use of diagonal battens—make them highly effective.

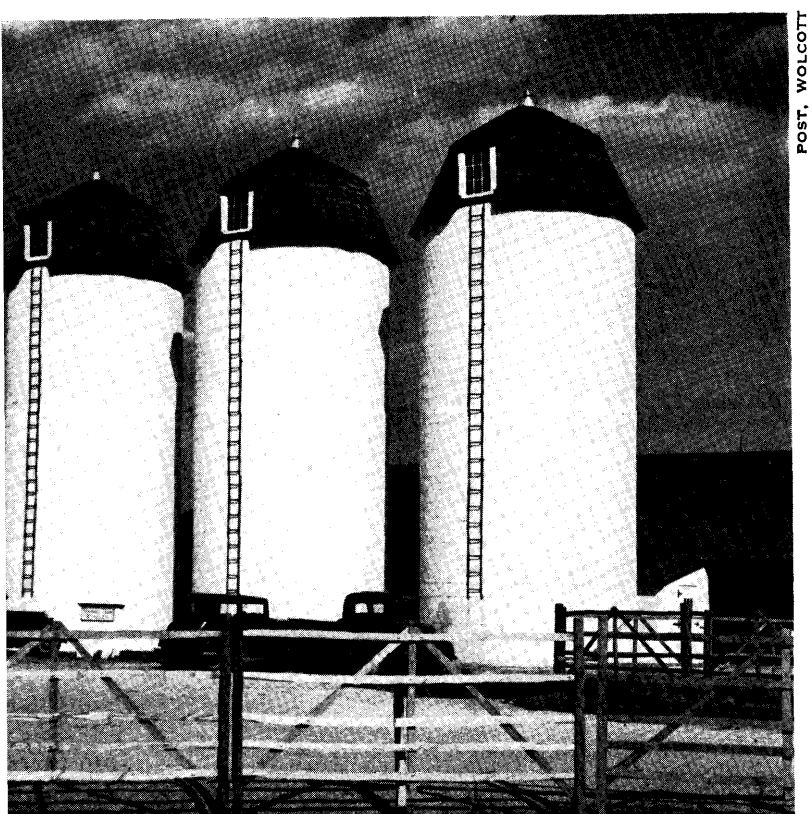


DELANO

A tobacco barn on a Thompsonville, Conn., farm acquires a lovely, intricate pattern of light and shade when its ventilating panels are opened. Here is function contributing greatly to beauty.

POST

In the Bucks County dairy farm, the long line of the main barn contrasts with the projecting entrances and the central administration building, and continues through the three silos to the feed barn. Here is a three-dimensional composition of the very richest character.



POST, WOLCOTT

even here the pattern is not fixed, for newer ways of ventilation are continually being tried.

Barns for storage take an infinite variety of forms, from the old, simple, gabled hay barns of New England to the great metal storage warehouses of some of the big western ranches. In those more common barns in which storage elements and cattle or horses' stalls are combined, the union of two different but related functions leads to an additional interest in form.

In modern barns or groups of this type, another element has come in to give character and interest to the farm picture—the tower silo, where winter feed is both prepared by fermentation and preserved for use. The development of the tall silo in the 1870's was as epoch-making in its effect on the farm appearance as was the development of the fireproof skeleton structure a little later on the looks of American cities. How beautifully these tall cylindrical forms compose with the long horizontals of stable or barn, and give to the farm group a definite distinction in the vertical accent they bring! Surely such a group is architecture in every sense of the word. Even the smaller farms with their single silos have nearly always a definiteness of geometric patterning which is both winning and inspiring.

It is, by the way, a somewhat ironic comment on the architectural feeling of twenty years ago that architects, in their effort to find out why they like these barns and silos, could only think of comparing them to French *manoirs* with their round towers; it is a further indisputable fact that again and again, completely blind to the real reasons for liking barns with silos, architects used the form as a model to copy in house design. Many of our suburbs are unhappily all too aware of little, ostentatious, gadgety, "Norman" houses which would never have been designed had not the silo become an integral part of every American dairy farm!

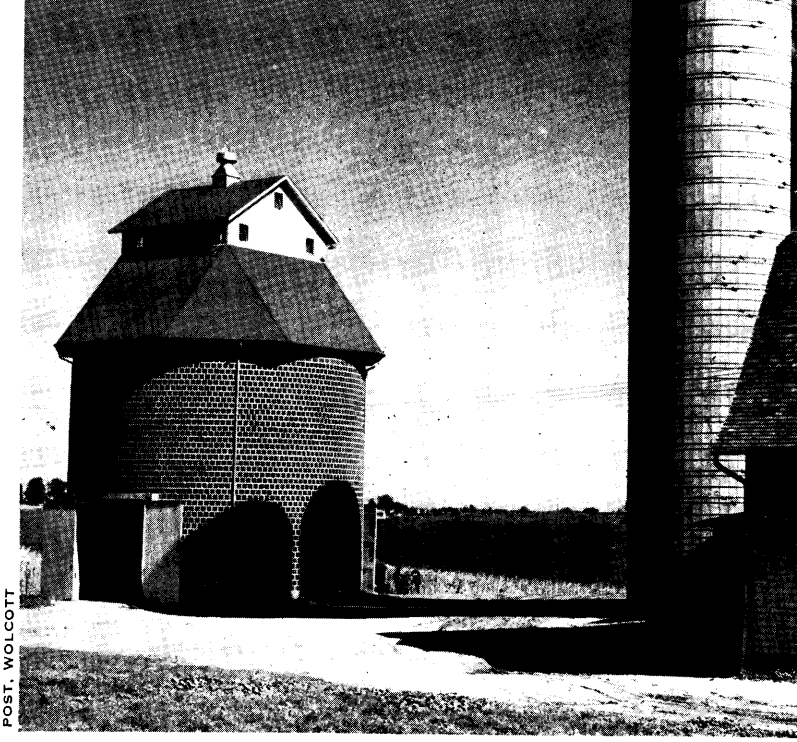
Another quality which follows from the requirements of good farming is some definite attention to group planning. The efficient farm *must* have its buildings closely related in a systematic way. It must pay attention to orientation and above all to topography. It knows the advantages of building on sloping land.

The typical New England farmhouse groups already referred to are often exquisite in their ordered arrangement, in the definiteness of the placing of each part, and the total visual effects is likely to be beautiful just because of this underlying order and definiteness. In many farms, to be sure, where buildings have been added over long periods, and earlier buildings designed for smaller operations have been affixed unsuitably to larger schemes, the results may be chaotic; but, wherever the real demands of the problem have been recognized and followed, system and consequent beauty through the ordered relationship of parts with different functions and shapes is nearly always the result.

III

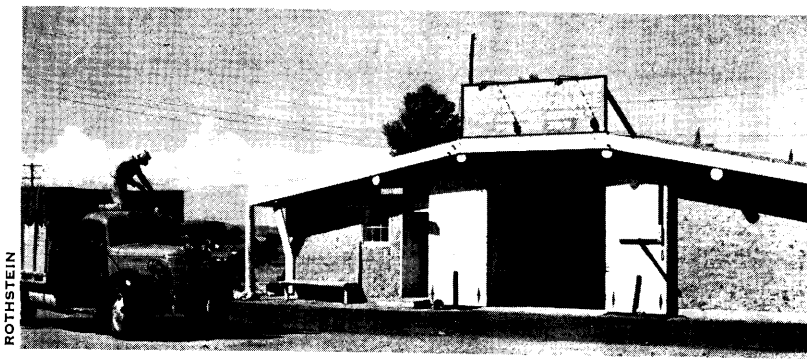
Still there is another lesson to be read from farm buildings, particularly the most recent ones. That is the fact that pure function, by itself, and pure economy are not enough. The details of these buildings are often crude, and the proportions, particularly in gambrel-roofed barns, frequently both harsh and indecisive. The gambrel roof is used, logically enough, to increase the storage space in the loft; but what determines the relation of the slopes in the gambrel, and the relation of these in turn to the height of the wall, often seems merely accident. And, too, buildings whose general shapes are beautiful are frequently marred by ill-thought-out and unconsidered detail. This is true of the double corn crib, with its useful aisle down the center to allow for ease of filling. It is true as well in certain parts of the machine shed and chicken house of El Indio, where one feels that a slightly greater projection to the eaves and a slightly more refined treatment of the sides might have made all the difference between a building of real distinction and one that is just adequately good-looking.

This same quality of bad detail seems often true also of the largest and most expensive recent barns, especially in the handling of the eaves at the side, where the almost universal kickout of the roof is so inorganically related both to the slope above and to the wall beneath that it has a thin and papery and unstructural appearance. Here perhaps one comes upon the reason why in many cases the older buildings are



POST, WOLCOTT

Many farms, notably in the middle west, contain groupings as picturesque as this one near Cedar Rapids, Iowa; yet how often an incongruity can convert the picturesque into a caricature.



ROTHSTEIN

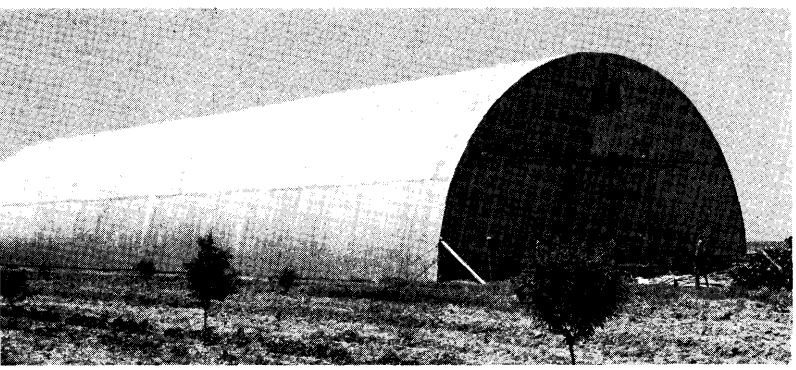
That pure "function" is not enough is illustrated by this potato storage cellar in Colorado, where satisfying general proportions and interesting materials are obscured by stark crudities in the sign and other details.

LEE

Unusually pleasing variation of the round barn: a horse barn in Sonoma County, California.

VACHON

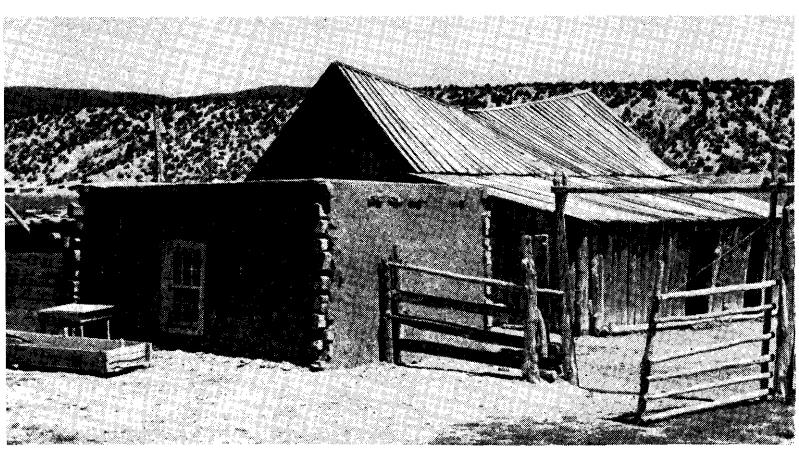
Barn in Iowa: the result of standardization imposed without thorough understanding.



