THE ARCHITECTURAL DEVELOPMENT

OF THE

AUTOMOBILE FILLING STATION IN AMERICA

by

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Natural petroleum was obtained before 1859 from various springs and streams upon whose surfaces it appeared from seepage. It was used for lighting, and the limited supply was augmented by oil refined from bituminous coal shale.

The discovery of oil-bearing subsurface stratas in 1859 at Oil Creek Valley, western Pennsylvania, and the completion of the first flowing well in 1861 created an activity rivalling that of the California gold rush ten years before. This discovery was even more important, for its subsequent commercialization furnished the source of fuel which made possible the development of the automobile.

The automobile was only a dream. The first one was built in 1893, and on its development depends the evolution of the filling station. As the appearance of the automobile followed the discovery of oil some years, so the rise of the filling station also followed the invention of the automobile a similar interval. There has been the search for the solution of the new problem of fuel distribution to vehicles.
powered with gasoline engines.

The wealth of oil in this country as well as the fact that the automobile industry is primarily an American one has related the development of the filling station to American architecture.

In 1896 there were only sixteen automobiles in the United States. They were novelties, and as one enthusiast as late as 1909 put it, "the cheapest form of amusement purchaseable." We have some reason to doubt this upon examination of some accounts of early automobilists. An overhauling job was necessary every 1000 miles. Tires cost approximately $26.00 each and gasoline averaged 20 to 25 cents a gallon. Batteries cost $18.00 and had to be recharged quite often at a cost of $2.00.

It was customary for the automobile owner to store gasoline in barrel lots at his car-house, usually his barn. At first, this gasoline had to be bought from the distributor at his place of business.

and delivered by the consumer to his private storage tank. Naturally this, even at the time, was considered a temporary arrangement by both the distributor and consumer alike.

It did last until a little past the turn of the century when gasoline was retailed from horse-drawn tank wagons in much the same manner as vegetables are sold from door to door in the present day. Automobile registration in 1904 was slightly in excess of 54,600 cars, yet days are recorded in which not a single gallon of gasoline was sold from the tank wagons, which drove about the streets seeking sales. The more practical minded consumer realized the saving that could be made by the use of underground storage tanks to combat loss through evaporation. These tanks, equipped with piston type pumps, met whole hearted approval in ordinances seeking to minimize fire hazards.

1 Underwriters labelled tanks were manufactured for this private storage and were used in some localities as late as 1920.
In the larger cities, storage garages took over the problem of the supply of gasoline. These garages appeared rapidly with the remodelling of livery stables of the age which was passing out, and because of the limited real estate available in the more congested districts. Houses had been built abutting one another in such a manner that no space was available for driveways or private garages. Only the owners of large estates and residents on the outskirts of the cities were fortunate enough to have space available for the accommodation of a horse and carriage which could be easily remodelled into a garage.

The fuel supply for automobiles was carried in the storage garages by the use of portable 50 gallon tanks that were wheeled from car to car. Continual controversy was waged over the problem of leaving the gasoline in the automobile tank while the car was in storage. The fire hazard was most important.
Some few outside pumps were provided at this time by garages for the accommodation of transient trade. These were more often than not of the same types that were used inside the garage. The majority of garages however kept their pumps inside the building since the major consideration was that of repair and storage rather than fuel supply.

Architecturally, these structures were probably as unsuited to their use as any type could be. The larger storage garages were made fireproof and, while they did at times attempt to express some form, they usually were massive factory-type buildings of several stories in height. The smaller garages were but fac-similes, just as massive to their scale, and just as dark and repelling as blackened masonry could be. The business of fuel supply had not emerged into the highly competitive field and little thought was given to appearance.

There are so many claimants to the title of the "first filling station" that it is difficult
to know just when the idea of the sale of fuel as a separate enterprise began. One St. Louis distributor in 1903 began delivering gasoline on order to the consumer's private storage tank. This idea of merchandising developed, during the same year, into the placing of pumps independent of the repair trade. These were located on the inside of the lot and required the customer to drive completely around the garage building to be served and to re-enter the street at the other side of the lot. The pumps were afforded no protection, were rather inaccessible, and were quite likely to escape notice from the street. This was merely a step in the right direction. The filling station was under the same management as the garage but was a separate unit.