LEE

Feed barn on a Texas farm: superb geometrical simplicity; the monumental results from natural size and functional shape.

Adobe shed and barn, New Mexico: with little conscious attention paid to esthetics, such farms as this achieve the same qualities at which architectural travelers have marveled when viewing rural architecture abroad.



LEE

more esthetically satisfactory than the newer ones. The frank handling of eaves and gutters and bargeboards on the older barns the country over seems generally firmer, more definitely structural, than the more elaborate finish of recent structures.

Now the character of these recent structures is often the result of an imposed standardization, half unconscious, resulting from publications of the Department of Agriculture, the state agricultural colleges, and manufacturers of farm fittings and equipment. With the decay of native craftsmanship and the tremendous increases in scientific agricultural knowledge, such publications were probably necessary; yet the designs they present are, time after time, the results neither of trained architects working on a specific problem nor the innate esthetic and structural instincts of the native-born craftsman. They are, rather, the results of serious-minded engineers and agriculturists dealing, at least in details, with elements which neither their experience nor their training had fitted them to treat. For instance, most metal barn ventilators, could, I am sure, be vastly improved in silhouette and detail without harm to their efficiency. Practically all the wood detail advocated in these designs could be made more elegant, more economical, more visually effective, more efficient, without in the least hurting their fundamental functioning.

Is there not, then, some way in which the training of the best architects could be brought to bear upon this important and fascinating problem? The value of agricultural construction in the country is enormous. It is too bad that so far the architect as such has had little effect upon it. Architects, to be sure, have designed farm groups for wealthy clients and in many cases have shown (in their attempt to impose upon these the esthetics of past styles, of fore-ordained picturesque patterns) a total lack of understanding of the lessons to be gained from a study of other, unconsciously-designed farm groups. And yet in all modesty I believe it is true that, although the architects can learn much from farm buildings, these in turn could gain much in simplicity and directness, in detail and in form, from the skills which architects alone possess.

Another question arises—the question of why prefabrication has not been more extensively applied to this important structural field. Is there not an almost perfect scope for the use of prefabricated elements? Barn dimensions and the dimensions of farm buildings for other uses have been very largely standardized. Application of prefabricated elements ought to be comparatively simple. Moreover, since in many ways the actual structural demands may be less stringent than those of houses, one would think the application would be easier as well. Perhaps the future development of American farm buildings may lie precisely in the combination of the best architectural service and large-scale prefabrication.

Fontana School, built for TVA employees stationed where schools did not exist; several similar schools have been incorporated into state systems. (All photographs from TVA.)

Architecture in Rural Areas

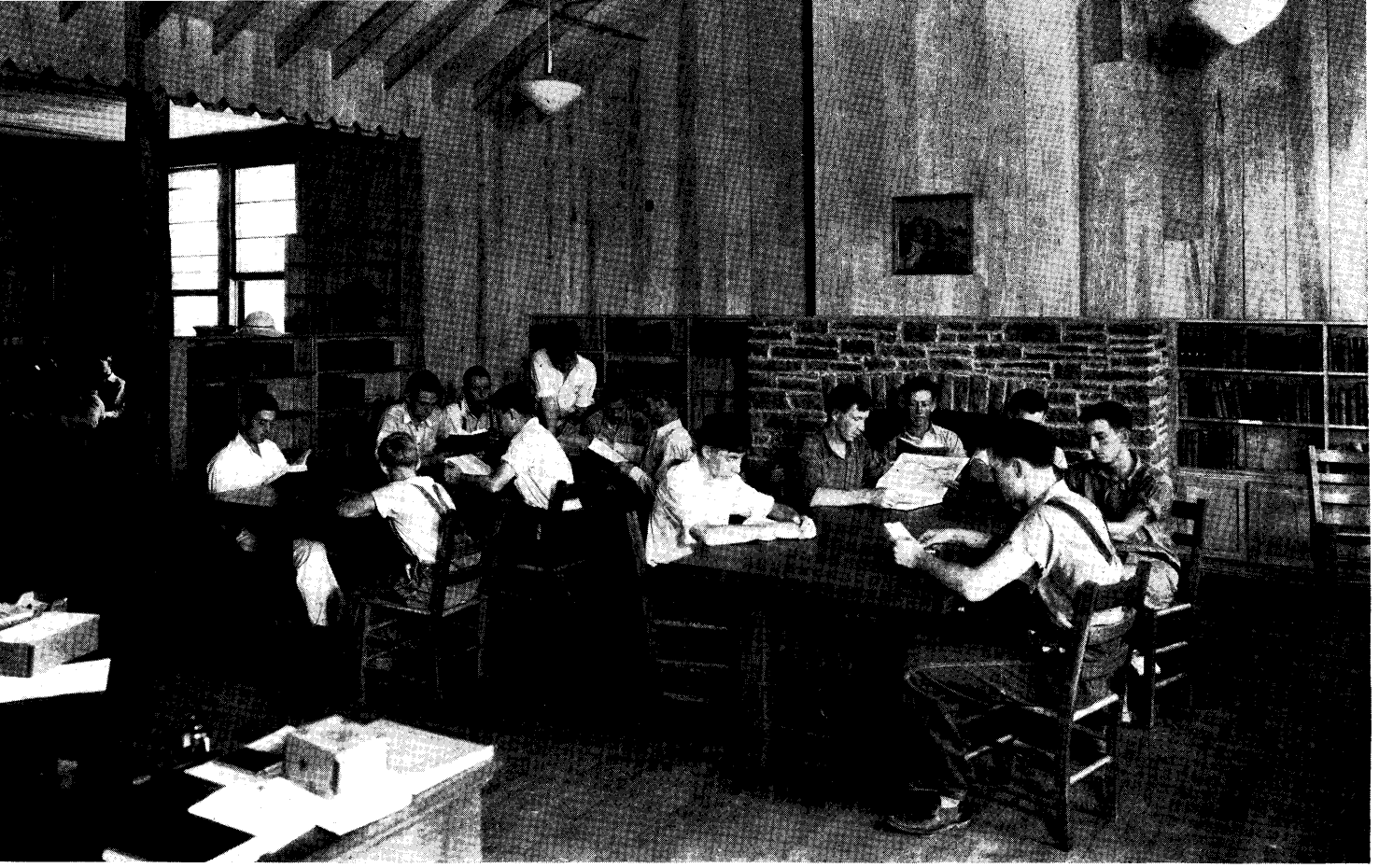
A Report on TVA Experience, by Roland A. Wank, Head Architect

The tenth birthday of the Tennessee Valley Authority is drawing close. Readers of this magazine will probably be more familiar with the big river control projects which are conspicuous in the program; but during this decade, TVA has carried on many other projects of comparable long-term significance which, in various indirect ways, related to rural and small-town building. Experimentation with fertilizer and its controlled distribution, rural electrification, encouragement of cooperatives, soil conservation, development of strategic minerals and agricultural products, rural health, education and libraries for employees in remote areas, quick freezing, dehydration and community refrigerators, recreation along the river reborn into a chain of clear lakes—these are but a few of the relevant programs. Buildings incidental to this work have hardly attained much architectural significance—yet; but experience gleaned along the road may yield some interesting and perhaps useful pointers against the time when this nation will turn, as it some day must, from exclusive preoccupation with cities to recasting nonmetropolitan areas into the mold of modern civilization.

II

To begin with the principal reason for lack of outstanding accomplishment: the architectural aridity of country and small town (with honorable exceptions freely granted) is not primarily a problem for the architect, not even for the town or land planner. It has its roots in economic questions. The long-term decline of family farming carried away the original pastoral charm of the countryside. The impact of technology in forms like farm machinery, modern transport, electrification, and decentralized industry has not yet been assimilated; nor is there, as yet, a unified concept against which problems and corrective programs could be clearly perceived. When the countryside is restored to economic health and spiritual balance, new and well-adjusted architectural expression may be anticipated with some confidence. The Authority has addressed itself to root causes with conspicuous success; but a decade is too short for any cultural flowering to become manifest.

This does not imply that good design is impossible in the meantime. In fact, orderly site planning and structures bright with the promise of the future were deliberately used by TVA as visible tokens around which may crystallize a vision of modern rural civilization. Examples are catching. Recreational parks, office buildings of farmers' cooperatives, simple cottages for employees exerted noticeable influence over their neighborhoods. But in turn, such direct TVA projects were held well inside the limits of the most progressive



modern design because it was assumed, rightly or wrongly, that lesser deviation from the traditional will be more readily understood, thus more productive in the long run.

Another principle, fundamental to the operations of the Authority, has influenced the rate of visible architectural improvement, to wit: that whenever possible, the people and their homespun institutions should carry out programs with only advisory leadership from federal sources. Even though this will produce compromises, delays, and some avoidable mistakes, the net progress will be due to the conscious desire and efforts of the people, and thus will be more firmly rooted than possibly superior results achieved through direct federal action. Some of TVA's experiences with the application of this principle may be of interest here.

III

Rural architecture designed in central offices of corporations, big-time architects, or governmental units is often painstakingly regionalistic, traditional, and rustic "to maintain the character of the landscape" or to express the supposed preferences of the countryside. The closer one gets to the grass roots, the less realistic this approach appears. People in small towns or on farms do not think of themselves as rustic, or quaint, or in any way set apart from others. Nor do they consider their landscape inviolable any more than urban dwellers object to a thoroughfare widening or a new city hall. They want to better themselves like everybody else. When they are called upon to express their wishes in architectural matters, they may quite naturally use terms familiar through past experience, leaving the superficial impression of preference for the traditional —tradition in this context including the bad with the good, the false-front crossroads store, dark firetrap business building or the flatroof fake Tudor school, as well as the white-porticoed mansion or courthouse. But, in direct contact with the people, it is amazingly easy to explain modern architecture in terms of efficiency, comfort, and joy of life; to relate a concrete project to the poetic but powerful vision of "the people's century." Architects of the TVA repeatedly have had this exhilarating experience in advising boards of directors of cooperatives elected from among the membership, or observing the reactions of country folk to bold and bright TVA projects endowed with ample light, air, and plumbing but with few concessions to tradition for its own sake.

On the other hand, when dealing with institutions representing the people, or with architects in small towns for that matter, there is much greater chance to meet a patronizing attitude, conscious or otherwise, of knowing that the people don't want anything very different from what they are used to, with a climax in the big city dweller who wants to keep the other fellow's countryside rustic and picturesque for the fun of occasional excursions. Thus, while this trend of thought is not by any means universal, a few grains of salt may often be added to interpretations of grass-root thinking by state park commissions, school boards, architectural departments of land-grant colleges, agricultural extension services and so forth.

"People in small towns or farms do not think of themselves as rustic, or quaint, or in any way set apart from others." What could better express this than the library for TVA employees in a rural area (opposite page) built with indigenous materials and of the very simplest workmanship? By cooperative agreements with State and County authorities, such facilities become available to all residents in the vicinity. In the same structure is an unsophisticated art center (photo at right) furnished with donations of county residents. Most of the labor for this was contributed. The WPA art project furnished part of the personnel and exhibits.

The same thoughts, by and large, apply to regionalism in architecture. In rural housing many geographic peculiarities are unquestionably warranted by climate, land characteristics and land use, racial stock, and other determinants of living habits. Less reason can be found for regional deviations for other structures, except for climatic reasons; and, indeed, many types of buildings, from state capitols to filling stations, have been thoroughly nationalized as to layout and appearance. Nationwide uniformity is not necessarily synonymous with excellence; but when the norm is good, it performs the extremely useful job of spreading technical progress far and wide. Some of the oil companies have never gotten all the credit they deserve for broadcasting good building technology and design.

IV

And this brings us to the country architect, because in the wide-open spaces where experienced architects are not very numerous, a very large percentage of structures above the jerry-built level in any vicinity may bear the imprint of the one best-reputed architectural firm, either as its design or as the design of others who were asked by clients to be imitative. Thus, architectural characteristics seemingly regional in nature may often be traced to the influence of a single office. In observance of TVA's grass-roots policy, private architects were given all possible opportunities in connection with projects in which TVA had a partial or contingent interest. After several years' experience, it may be stated that problems still exist in this field.

The practice of architecture outside of big cities is not promising, financially or professionally. Jobs are small and far between, often so dispersed geographically that full contact and supervision would consume the entire fee. It is difficult to keep posted on technical developments, and shortage of trade skills may make the effort useless. Maintenance of an engineering staff is not warranted by the volume of business, and outside engineering assistance is hard to get.

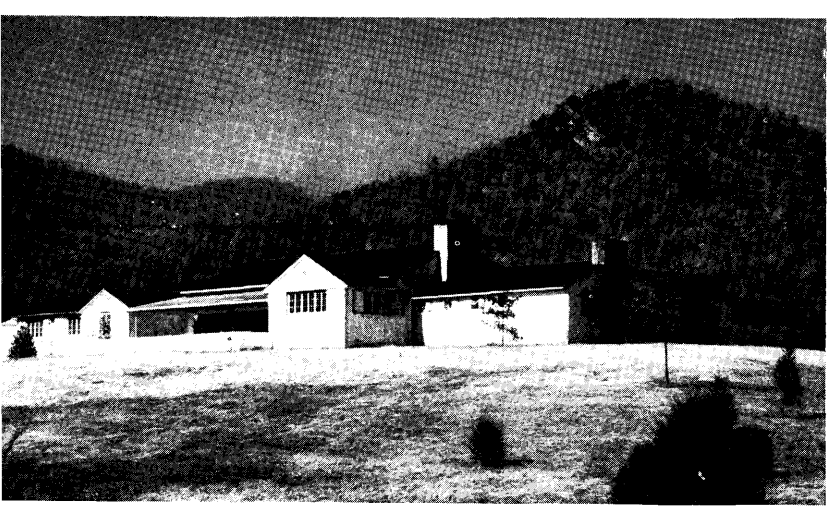
For these and other reasons, national businesses and governmental agencies have increasingly tended to bypass the local architect, thus further sapping his competence and professional vitality. With a seemingly irresistible trend toward bigger units in all aspects of national life, the gap widens between the horns of the dilemma. There is no attempt made here to find a solution; but it may be assured that the public interest in able and progressive service is paramount and will be supplied from whichever source is more competent, regardless of any philosophical preferences the profession may have.

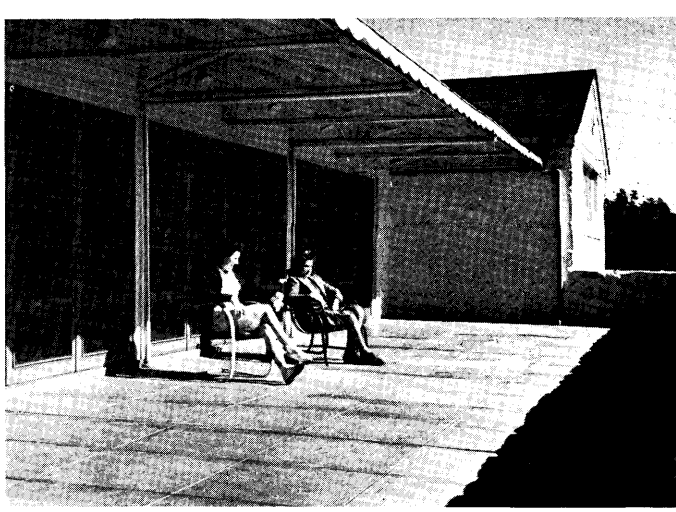
V

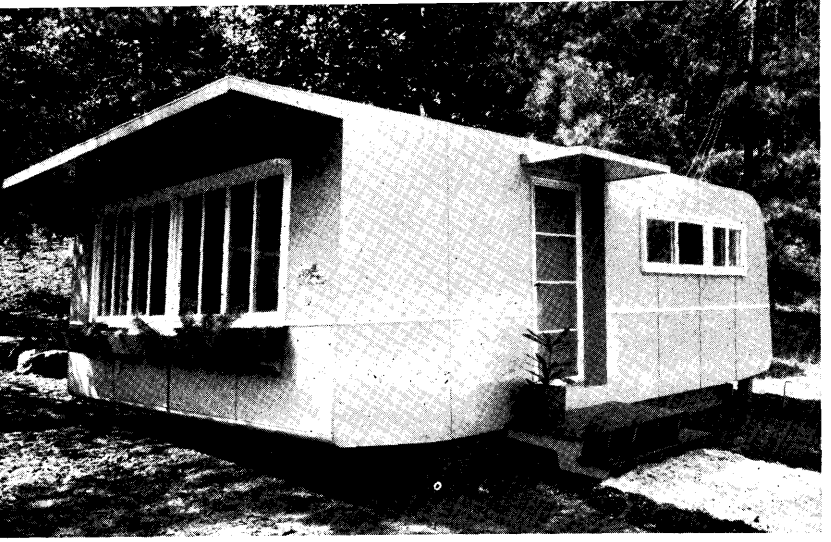
Let us review now, briefly, the many seemingly independent tacks along which TVA influence has been exerted. The first problem—and one still with the Authority—was the housing of its own workers on projects in remote locations. Eight more or less permanent villages have been built in four states—at Norris, Wheeler, Pickwick, Guntersville, Kentucky, Watts Bar, Hiwassee, and Fontana. All had rural

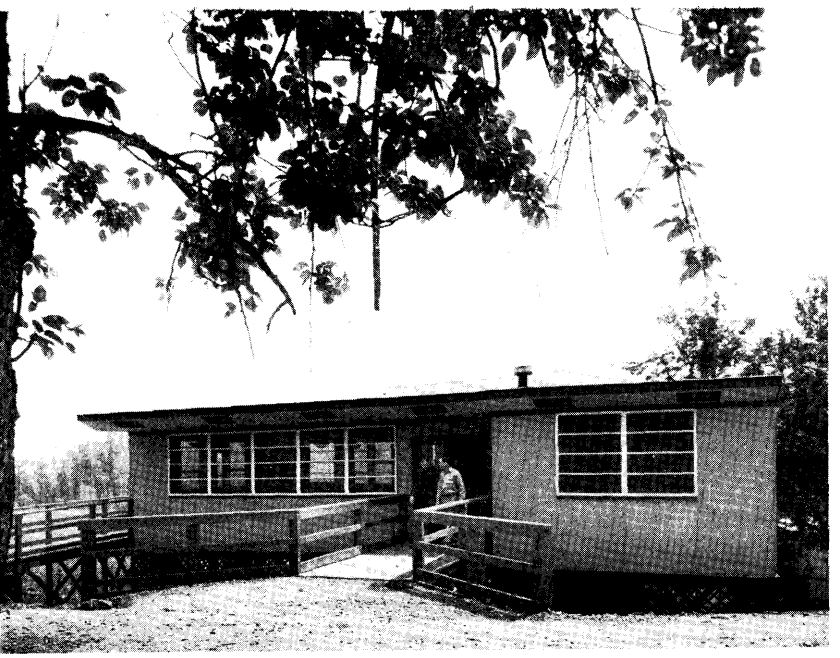
Above and across-page are three examples of portable construction developed by TVA. The village of demountable houses was taken some 350 miles from Alabama to North Carolina, then removed again to another project. Eventually the houses may become available for farm housing or tourist cabins. The portable trailer house (top right) is a completed example of which working drawings and a complete description were shown in the July, 1942 issue of THE NEW PENCIL POINTS. The recreation building (lower right) includes a library and is built on the same principles as the demountable houses in the larger photograph. It can be easily moved and re-erected in six three-dimensional slices, each 7½x22 ft.

The inn at Cove Lake Park, shown below, was built under TVA direction by the Tennessee State Department of Conservation, with the assistance of the CCC, on an arm of Norris Lake. Photographs show a general view, porch, guest room.









settings and made the most of them. Their general layout and individual housetypes have been observed by millions, and have been invaluable as demonstrations, along with other federal rural housing projects which have appeared in more recent years.