Seattle claims another "first filling station." It too must be regarded since it marks the beginning of the divorcement of the filling station from the garage. This Seattle station was located at the bulk storage plant and was in no way connected with a garage or repair business. Gasoline
was served to the car by means of a 30 gallon vertical hot-water storage tank with a glass gauge at the bottom to show how many gallons were run into the tank. The fuel was pumped by hand into the storage tank and ran by force of gravity to the automobile. A crude canopy of corrugated iron was erected for the protection of the attendant, pump, and motorist. Here the operation was directly supervised by the wholesale producer for the first time.

Still another variation of marketing is found in a Detroit station dating from 1910. This station was a simple corrugated iron shed roof mounted on six supports. It covered one service lane on either side of a piston type hand pump and was useful and functional. It sheltered its wooden runways, attendant, pump, and customers. This station was operated by a retail gasoline dealer and represents possibly the first such independent business. The supply of gasoline was delivered by a tank wagon drawn by horses and was stored above ground in a separate shed of corrugated iron.
Other stations followed closely in point of time and were more satisfactory architectural solutions. An octagonal station in Pittsburg in 1913 was built of brick and stucco with wide overhanging canopies on all sides to protect the narrow service lanes. This is one of the first examples of a masonry building constructed to sell gasoline. It was surmounted by a huge oil can to display its purpose, as the earliest example of visible effort to make the structure advertise itself and to make it recognizable to the public as a filling station. A city ordinance forced it to forego its original color scheme and to paint the pumps red to denote the explosive nature of gasoline. A courtesy extended to the customers by this station was the cranking of all cars which stopped at the station.

In 1913 many of the large merchandisers motorized their tank wagon fleets for the first time with chain driven trucks, of a speed of about 12 miles per hour. Automobile registration exceeded the one million mark for the first time, and the
importance of the automobile was expressed in the beginnings of a new, vital industry.

The part played by the garages in the filling stations business remained the same during this period. The year 1915 marked the beginning of small garage stations placed along the more frequented tourist routes. They were simply garages selling gasoline and standard parts for the automobile. "They were often little more than supply stations carrying gasoline, oil, grease, and such universally used articles as spark plugs, tire patches, standard screws, nuts, and washers. Generally the building consisted of a single room with perhaps one corner railed off for a desk and show case." The architectural form was still an unsightly masonry building with little acceptance of their real function.

Fuel was supplied to the automobile by any one of three agencies at this time. First, the wayside garage which had expanded its business to

1 "The Garage Business," P. M. Heidt in Horseless Age v. 36, November 1, 1915.
take over the retail fuel trade; second, the curb pump operator who had installed a pump in front of his grocery store or whatever business he was engaged in; third, the independent filling station with the express purpose of selling gasoline and oil for automobiles. Forms remained fairly static due to the intervention of the World War. The wartime rumors of oil shortage and diminishing supply to meet the demand held all progress in check. The fear of fuel shortage grew to such a point that groups organized to force legislation curtailing the production of automobiles.

This attitude was changed during the period of post-war prosperity. The demand for gasoline tripled from 1909 to 1919 and little fear was felt by the dealer or the public concerning the shortage of fuel. Automobile registration reached approximately 9,346,000 in 1921.

Motorists, by force of salesmanship were made conscious of the fact that they should have the oil changed in their cars regularly, and that they
should have their cars greased every 1000 miles. Salesmanship became an active factor of the filling station. Pumps with visible bowls were installed so that the motorist might see the gasoline he was buying.

Salesmanship added another requirement to the clear record that guided the filling station. Racks were built for the purpose of offering greasing and crank-case service to the public. These racks were usually constructed of wood and presented an undesirable appearance. For this reason, they were soon replaced by pits. These pits were in turn replaced by electric or hydraulic lifts in many instances, as further recognition of the visible sales appeal. The motorist could see what was being done.

Accessibility to the lifts or pits as well as to the gasoline pumps was now to be furnished. This problem was met in many cases by the mere installation of draining pits in the driveways themselves. The fallacy of this system was soon seen when
the pumps were blocked by cars which were having their crankcases drained.

The expansion of the service offered by the filling station to embrace that of crankcase draining and greasing opened the avenue of general accessory sale. The controversy arising out of the sale of accessories was of considerable importance because the inclusion of such sales necessitated additional planning provisions for storage and display.

Naturally no proper building form for the sale of fuel could be evolved while so many different units were bidding for the business.

One noteworthy attempt to solve the problem was made in Rochester by a small oil company that utilized a portable station design consisting principally of steel sash bolted together and mounted on a concrete slab. In a way this was the early ancestor of the modern station. Portability and salvage value for use on temporary sites occupied the chief interest in contrast to
the modern aim of visible sales appeal. This station sold no accessories.

The problem of accessory sales reached a point of such importance to the filling station that in 1921 the prediction was made that, "In five years, there will be a completely new branch of the automobile field evolved, which will be a wedge driven between the service station and the garage." It was called for lack of a better term, a service store.

That division came sooner in an entirely different form in 1923. Automobile registrations had by this time approached 13,500,000. In the congested areas of the East, curb pumps were detrimental to traffic flow. The curb pump was, at best, a very poor solution to the problem. It was horribly antiquated. Organized agitation in Buffalo, New York, resulted in a court order prohibiting their use. Counter propaganda defeated itself. It cited

low dealers overhead and availability to the motorist as beneficial to the public and completely overlooked the traffic problem in the search for sales. For example, one company opened "three oil stations with sales, on the initial day, of 3500 gallons. The sales would have been much greater had it not been for an accident at one station which put two pumps out of commission in the afternoon at a time when the street was clogged for eight blocks with cars waiting to be filled." All these pumps were located at the curb.

The prohibition of curb pumps was accompanied in many locations by the exclusion of pumps inside buildings. Many cities followed on the heels of the New York court order. Thus, in the short span of sixty days in Buffalo, accessibility and circulation became items of prime importance in filling station planning. This condition spread over the entire country in a very short time and was the great-

The early search for new form centered about the problem of accessory sales and the use of the canopy over drives. Circulation was, and still is, controlled by location. If the station was placed on a corner where traffic was equally heavy on both streets, it was placed on the diagonal axis of the plot with access to both streets. If the traffic was heavier on one street than on the other, the station faced the heavier traffic. This general rule holds even today. The diagonal placement is not as efficient as the others because one may not re-enter the same street after being served.

With the circulation improved, the search for proper form developed into many types of architectural expression. The earliest style adopted was

1 See Diagram A
CUSTOMARY CIRCULATION FOR CORNER SITE WHERE TRAFFIC IS UNIFORMLY HEAVY ON BOTH STREETS.

Access to the original flow of traffic is not directly furnished.
the Colonial. Several examples of this style occurred as early as 1921. Fidelity to it ranged from the use of Palladian show windows in the earliest example, to a two-story portico reaching over the drive.

The station building housed all units of the service except greasing. The canopy was used in the majority of cases. A great deal of importance was placed on the appearance of the grounds. Flowers were often planted carefully around its borders. The building was of masonry construction and might take any historic style of architecture. "There is no set type for service stations. They may be Greek, Gothic, or Mission without disguising their purpose. They may be Early Colonial or Queen Anne and still have enough pumps around them to identify them as service stations. Motorists know that any odd and artistic structure by the roadside is likely to be a service station whether there are any pumps in sight or not.

There is a story told of a middle western motorist who toured 'down East' and near the end of his journey on a certain famous thoroughfare came to
a dead stop in front of Grant's Tomb and yelled, 'fill 'er up,' at a naval officer standing near by."

By the close of 1923 there were about 21,000 filling stations in the United States and approximately 8,000 more under construction. The service station business was rapidly becoming a merchandising enterprise involving all the accepted propositions of salesmanship. The visible type pump and rotary lift had already been installed as sales features. Accessory cases were brought to the pump island by the more practical operators and to attract the trade of "the most fastidious automobilists, Chinese pagodas, Mohammedan mosques, Norman castles, and Flemish towers could be found." The pump island became the salesroom.

In 1923, on the west coast, the service store predicted three years before, was developed in the form we now call the super-service station or the one-stop

station. It was sponsored by those who strongly advocated the sale of accessories for an expanded service. The form developed in the west because of the available real estate, the greater distances from town to town, and the greater touring trade which demanded that all branches of the service be concentrated. These expanded units were made by the addition to the filling stations of stores with greater service space on the same lot, so that all might be served by the large drive area in front.

The accepted style in the West was Spanish. Canopies were invariably used and in some instances took the form of wings through which wide arched openings were placed. Ceramic domes, Spanish grills and Moorish archways were often used.