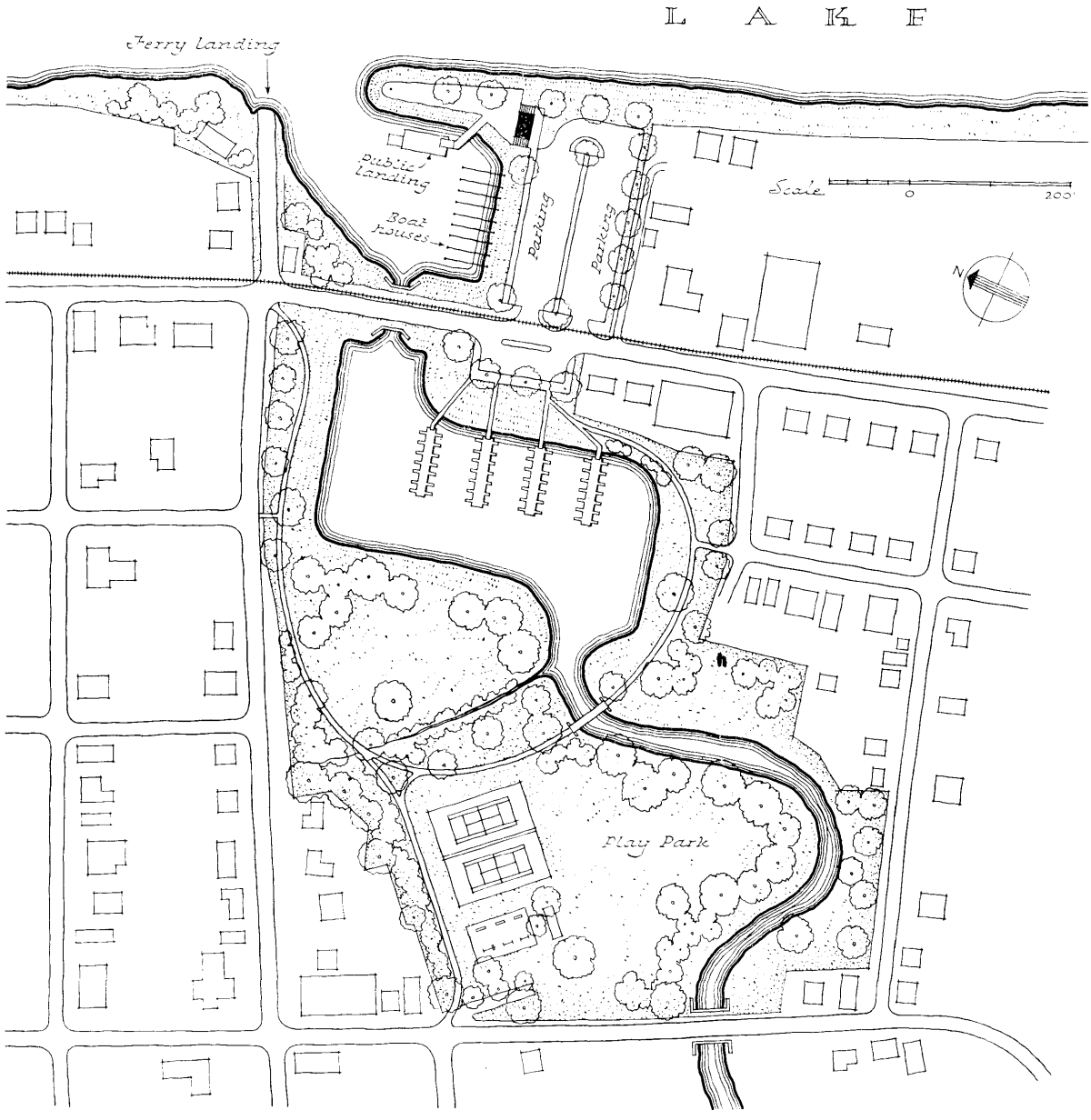
In addition to permanent residences, temporary quarters were needed for construction employees. Through years of experimentation, a unique and extremely successful method of demountable construction was developed. (The latest product of this method, structures sectionalized to roll like trailers but hitched together on the site to work like houses, was reported upon in the July, 1942 issue of THE NEW PENCIL POINTS.) Demountables are one of the great question marks of the rural future. Those owned by TVA may be available eventually as vacation cottages or farm residences in new locations. But beyond this group of a few hundred, large numbers of similar structures, probably of more advanced postwar materials, may change the whole problem of rural housing through substitution of a modern industrial unit for the relatively low-skilled, clod-tied farm house or tenant shack.

Workers in TVA villages have needed schools, libraries, stores, eating places and so forth. As far as possible, such facilities have been planned for permanent absorption into the life of the countryside for the use of all residents of the vicinity. This program has been promoted by cooperative agreements with state educational institutions which take over and run TVA schools, and through which much wider notice is assured to architectural principles of the buildings.

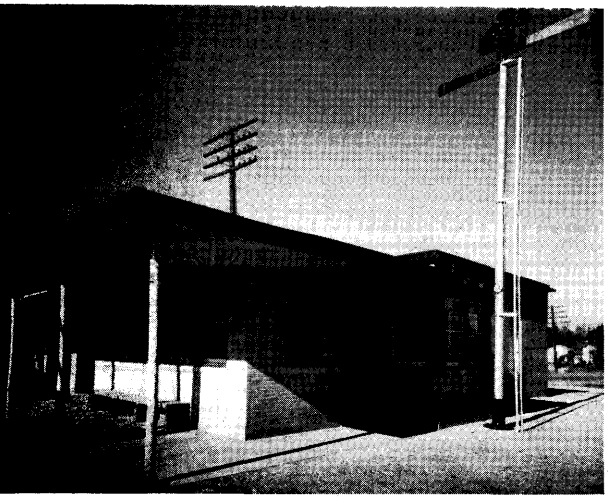
Library facilities, originally supplied directly by TVA, have been similarly subjected to cooperative federal-state arrangements. The same philosophy was applied to recreational projects, until the war concentrated TVA energies upon more pressing problems. At the start it was necessary to build up public understanding and to assist in the establishment of new branches of state governments for administration of parks and other recreational properties. The Authority, therefore, built its first swimming beaches, boat landings, restaurants and vacation camps as direct projects, often with work-relief assistance, but contracted for further developments with state, county and local agencies as soon as such were set up.

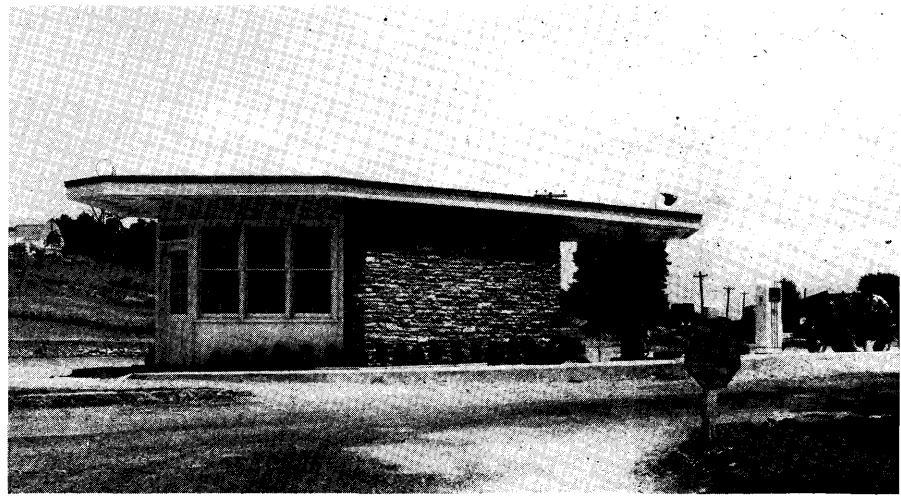
Flooding of reservoirs required replacement of roads, bridges, railroads, etc. This work was executed with the intent to find solutions applicable by others to similar work elsewhere. Post offices, stores, filling stations, firehouses were conceived likewise as studies for more general application in rural surroundings. Small office buildings, plant structures, docks, hangars, switchhouses, for the Authority's electrical, mineral and chemical enterprises, forestry headquarters, malaria control stations and so forth, scattered throughout the Valley, also serve that purpose. The agricultural program included community refrigerators and freezer-lockers, and started from the most modest ap-

Development of TVA reservoirs presented the opportunity of using water in the development of recreational areas. The map shows a park and boat basin in the center of an existing TVA community.



Flooding the reservoirs necessitated replacement of roads and other facilities as well as provision of some new structures. Reading from left to right and up, these types of buildings were constructed: railroad station, service station, transformer sub-station, harbormaster's office, concession in a TVA store, restaurant, and temporary school building.





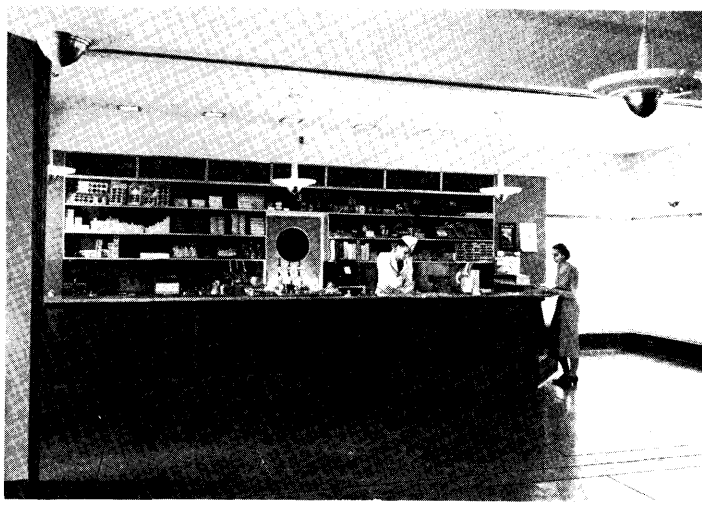
proach to these potentially important subjects of rural architecture.

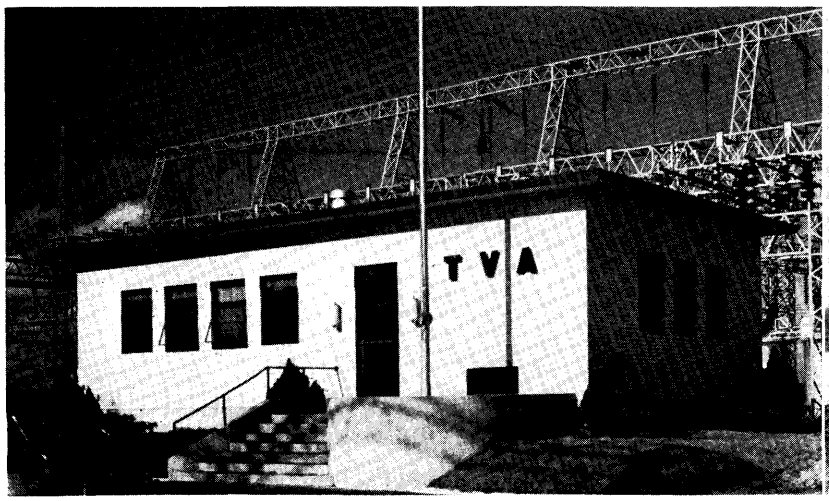
A special and rather successful effort was concentrated upon the structures of power subcontractors—the municipal boards and farmers' cooperatives which resell TVA's wholesale power to the ultimate consumer. Their headquarters buildings are conspicuous in the small towns where they are usually located and are visited regularly by rural power users for whom these buildings often represent the most advanced contact with modern civilization.

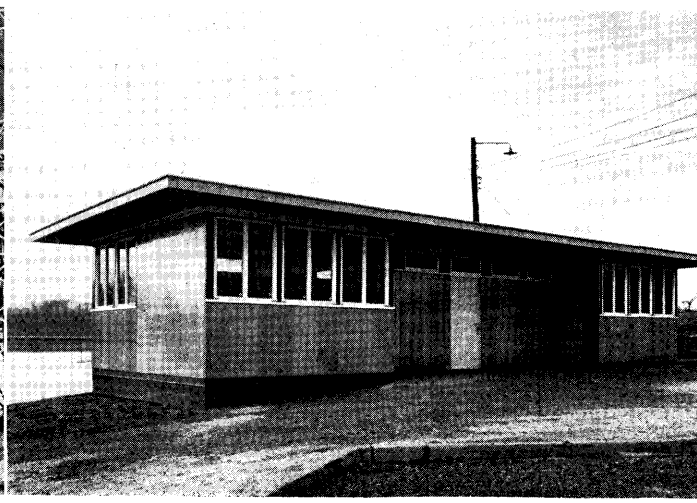
VI

These are some of the many strands that have to be spun into one strong lifeline for a rural architecture in the Valley that will be expressive of successful readjustment to twentieth century civilization. The problem is not static. New war industries have brought great shifts of population, and postwar use of air transport may produce a diffusion of urban inhabitants through the countryside that will dwarf our present conjectures. Success depends upon awakening rural people to a view of the many little plans and problems as one interrelated whole. Groundwork has been carried on by the staff of the Authority intensely for years, and has resulted, among other things, in the creation and active functioning of state, county, and local planning commissions, assisted by their own or TVA technicians. City plans, municipal and county zoning ordinances, building codes have been created and are followed. Isolated building programs were brought into the focus of the whole; negotiations were under way at the outbreak of the war for coordination of building programs of numerous agencies concerned with health, welfare, education, agriculture, rural electrification. From all this effort may emerge planned use of land, with enlightened policies toward distribution of rural inhabitants and properly related service centers of rural industry, commerce, culture.

If and when, in the course of this evolution, the hang-dog air of rural building yields to brisk, light, purposeful structures properly placed for enjoyment and use, it will be a sign of more than planning and design well done: it will be a manifestation that throughout the countryside the "people's century" is on the march.







FSA-COLLIER

Chemistry — Farming — Building

by Franklin C. Wells, of Holden, McLaughlin & Associates

I

For over a hundred years, we have been living in the Machine Age. In the early days of this era, men were so delighted and pleased with their new black and cylindrical boilers, tanks, smoke stacks and tunnels, that they promptly dressed themselves like the machines—with stove-pipe hats, black cylindrical Prince Albert coats and pantaloons.

But today the Chemical Age, far more astounding in its effects than the Machine Age, has crept upon us unawares. We read about the miracles of chemistry, but the significance of the fundamental changes that confront us is but little appreciated.

The main events in the upsurge of organic chemistry are as follows: Toward the end of the last century, the research on synthetic dye manufacturing led to establishment of a practical laboratory technique of organic chemistry. So important was this basic step that in the first years of the century Germany knew that if she could synthesize nitrogen and oils she could challenge the world. In 1913, the Germans succeeded in fixing nitrogen from the air, thus gaining unlimited explosives and fertilizer, but war came before they could produce oils and fats synthetically. This was one of the reasons they lost that war.

The use of clay and bone-like materials is prehistoric. In trying to make an artificial ivory billiard ball, celluloid was invented. In 1909, Bakelite plastic was found as an imitation amber. Since then we have become accustomed to the increasing number of articles made from plastics—cabinets, knobs, tools, wrappings, electrical goods, parts of planes, water pipe, and a host more. This

FSA-LANGE

Industrial farming: sugar factory and beet field, Monterey County, California.

is only a start, since specifications for superplastics are now in chemical laboratories.

In the last decade chemical technique entered the field of textiles, so that in the near future it will completely dominate it with rayon and nylon displacing silk, and curly fibred rayon and Aralac (from milk) taking the place of wool and fleece.

The effect on diet of vitamins, and the use of the sulfa drugs, and the constant new discoveries such as the mould "pencillin," entail far-reaching changes in human health and life span.

We know that sea water is an almost unlimited source of raw mineral materials; but it is only *one* new source. Agricultural products and the products of the forests are the great, self-renewing sources for most of the ingredients needed by the Chemical Age. The profundity of this change is indicated by the fact that in the last decade, with the Chemical Revolution barely under way, over 200,000 brand new chemical products, having a pre-war annual sales value of ten billion dollars or more, have been produced.

II

The impact of the Chemical Revolution is being felt first by the farmer. He has clung to age-old methods and hand tools as has no other producer—except possibly the builder. The farmer has resisted mechanization; but, in spite of him, today the farm is fast becoming industrialized. This is happening in two

ways. The first is through education, which enables the intelligent, college-trained farmer to apply readily and quickly to his work the results of modern science.

The other way is the "factory in the fields"—the large corporate farm (still illegal in some states) which is assembled from foreclosed farms, or capitalized by financial groups, or by canners, or groups of city business men. In relation to certain crops these industrialized farms are successful. Although they have the best management and machines, they still depend, for labor, on exploiting the migrant, and on nearby small farmers. However, they do not successfully compete with the "educated" farmer where he is well established, as in Iowa. With these two new types of farms lie the future of agriculture.

Now the farm's first job is the food supply. One-sixth of the first draft in this war were rejected because of malnutrition. For this country to be adequately fed would require an increase of 25% more dairy and poultry products and 100% more fresh vegetables and fruit. Yet so fantastic have been the results of chemical discovery that on two-thirds of the acres now tilled we could raise this enlarged food supply. The war-perfected nitrates, insecticides, and bactericides are being tremendously improved, meaning higher yields per acre.

Other developments have been proceeding at breakneck pace. These include low-cost manufacture of plant-growth accelerators, such as levulinic acid and cochicine; discovery of enzymes for industrial use; use of qualities inherent in existing plants which at present are not used; adaptation of plants, even changes in plant forms and properties, by plant geneticists, to make available unheard-of agricultural products, such as levulose—which comes from the Jerusalem artichoke and the dahlia, is half again as sweet as sugar, and is three times more easily assimilated.

Eighteen hundred oils can be "grown" here; cellulose comes from agricultural crops. Paper pulp, cellulose for rayon, and plastics, as well as naval stores, are today grown with an efficiency which reverses what used to be common figures for lumbering—20% yield and 80% waste.

Seabook Farm, Bridgeton, N. J.: An agronomist's establishment which extends as far as the eye can see. Views, from roof of packing house, show workers' community below; shipping area, parking lot and greenhouses across-page.

Gasoline ruined thousands of small farmers because it broke the farm cycle. Draft animals, which fed on farm produce and contributed fertilizer, were replaced by the tractor and gasoline, which required a cash outlay. A gasoline-alcohol blend of fuel has been successfully marketed for present carburetors, and catalysts to improve the blend, are available. The low cost of alcohol, derived from farm products, as fuel, is anyone's guess. The farmer who grows his own fuel can use more of the new and improved machines that can plow, till, and harvest with a minimum of human labor. Again, soilless farming, with the direct use of chemical solutions in tanks, has been proved successful.

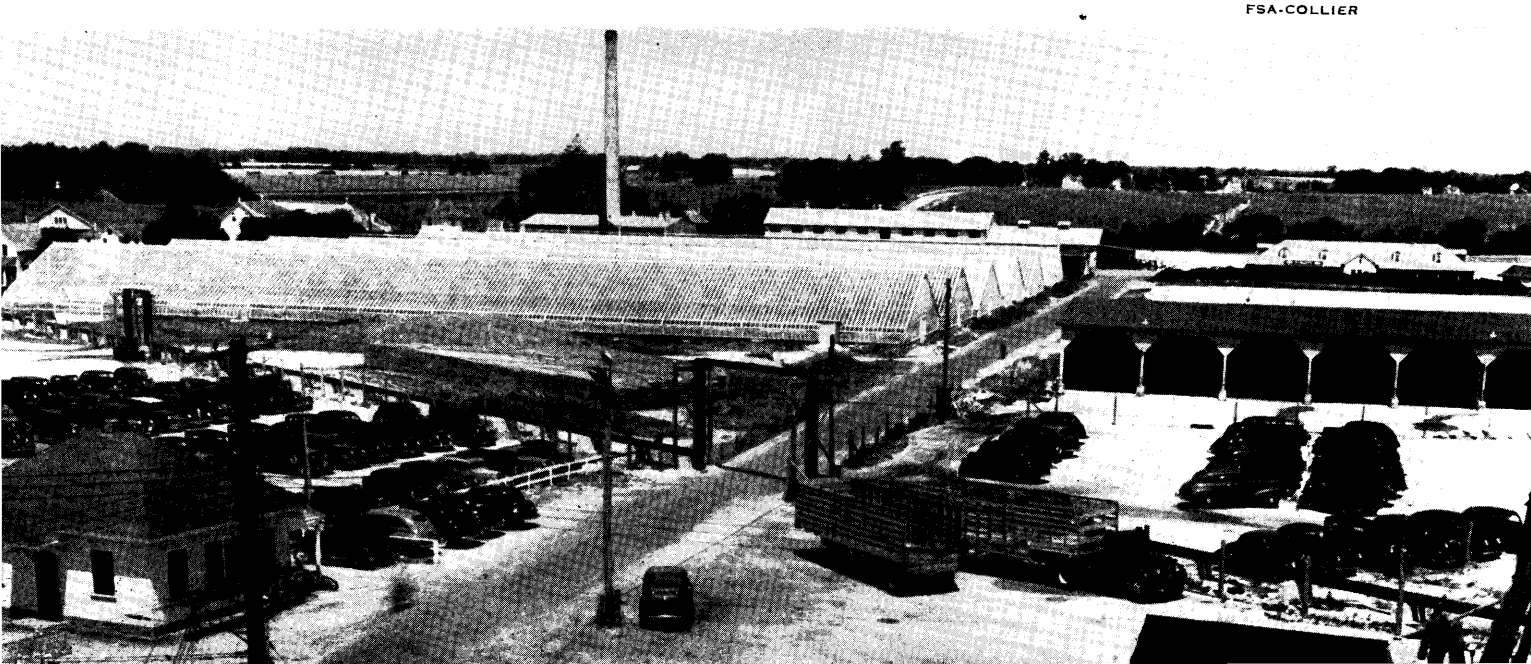
The status of the farmer, as a "colonial" under the domination of city, industrial-financed overlords, has passed. The farmer will be a producer of raw material and also a processor and primary manufacturer. The freezing and dehydrating of foods, the pressing of oils and distilling of agricultural materials, the preparation of cellulose and other forest products, mark the beginning of a new day on the farm.

III

Another medieval occupation—building—also has clung to hand tools, resisted mechanization, and is at last ready to step forward and become an integrated industry. Although one great task lies ahead in rebuilding our cities, great new opportunities are also apparent in the rural field.

Regional Planning. The economic rehabilitation of farming, and the application of science to agriculture, demand skilled planners. Architects, as the members of society whose function it is to study the ultimate use of things, have before them many important problems of zoning and planning: the re-utilization of farm land, involving classification as to use; the withholding of marginal land from crops and turning it into shelter belts and cultivated wood-

FSA-COLLIER



FSA-ROTHSTEIN

Grain storage under the "Ever-Normal Granary" plan led to development of such storage bins as this one on an Iowa farm. Though simple in exterior appearance, their design entailed considerable thought, and had to encompass the following factors: they had to be easily built, by unskilled labor; they had to be cheap, durable for at least 5 years, water-tight, vermin-proof, and tamper-proof (capable of being locked and impossible to break into); they had to be easily loaded and unloaded. Their interior temperature had to be kept low — a quality here achieved by utilizing the reflectivity of metal. They had to have a carefully designed system of updraft ventilation.
The type of steel bin shown here stored grain at cost of 6 cents per bushel, compared to 15 or 16 cents for standard elevator warehousing.

land; the planning for soil and water conservation and power requirements, as well as the orderly flow of goods; the designing and locating of the chemi-industrial farm towns of the future.

The Housing of the Farmer. Most farmers are now living in rural slums. One-third of the farm houses are unpainted; 25% do not have screens; 70% do not have running water in the kitchen; 90% have no bathroom with running water. The heating is primitive. Four million out of 6½ million farm houses are lighted by kerosene lamps. Surely this is a challenge to a new building industry! Sooner or later the corporate farm will have to adopt a decent labor policy, which will inevitably demand housing for its workers.

Farm Buildings and Equipment. Lumber dealers, mail-order houses, farm implement companies, and agricultural colleges have poured forth copious plans and plan books concerning the farmer's barns and other equipment. But the results are not satisfactory for the scientific farm. New ideas must constantly be found and quickly put to work. Today, for example, experiments are being conducted to see if cows and chickens should be housed or not. Apparently the cow should not and the chicken should. Yesterday's methods are not good enough.