While these extensive service units were being built at great expense in the West, in the congested areas of New York the question was raised as to the advisability of having any station building at all. It was proposed by some operators that all available space should be given over to gasoline pumps in as much
as the revenue depended upon the speed with which cars could be supplied with gasoline. Since the building served no part of this speed program, it should be omitted. Further, this group contended that the pump was the best advertisement a station could have. Accessory trade was considered by these operators as being neither desirable or profitable. Little influence resulted beyond the strengthened argument against the canopy. The heavy masonry construction that was used in the canopy and its supports was likely to hide the pumps from view as well as to create forbidding shadows and a sense of narrow confined drives.

A station in Pittsburgh seems to have been the only one affected by this idea of speed. It had 32 pumps arranged in a semicircular plan on an inside lot. This example did have a station building for the attendants office, storage and display. Sixteen operators worked at the pumps and the approach to any one pump without interference with the traffic to any other pump was worked out successfully.
The super-service stations rapidly spread to the East. They were even less fitting there than in the West since the conditions under which they originated did not exist. They were generally larger but less numerous, due to real estate conditions. The eastern type rapidly transcended the filling station field into a development of its own, the extent of which may be seen in a Cleveland station that incorporated two filling stations in its two acre plan. It was in this eastern type that the practice of washing cars originated.

The East never sought the romantic and bizarre styles of the West in their super service stations. The type reverted to the earlier garage building in appearance. No Moorish castles or Flemish towers were found.

The chief contribution of the type was the definite establishment of the sale of accessories in the filling station. This did not apply to those stations operated by the major oil companies, because of the lack of standardization of the accessories to
be sold.

Because of the unsuitability of these large stations to the congested cities of the East, the service was divided into units of gasoline trade, washing and greasing, and accessory sales. This divided service often took quite new forms. The Greasing Palace was one such form. It emerged from the divided elements of the greater station about 1927. Its design feature was a pit, usually curved, from 40 to 50 feel long for the accommodation of a number of cars at the same time. This service type sold no gasoline as a rule.

For the most part, the smaller stations sought the efficiency of the super service station by taking over as many of its practices as were possible on a small site. The form was more eclectic in the East. The tendency in 1925 was to abandon the canopy as an avoidable expense. Individual canopies over the pump islands were considered practical for the protection of the equipment and attendant.
Features entirely alien to function were used repeatedly. Window boxes were considered quite desirable and fairy tales were recalled in search for architectural inspiration. The station building was considered an advertising medium and its primary purpose was to attract attention. An example of any architectural style can be found from the small Wisconsin station that, "would seem to be a bit of stage setting from the 'Wizard of Oz' or the 'Gingerbread Man'", to the station in Erie Pennsylvania that "looks more like a Grecian Monument than an oil dispensary." No more expressive term for the entire period from 1921 to 1930 could be found than the one word, "gingerbread."

This stage setting architecture was carried to the inside of the station also. One "English type station", of which there were hundreds, "had a small


fireplace, chintz curtains, and maple furniture to give an atmosphere of refined luxury."

The reason for this architectural stylization was the attempt on the part of the operators to conform to the style of the community. The last thing they wanted to do, it seems, was to build a filling station in the form its commercial purpose dictated. A satirical bit written in this eclectic period expresses the manner of the time. "Architects were sent scurrying to southern Europe to study the best examples of Italian Renaissance. Others hastened to rural England to copy typical Tudor buildings. In sunny Spain and in remotest parts of China others sketched temples, pagodas, dwellings and court yards. Hundreds of skilled men delved through research volumes for the best authorities on Gothic structure. Finally, after two years of wandering, they gathered in the large assembly hall.

1 $11,000 Built It Including Equipment, Grounds And All," Petroleum Age, v. 18, December 15, 1926, p. 20
Each rose to his feet and read a carefully prepared paper on the results of the investigation. A tense, almost solemn atmosphere pervaded the hall. Next to me sat the Elizabethan authority, sketching castles on a blotter. 'Excuse me,' I whispered, 'but are you planning to erect some massive cathedral, some glorious temple of the arts or possible a sumptuous home for some great millionaire?'

'Don't be silly,' he answered. 'The Consolidated Gasoline Corporation is thinking of putting up another filling station out in Santa Barbara, California.'

Research of this nature, although not to this extreme, was carried on. For example: "for about a year the Pure Oil Company has been studying architectural types best adapted of the needs of a filling station, and the English type scored highest in every way."  

1 Hugh Wood in Petroleum Age, v. 17, July 15, 1926, p. 25.
These stations were to be located in the East, and middle West principally. They were the best adapted because they would fit with more communities than any other type and not because they were better adapted to the solution of the problem of the filling station.

Historically styled stations were not unique to Santa Barbara or any single locality. The high point of stylization was probably reached as early as 1924 in Washington, D. C. This example was an octagonal station with two small semicircular wings on one axis. Its treatment in stucco with a tile roof and delicately arched openings was quite monumental. Even the pumps lost their identity and took small delicately carved forms that looked more like memorial markers than gasoline pumps. Advertising was purposely avoided as signs were considered undesirable. The continual inquiries of tourists as to whom the monument was erected flattered the operator, but this uncertainty as to the function of the building was not an asset to his busi-
ness. He was forced to erect signs in spite of their resulting incongruity. It has been said of this station that, "the design of the building as a whole is unusually attractive and well thought out, and it is probably quite as appropriate for a service station as those in any of the other styles." Certainly it is as appropriate as any steep roofed creation or any small New England Farmhouse with two pumps enclosed by lattice huts to represent well houses and the air standards boxed in to resemble old-fashioned hand-pumps with long wooden handles.

Though the majority of stations were built in some architectural style, a few sought arrangements of office, rest rooms, oil storage and other facilities that were best suited to the operators and customers with little reference to historic styles. Such straightforward simplicity

was almost always expressed in masonry masses, either
stucco or brick with large heavy canopies. It is
probably true that economy was the explanation for
these examples, but they are none the less admirable
for seeking simple expression of function.

A period of standardization began in 1926
that has lasted to the present day. It was started
by the manufacturers of equipment and was followed
shortly by nation-wide control of the filling sta-
tion field by the oil industry. Stations began to
sell only one brand of gasoline under the direct su-
pervision of the controlling company in 1927. Plans
were repeated time and time again, with little varia-
tions forced by locations, in order that the customer
might become accustomed to the appearance, service
and arrangement of the company's stations.

The stations of the East were still his-
torically styled. Those of the West and the South-
west more often chose less offensive masonry types

1 See footnote 2, p. 22. This type is still used
with slight variations in plan.
with little character at all. One company of the East held only generally to a style so that it could be slightly altered to fit with the community. The predominating material for exterior finish was stucco.

Standardization gave impetus to pre-fabricated steel construction. Oddly enough, this most contemporary and expressive method was usually painted to imitate wood of stone. It lost its identity in the Doric style or the Colonial manner just as its masonry and frame predecessors had. Had the pre-fabricated type not sought stylistic expression, the present day trend of design might have been reached much earlier.

The ready-built unit was perfectly suited to the function of the 1927 filling station. Little space was required since very few accessories were handled. Greasing and crankcase service was done in the open as a rule, and complete adaptability to the location was provided.

The portable pre-fabricated station fur-
nished the final opposition to the canopy as an ex-
pensive and unnecessary item and promoted the use of
new and more suitable materials, steel and glass.
Salvage value, the primary reason for the use of
portable construction, was soon supplanted by the
ease with which the large glass areas might provide
visible sales appeal and station cleanliness. The
customer liked to see at what kind of a station he
was stopping.

The standardization of the filling sta-
tion by the oil industry brought about the revival
of the super service station under private owner-
ship. In this manner, more than one brand of gaso-
line could be sold, and accessories, which were com-
monly excluded at the majority of stations, could
be handled to suit the needs of a particular trade.
This revival occurred in the West. One reason
for this was the fact that the major oil companies
in the West did not furnish gasoline pumps and
equipment for a small fee as did those in the East.
Consequently, the standardization was not as complete, and the individual operator had no obligation to a single company.

In the East, the super-service station was controlled by a number of interests. Private ownership was not as common as ownership by tire and battery manufacturers. The location and planning of the eastern type made it acceptable to the needs of these agencies as an outlet for their goods. The revenue was based upon the accessory sales, and the sale of gasoline was supplementary.

This interpretation placed a limit on the number of large stations that would be economically sound. Continual fear for the overbuilding of this type was expressed. In 1929, statistics based on the supply of tires alone to 23,000,00 cars, placed the upper limit at between 5,000 and 8,000 stations. This estimate did not take into consideration the fact that all the tires and supplies were not sold through such stations. The revival definitely es-
established the importance of accessory sales and the necessity of centralized management of the unit, whether it be large or small.