Further, a good deal of poor construction has been turned out in the past—for example, 2″ x 3″ rafters on a 10′ span in a northern state. It is an architectural job to elicit the results of research, correlate the experts, and with a knowledge of construction and detailing make good farm buildings easily available. A survey was made recently to discover a post-war farm market for prefabricated building products. Kicking around an agricultural college was research data on a new "corn dryer", a shed-like structure using cleverly directed streams of air, and very much needed in the corn belt. This device requires that someone detail it economically and build it in the various sizes required—and thousands of farmers will gladly buy it.

The architect has proved that a well-designed factory pays in efficient operation. The same applies to the farm with its machine shed, processing

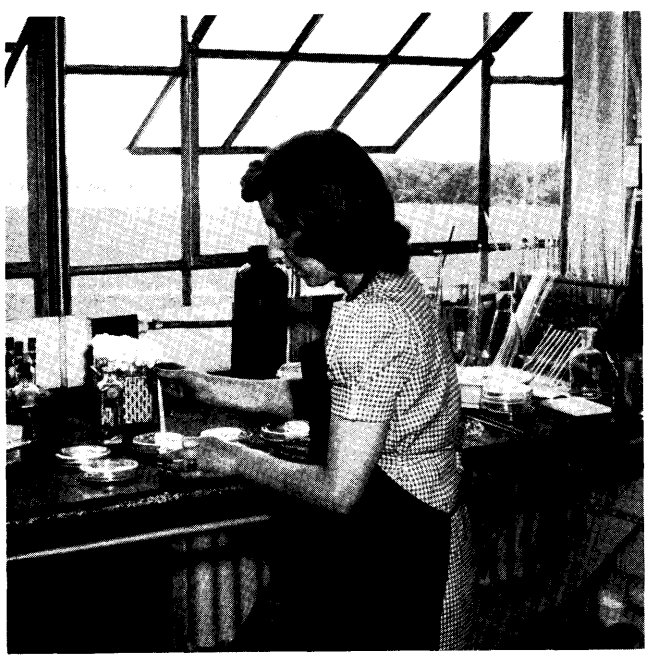
plants, and storage facilities. The recent success of good design in the 1000 bushel grain bin for the ever normal granary program is a case in point. The research and studied design which made this bin so great a success indicated that the field for the agricultural engineer-architect is just opening. Any new structure or device or plan which will save farm labor will be welcome, and the designer will be well paid.

As the scale of farm operation equipment tends to larger units, this better planning and design will be more needed. For example, a group of Western farmers wish to form their own power company in which each farm runs a diesel engine feeding the central power loop that goes to all the members. When a farmer needs a large amount of current, he draws from the main. At other times, by automatic controls, his generator contributes to the main. Oh yes, the exhaust from the engines will heat the domestic hot water.

New Materials. The utilization of new plastics and other materials for building requires the presence of the architect from the very inception. The chemist can make anything—anything that can be described. But it is the architect whose knowledge of "use" fits him to say what products shall be made and how they shall be joined together. Through the electronic microscope, we can see the lattice of material structure. The chemist can fill that lattice with many different kinds of substance; he needs instructions on what he shall make. For example, the plastic panel for the outside of houses is yet to be made. The architect can set up the requirements and the lattice will be filled with silicate or magnesium to give durability, low specific gravity, fire-proofing, permanence of finish, thermal insulation, translucence as required. The great chemical companies want the architect's advice.

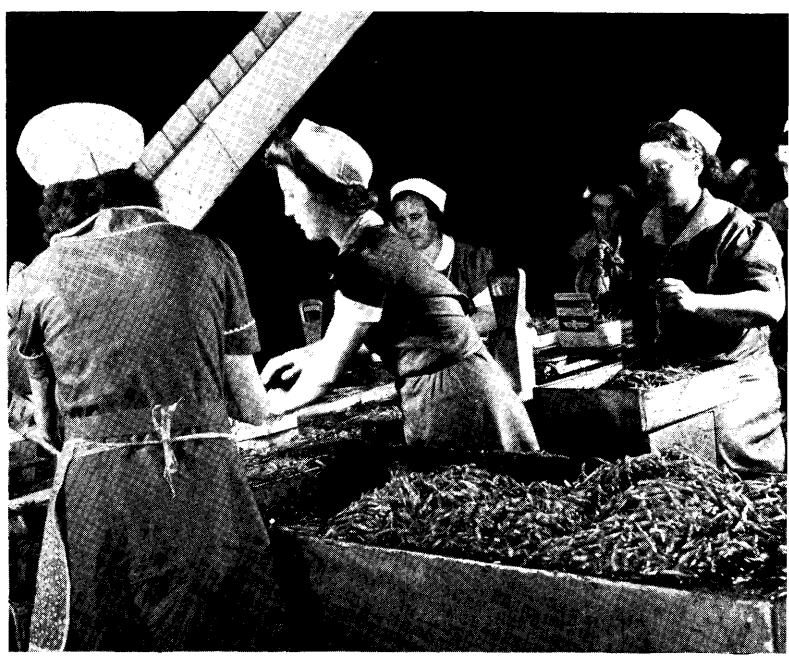
The Chemical Age offers to us a new frontier. Had a new continent been suddenly discovered off our shores, it would not offer more opportunity to our country than does recent scientific advance. This means that no one need go hungry or unsheltered, if we with courage step across this new threshold.

Making bacteriological tests on canned produce.



FSA-COLLIER

Packing beans for "quick freezing."



N. Y. TELEPHONE CO.

Electricity Puts Its Hand to the Plow

by M. M. Samuels, Chief, Technical Standards Division, R E A

What will be the role of electricity on the farm of the future?

The answer is, "No one knows." It is about as difficult to discern the pattern of the future, so far as farm applications of electricity are concerned, as it is to predict what type of automobile we'll be driving five or ten years from now.

But just as the automobile is simply a device for efficient transportation and some day will probably be designed with more regard for its true function, so are electrical devices tools to be used by the farmer in accomplishing specific tasks. Parenthetically, the first automobile was a motorized buggy. I think we shall see more electrical tools and fewer gadgets when engineers find time to design electrical equipment for farm use—and farm use alone.

This concept of farm electrification springs from the realization that the farm is no less a factory engaged in production than it is a place where people live. Appliances which today are doing a makeshift or half-way job will give way to electrical tools that permit the farmer to make more money, produce more or better food, preserve food, and eliminate needless waste of good food.

We who work in the program of the Rural Electrification Administration know that hundreds of thousands of farmers are using electricity for one or more of these purposes. The American farmer, however, has barely scratched the surface of electrical use, and the fault is not primarily his. Until recent years not many farmers had central station electric service. While men of science in colleges and laboratories have done some remarkably good work toward development of electrical equipment especially adapted to farm operations, it has not been possible as yet to make the results of their labor available to all farmers who do not have electric service. Price has been an obstacle. Without quantity production you can't have low price, and we have only the beginning of a specific industry designed to produce these goods on a large scale.

A number of progressive manufacturers have been giving attention to the development of devices suitable for manufacture in quantity. A glimpse at a few of these will emphasize their possibilities for good in the farm home and in farming operations.

One of these devices holding great promise is a self-contained quick freezer and cold storage unit having a capacity of 20 cubic feet. It will hold about 1,000

Telephone and power lines are today a curse on the countryside, as they once were in every American city. Perhaps our designers will get around to perfecting a more functional, less expensively maintained pole before some wizard manages to transmit light, sound and power privately and commercially without exposed wires.

TVA

The rural community refrigerator requires a building —an architectural expression directly related to Mr. Samuel's article.

pounds of meat or 500 pounds of fruit or vegetables. It is small enough to be placed on any back porch and will provide all the advantages of ordinary electric refrigeration, plus the benefits of food preservation by the quick-freeze method. If produced in quantity it would probably cost no more than $300. Farmers will be quick to sense the value of such a device and the money saving involved in preserving homegrown produce for off-season use. It will be worth a good deal in terms of improved nutrition alone.

Another manufacturer has developed a small, kitchen-type flour mill capable of grinding from 20 to 40 pounds of flour per hour. Its estimated cost, under mass production, will not be more than $25. This mill will enable the farm wife to grind her own whole-grain flours and cereals, using in most cases products which under present conditions are grown on the farm, shipped to market, processed, and purchased back again at a much higher price. It may be possible to operate standard kitchen mixer attachments with the same machine, making it serve double duty.

Although commercial dehydration is receiving considerable notice because of the vast saving in cargo space made possible by shipping products in their dried form, we are just beginning to realize what modern dehydration can do in the preservation of food for home use. One manufacturer has developed a small electric dehydrator which can be placed on a table, attached to the house circuit, and used to dry fruits and vegetables very economically. In 12 hours it can convert 25 pounds of fresh apples to four pounds of dehydrated apples, consuming only 2.4 kilowatt-hours of electricity per pound of dried product. Enormous quantities of apples, peaches, and vegetables that now go to waste could be preserved for human consumption through use of this device.

All of these developments have been put to sleep because of wartime shortages of critical metals. But they may be expected to form the basis for an important manufacturing industry when the inevitable demand arises, after victory has been won.

One of the obstacles that must be overcome if technological advancement is to proceed unhampered is the tendency of many individuals to turn thumbs down on any device that doesn't work perfectly as soon as it is placed in operation. The very persons who never created a new thought of their own are the first to jump on anyone who introduces a device showing the

slightest defect. This attitude, which has been called "the bias of experience," can deter the development of new appliances. If everyone had possessed such a view we would never have had electric service at all; we would have no steamships, no railroads, no automobiles, no airplanes, no radios. We would still be living in caves like primitive men, eating steaks from each others' hips or climbing trees like monkeys.

Equally obstructive is the lack of interest on the part of some agricultural engineers who regard farm electrification as a mere appendage of pre-Edison agriculture. But even they are now beginning to see a vision of a new agriculture in which machines designed for electrical operation will be the core of farming. The saturation point for electrical consumption on a properly-powered farm is as far away as the limits of man's ingenuity.

Power must be cheap so that the farm consumer can put it to maximum possible use; power must be dependable so that operations on which the farmer depends for a living, and on which all of us depend for our food, will not be interrupted needlessly. Achieving dependability of service is a job for the engineer, who must create protective devices that assure a continuous flow of power under virtually all circumstances.

Since lightning is one of the most frequent causes of trouble, why not place rural power lines underground? The only real obstacle in the way of this development is the old philosophy of thinking only of first costs. Perhaps those costs can be reduced to a reasonable level in the future by applying the "self-help" principle which has already worked successfully in the building of some of the overhead lines financed by the REA. The farmers themselves could dig the trenches and perform much of the other work.

When will we stop selling the farmer flatirons or curling irons for billy goats' whiskers? Just as soon as the manufacturers develop all the types of new equipment so desperately needed to make the power age in agriculture a reality instead of a dream.

The farmer of the future may use a tractor operated by storage batteries that can be charged inexpensively at night, right off the house circuit. He may also use high frequency current to treat his soil and to exterminate ants, termites, mice, cockroaches, and boll weevils. And we hope that electricity can be applied to the extermination of the corn borer.

Farmers also will likely have home pasteurizing equipment so that they will be able to sell some of their milk in their own communities instead of shipping it. Electric lighting should be possible even in the remotest shack, and it must be *good* lighting. The farmer doesn't want fixtures or the product of a fixture racket. He wants good, cheap light, without glare.

The farmer desperately needs running water. If anything, this is more important even than light because he can live healthfully only under conditions of sanitation. What we need is an electric pumping outfit that will sell complete for about $10.

All of these things, and more, are needed because the farmer, like everyone else, has a right to enjoy the fruits of technological advancement. After all, this war would not make sense if we did not hope to make it possible for every American to live the life of a civilized human being.

This REA Utilities Building, built with TVA cooperation, contains offices, demonstration space, auditorium, lounges, meeting rooms, shops, garages.

TVA

ALL PHOTOGRAPHS BY THE AUTHOR

Backhousing for Bomber Plants

A Report by Alan Mather

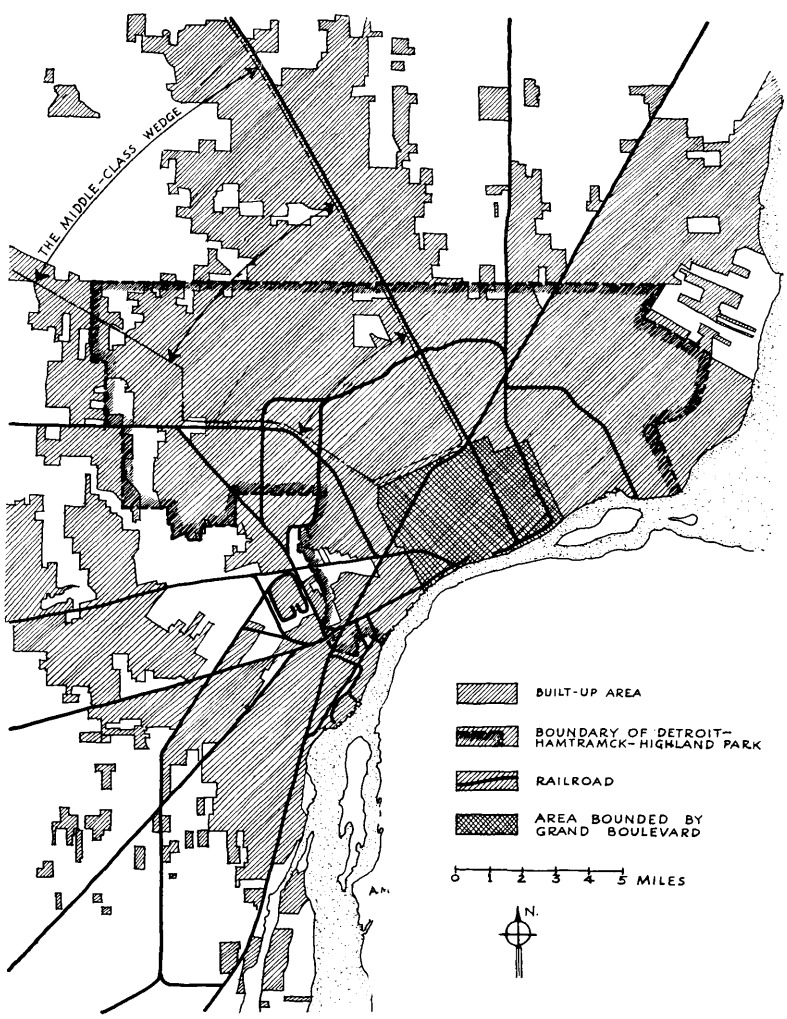
Mr. Mather knows only too well the causes which led to the existing Detroit war-housing situation. From various parts of the country have come rumblings at housing construction: Norfolk, Va.; Portsmouth, N. H.; Portland, Oregon; and most recently, New Jersey. But as Mr. Mather highlights the forces at work behind the Detroit scene, this question rises: Can anything but jerry-building result from such manipulation?—The Editors.

Some Detroit Peculiarities

Of the twelve largest cities in the United States, Detroit has the highest proportion of its workers employed in factories. While it has a powerful middle class, located for the most part in the great "middle class wedge" (see map), the main impetus for its development has been through the man in overalls, and along the railroads. Such development conditions planning for its residential areas. Heavy industry must stay close to the tracks. Detroit's industry is of the heavy variety; it is in strips along the rails, hugging the Michigan Central, the Grand Trunk and other lines.

Along the railways going northward and just beyond the city boundaries, in Warren Township, are new factories with a maximum employment capacity of 28,000. Near them are hundreds of newly-built cottages. Inasmuch as Warren Township is still a farming community, farmer legislation prevails: backhouses are permitted and a house is ready for occupancy even though the widely spaced and bent studs of its exterior are uncovered by wallboard or plaster. Foundations consist of concrete block piers resting on topsoil. Wells, drilled in a hurry, are just as quickly condemned by the State Board of Health and people are driving miles to public fountains with milk cans, garbage cans, oil cans, and other assorted containers. Two public housing projects have been built in this area: Kramer Homes in Centerline, 300 families, and Charles Terrace Homes, 440 families.

Ypsilanti, twenty-eight miles west of the center of Detroit and near the Ford bomber plant, is rapidly turning into one big dormitory for the plant's employees. Strive as they may, the citizens of this quiet teacher-training center don't seem to be able to prevent this change. Ford workers are making relatively good money and the best way to get it is to convert an old place into a rooming house. Evictions of people with families, in order to make such alterations,



are a daily occurrence. Walking from the center of the town and out along Michigan Avenue for about four miles, I counted one hundred and thirty-five trailers, some in two's and three's in farmhouse yards, others compactly ranged in rows in camps. Nearer the factory is an orchard from which 150 families of squatters, most of them bomber plant employees, were evicted in August. County health authorities in investigating found many drinking polluted water. There was an outbreak of a form of dysentery among the tenants and the state authorities felt compelled to evict them. A number of these wretched people purchased lots in nearby areas but were forbidden to build on them by the health department. The land had been found so low, water level so near the surface, that neither privies nor septic tanks could be erected without causing pollution of wells nearby.

I cite these dreary conditions to show two things: first, that the problem is primarily a public health one to which housing is an attachment, and secondly, that the principal representatives of "private enterprise" who stepped forward to do anything about it were the owners of trailer camps and the gentlemen who sold the lots which couldn't be built upon. Of course, the few respectable representatives of private enterprise who *might have done* anything about it were paralyzed from the conviction that the government *might* do something. They were away having doubts as to the expediency, feasibility, and justice of continuous gigantic government spending (loud cheers): they were nursing their wrath to keep it warm.

There are three factors which prevent government and private enterprise from providing permanent housing in Warren Township and Ypsilanti: first, the *relative* shortage of materials; second, the need for speed in construction; and third, the alleged fear that these areas will become ghost towns after the war. I'll take the third one first.

Those Big Solid Factories

One of the most striking features about the factories, built outside the city limits during the days of OPM, is their look of permanence. Ford's Willow Run bomber plant, Hudson Naval arsenal, Chrysler tank arsenal were all built to endure. This is not surprising, for the terms of their contracts with the Defense Plant Corporation allow a manufacturer to retain a factory and to pay for it the amount shown in the Final Cost Certificate, *unless* "a less amount shall not have been agreed upon and approved as representing a fair value." These wartime factories can be transformed easily to peacetime activity, and it is no rash guess to say that they were planned with that transformation in mind.

These factories are big because, during the days of William Knudsen in the OPM, the Army and Navy let contracts to the biggest automobile corporations; these corporations built anew rather than convert their existing facilities to war work, and they built hugely with the future in mind. The Ford bomber plant is the biggest stretch of roof in the world. Why? The Army first proposed to Ford that he produce plane parts to be put together in two great assembly plants in the southwest. Mr. Ford, not wanting such an apparently subordinate position, made a counter pro-

Warren Township housing: backhouses, permitted by rural legislation, pollute the local water supply.

posal. He would produce all the parts asked for by the Army and, in addition, would assemble complete planes in the same factory. As a result we have colossal manufacturing activity carried on alongside space reserved for tremendous assembly activity.

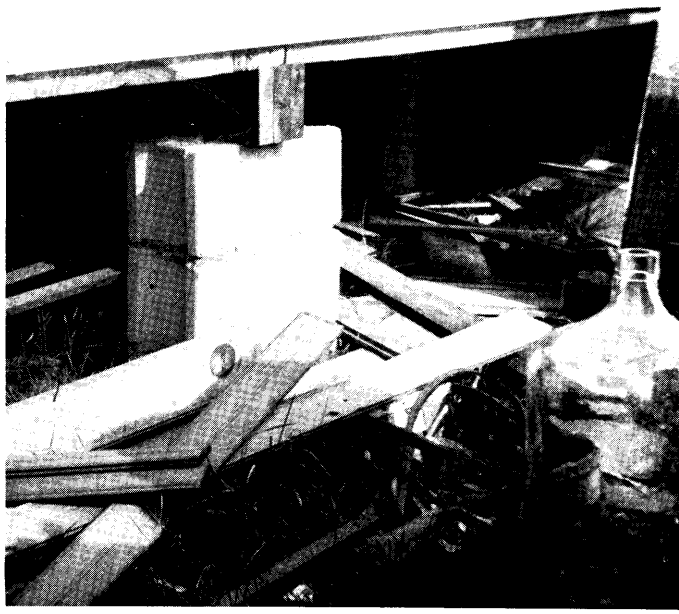
It is a depressing fact that despite the experience of Germany and the Soviet Union, the assumptions on which the planning of such gargantuan structures is based have never been questioned in our newspapers. The Soviet Union has been cursing "giantomania" in factory planning for years. These huge factories are difficult to camouflage. The possibility of splitting their component parts, of placing them in satellite towns linked together by railroads has never been spoken of in the press. The ideal of building small plants in towns where the labor force would soon be released from peacetime industry was never grasped for what it contained as a good architectural and social solution.

But the factories are here; they exist. At their worst they are better than the multi-story structures in the city of Detroit. Mr. Albert Kahn has based his prophecy of much industrial building after the war on the fact that these new plants will offer severe competition to companies cursed with old buildings —they too will be compelled to build or perish. Speculation on the future of Ford's Willow Run plant feeds on the fact that he has made spectacular shifts before. Willow Run may succeed the Rouge plant just as that succeeded Highland Park. The new factory is in the geographical center of Ford's soybean farms. We have visions of a postwar ceremony: Charles E. Sorensen shoveling soybeans into a hopper at one end of the plant as Edsel Ford watches the first soy-plastic Ford family airplane issuing from the other!

Those Ghost Towns

During the months that Charles F. Palmer served as Chief of the Division of Defense Housing Coordination you could find, at least once a week, in any newspaper anywhere in the country these words: "fear of ghost towns." Now this did not mean that newspaper editors had ever seen a ghost town or ever expected to see one—it meant that Mr. Palmer's Division had issued another press release. Mr. Palmer's Division knew that the editors of the big metropolitan newspapers don't write sentences. It had learned that they cut chunks out of press releases, paste them on clean sheets of paper, and send them down to the linotype room. The editors always cut out and pasted that phrase, "fear of ghost towns." They liked it—reminded them of "The Deserted Village." Mr. Palmer's Division was glad they liked it because some people were demanding that Mr. Palmer build houses near the new factory in which they worked and the Division didn't want to do that. The factories were usually in the suburbs and Mr. Palmer's Division wanted to build in the city. It was not petulant, cross, or stubborn about it —this Division and another arm of the Federal government were in the real estate business. That arm was afraid of what is happening and will happen to the center of our cities.