Its challenge to the oil industry was not ignored. Opinions varied as to the proper method of combatting the threatened loss of retail control by the oil industry. Some said, "the oil industry is the logical medium for one-stop automotive service because it has developed its own merchandising organization. Fewer service stations will be built, but they will be of the one-stop type." The increasing use of enclosed greasing facilities to enable service all through the year was considered a step in this direction by many. The logical explanation of the use of enclosed greasing facilities lay in the study and more adequate solution of the problem. It was, like the added sale of accessories later, influenced by the larger type.

The cost of the greater stations was out of proportion to the increase in service. The majority of companies were of the opinion that ten $25,000 stations in a city were better than one $250,000 station.

The rural problem was somewhat different. It was solved in the East by the larger companies lending pumps to wayside refreshment stands. "Along the 70 mile stretch from Cleveland to Sandusky, there are 31 pumps." These were, of course, not filling stations in the real sense of the word. The source of revenue from gasoline depended entirely on the transient trade. It is natural that the type should differ from that of the city; living quarters, soda fountains, restaurants or almost any other type of business being incorporated in the design. The gasoline pump was only supplementing another business. One rural operator said, "we

have more business in gasoline, but we make more profit on the ice cream and sandwiches." While such a condition prevailed, there could develop no clear type of rural filling station.

The application of the western super-service station to the rural problem in California brought about the service community. This type started in 1928 and was designed to meet all the needs of the tourist. It included a hotel, stores, cafe, and repair garage in addition to the filling station. The architecture was Spanish in order that it might fit into its setting. No thought was given to the fact that the exposed steel-constructed beacon shaft, that was used, was scarcely convincing with the Spanish style of architecture. The depression stopped the project short of its completion.

Standardization of the nature and demand of accessories reached such a point in 1930

1 Truesdell, loc. cit., 19.
that stations operated by the oil industry could include them. Tires were the first of the more important accessories added. Batteries followed shortly, and the service rapidly "provided in addition to gasoline, oil, air, and water, complete lubrication, tire and battery service, a complete line of household speciality products."

According to the government census, at the end of 1930 there were 55,787 filling stations in the United States that sold petroleum products exclusively, and 33,443 that combined accessory sales and gasoline trade. A filling station, according to the government definition, is a "place of business whose principal sales are of petroleum products."

1 Only independently operated stations included accessories before 1930.


The inclusion of rural stations that were in reality only gasoline pumps, like the ones from Cleveland to Sandusky, accounts for the majority excluding accessory sales. Since that time more conservative companies have included such sales, and the discontinuation of lending pumps has further reduced the number of outlets located at roadside refreshment stands.

The building in 1931 was seeking cleanliness and a minimum of expense in upkeep rather than architectural style. The Colonial style and the sentimental domestic atmosphere of the New England style were the only retentions from the earlier eclectic period in the East. The search for form narrowed as more and more requirements appeared, and the filling station became concerned with the provision of storage space for accessories and enclosed facilities for greasing.

Coarse textures became undesirable because of the difficulty of keeping them clean. Rough brick was replaced by glazed brick or terra cotta.
The greasing compartments were enclosed and took either the form of a wing attached to the building or of a separate structure. This was the first remodelling program undertaken by the industry.  

Steel and glass were relegated to the role of temporary structures for the most part. Steel construction was used, but it was usually veneered with granite bases, terra cotta walls, and tile roofs. The style was foreign to the problem in its expression of dull masonry masses after the manner of continental Europe. In fact, "the architecture of the station building is similar to that of stations in German cities,"  

The newer materials were more adaptable to attractive lighting at night, a problem which originated as early as 1923, when the edges of the canopy were lined with lights. The illumination  

1 The enclosed greasing compartment did not reach the Southwest for approximately five years.  

furnished the areas about the pumps and drives was simply what happened to fall there. A few years later the entire building and plot was illuminated to create uniform and diffused light. Canopies made undesirable shadows and were usually eliminated except in the South and West.

The period of experimentalization also produced the miniature filling station, which consisted of a complete gasoline and oil servicing unit mounted on a base two feet by either twelve or eighteen feet. These were extremely practical for temporary sites since they were portable. One type of the miniature station placed a small attendant’s room of steel and glass between the two pumps. This was the initial attempt to place the attendant in direct connection with the service unit.