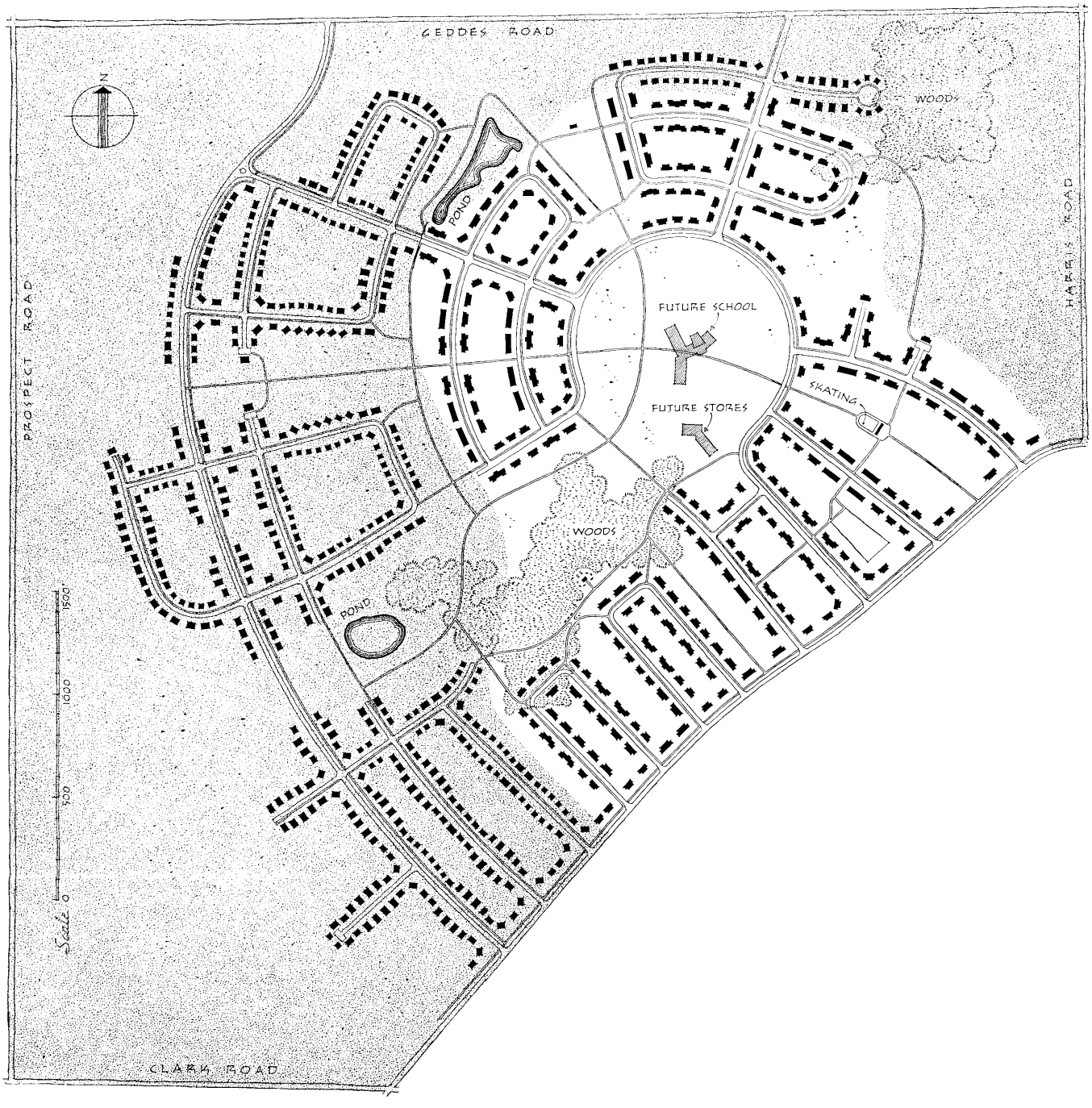
It is not the possibility of decline in our suburbs but rather the expectation that their continued activity will drain more population out of the centers which prompts the fear. In his foreword to FHA's *Handbook on Urban Redevelopment for Cities in the United States*, Mr. Abner Ferguson says, "Decay near the centers of urban communities has progressed to such a point that reasonable men may well be concerned about the municipalities' increasingly precarious financial condition. Irrespective of the methods used to finance solutions of this problem of slums



Niceties of construction as observed in Warren Township housing: foundations of concrete block piers resting on top-soil; bowed studs, widely spaced. When a door has been added, this unit is ready for occupancy; interior wall and ceiling surfacing can come later.

Because blight had descended on urban residential districts in Detroit, such as this, enlightened real estaters and mortgage holders favored construction of Federal housing projects in the worst-hit parts of the city. Naturally, their interests have led them to oppose permanent housing (even for permanent plants) in outlying districts because this would further drain the already debilitated urban residential areas.

Plan of part of the housing scheme for Willow Run; Mayer and Whittlesey were architects for this section. Last June there were five schemes, and five architects responsible for them. But by October, 1942, two of these (which were farthest from utilities lines) had been dropped, and had been incorporated into the three remaining sections for "future" construction. Such a portion is shown in the shaded area below. The white area is for "immediate" construction, and contains principally multiple units, of a temporary nature. Single-family units are relegated to the doubtful future.



and blight, the fact remains that this is a problem that must sooner or later be solved. . . . The Federal Housing Administration has a nationwide and constructive interest in this situation, partly because its own insured long-term mortgages aggregate more than 3¼ billion dollars of insured loans on residential construction, chiefly in cities."

Mr. Palmer has gone, but the spirit and substance of the Division of Defense Housing Coordination lingers on. Some of it is in the NHA. Paper being scarce, this agency omits the poetry and mimeographs on both sides of each sheet. Nobody there says now that if industrial suburbs are built they will become ghost towns after the war. The Federal Public Housing Authority asks the National Housing Agency to get some materials for permanent housing. The Agency feints in the general direction of the War Production Board, comes back to its office after some gruelling shadow boxing and says, "No materials." So the Authority goes ahead, builds houses with first floors of concrete on fill, sticks furnaces inside chimneys, puts up some shaky dormitories, and builds industrial suburbs which *will* become ghost towns within five years.

Slapdown Housing

This reluctance to build for permanence in the new industrial suburbs of Detroit and elsewhere has produced the demountable house and a contradiction. We recall that when demountability was first discussed, and before the shortage of steel made itself felt, dozens of success boys stepped forward with their little designs for steel igloos or for steel houses built like silos. Came the steel shortage and the boys took to the woods—they had schemes for demountability in that material too. Came the wood shortage. And now the success boys are pressing forward with cotton, cardboard, highly compressed newspapers. But no matter which way they turn, the demountable house always seems to use up more critical materials than one built for permanence in brick or concrete, or rammed earth, or cinder block. Certainly, there is a shortage of critical materials. All the more reason for building permanently. This does not mean buying everything for complete construction and equipment of permanent houses now. In discussion with officials of the Housing Authority here in Detroit, representatives of the workers for whom the town at Willow Run is to be built have said that they don't need wood first floors, or laundry tubs, or even wiring for electricity *now*. What they do ask is that allowances be made in planning for installation of these things in the future.

Early in October the secretary-treasurer of the United Automobile Workers-CIO spoke in favor of substituting temporary for permanent housing and said that this "will divert at least one-half of the critical materials which go into permanent-housing construction toward production of war implements." This represents a radical reversal of UAW policy, and for Detroit, at least, it is very important. Looking at the plan for Willow Run town site one is not surprised at this reversal. The density is low and utility lines are long. But the UAW, which had much influence on this plan, wanted houses as near to complete independence of each other as possible. It was only at the last moment that single family houses were omitted for economy's sake. The union had dubbed the PBA, the "Public Barracks Administration" and in their reaction against the monotonous rows built by that agency had asked for this low density planning. Their ideal is stated thus in a pamphlet: "Everybody likes to have their own home. When you sit back and think of what that home would be like, you usually think of a one-family wooden or brick home with two floors, two or three bedrooms, a big cellar for a workshop or recreation room, and a big back yard for a garden or for the kids to play in." (It continues further on—"You have only one big problem and that is financing.") So the ideal of the one-family home prodigal of land

and utilities, dies hard. I have no doubt that the comparison of cost in critical materials is not just between temporary and permanent housing. It is between permanent housing of too low a density and two story "temporary" dormitories. The comparison is not a good one.

That the union should have reversed its opinion of permanent housing when the architects' plans were going out for bids is astounding. It was largely responsible for getting the project through its earliest stages. Then it jeopardized the entire construction. This statement about substitution of temporary for permanent housing is so obviously a distortion that one wonders what purpose is being served: it seems so irresponsible as to make it advisable for some housing or architectural organization to investigate the whole question and issue a less confusing report.

Time and the Righteous

Pulling some of these points together will explain why grotesque things will be done now in Detroit in the name of speed. The new factories in the suburbs were built for permanence. This worries local real estate investors. They hope that the urban redevelopment law passed recently in Michigan will help in a reconstruction of the area within Grand Boulevard —Detroit's core of real estate values. (See map.) With this in mind they have been opposing construction, by Government, of permanent housing in the new industrial suburbs. The opening of new residential areas would further depress values at the center. Some years ago the most enlightened of these investors in the Citizen's Housing and Planning Council favored the construction of Federal housing projects within the boulevard. Recently, however, this organization poured cold water on the idea of a Bomber City near Ypsilanti. More forceful opposition to the idea was exercised by Henry Ford, the Board of Commerce, and a miscellany of groups having but one thing in common, one patriotism, one burning religious faith—hatred of the CIO which favored the scheme. In Washington, the investors were represented by the FHA and the Division of Defense Housing Coordination. These organizations fought a battle of delay. They were confronted by the threat of construction of *permanent* housing in industrial suburbs all over the country. And they resolved to have no such construction.

When looking at the Chrysler Tank Arsenal or the vast Ford bomber plant, miles from any built-up community, one is likely to be amazed at this opposition and its delaying tactics. "Where are the workmen going to live?" was the obvious question during the construction. Bernard M. Baruch had said that it was absurd to build new plants without simultaneous construction of housing; down in Baltimore, Glenn L. Martin was favoring construction near his plants. The need was clear. Anybody could see it who took the trouble to visit the plant sites. But as day followed day and no permanent housing was built, the shortage of critical materials and increasing congestion in existing houses made it clear that only one kind of housing *could* be provided—barracks.

The real estate people in Detroit have never opposed barracks. Mr. Ford favors barracks. The UAW-CIO, which favored permanent housing to the last moment of the delaying battle, now favors temporary housing. They will get barracks. 272,000 persons will have moved into Detroit between July 1942 and June 1943. Conditions are desperate. Time has been on the side of the righteous.