The economic condition of the country in 1930 and 1931 was such that stations with flexible plans were highly desirable. The miniature unit might be used as additional equipment to an
older station or might be placed on a new plot to test the potential gallonage of the location. Automobile registration dropped from around 23,000,000 cars in 1930 to little more than 20,000,000 in 1932 and economic recovery from the bad choice of sites created a demand for an element of semi-permanence.

Another interesting experiment of this period sought to cut the operating costs to a minimum by installing self-service. The building was a glazed control room in which was located an electric pump operated by the cashier. The customer paid for the desired quantity of gasoline which was pumped to visible containers along the drive. From these, he supplied his car. The venture was cut short by the state fire marshal's ruling that the self-service of gasoline constituted a fire hazard.

By 1932, a fuller understanding of the form the filling station should take was enjoyed. By this time the oil industry exercised almost complete control of the field. Problems tested in
previous years were finding a cleaner and more inter¬
teresting solution. The general requirements had been determined in the five year period of standard¬
ization and a longer period of merchandising. The form was governed by four factors of importance.
First, the buildings were to be of a standardized type of construction involving a minimum of main¬
tenance cost and designed for rapid erection; second, they sought permanent color in a medium that required little attention after installation; third, the design was to be distinctive and fresh, incorporating a max¬
imum of display space; and fourth, the design should be adaptable to attractive lighting.

These requirements were quite different from those of the super-stations a few years before. Two of them related directly to the problem of cost and maintenance. Simple masonry masses, flat roofs and absence of ornamentation gained in popularity. Straightforward design was admirable, but it was expressed in materials little adapted to the demands of the filling station.
The more usual designs used glass wherever anything of sales value was located. Waiting space was provided for the patron who wished to watch the servicing of his car. Pre-fabricated walls of steel with glass and porcelain enamel became popular because of design interest and economy. The general tendency was "to make a station look more like a retail gasoline store than a castle, manor house, or some other foreign design." The maple furniture that gave an atmosphere of refined luxury in 1926 was supplanted by steel and leather furnishings that gave a feeling of cleanliness and utility.

Consideration of adaptability to future business conditions led again to the prediction that "bigger and fewer stations is fast becoming the trend in the marketing of petroleum products. It is a natural outgrowth of increased accessory merchandising and car servicing. Up to the present

time, however the stress has been placed on the number of outlets rather than their character. In other words, the much talked of and comparatively isolated one-stop super stations of a year or so ago is to become commonplace and the smaller station will be seen only along the roadside or in protected locations to meet the close competition.

I can agree with the prediction only in part. The filling station was not to take the form of the super-service station. Its form lay in a compromise between the small portable units and the larger station. It evolved logically from a consideration of complete service coupled with an attractive building of sound economic value. The service of the filling station was only modelled after that of the larger station in a search for efficiency in the smaller unit.

Utility and practicality in design emerged from the period of economic depression. Even Calif-

ornia began to drop the Spanish, Norman and Mission architecture to take up the more practical modern expression. "At present the tendency throughout the country is toward modern architecture with its rather severe lines, but brightened by color and the use of highly polished metal surfaces." The day of building the station to resemble neighboring structures is past. Concealed mechanical equipment and camouflaged construction have been neither expressive nor economically sound. The medium in which this more direct solution was undertaken varied. It might be steel and glass, pre-fabricated steel, porcelain enamel, aluminum, or masonry.

The first cantilevered canopy was used in 1933 and was utilized because of the peculiarity of the site. The form was readily accepted as a modern solution since the mental obstacle presented to the driver by the supported canopy was removed.

Accessory sale was generally accepted

as a part of the function of the filling station. It has been estimated that approximately eighty percent of the customers do not leave their cars when they buy gasoline. Therefore, the display of supplies was moved to the pump islands to reach the maximum number of potential customers.

The sale of lubricating oil in hermetically sealed containers began in 1933 in an effort to combat the competition of cheaper oils. This necessitated greater storage room since it did away with the underground storage and the oil pumps at the drives. It resulted in a cleaner and more orderly appearance of the station.

Greasing pits still were used as frequently as were lifts. Pits were cheaper and permitted lower ceiling height, but the lifts gave greater cleanliness of work space and an actual saving of area by rotation. Streamlining of the automobile reached such a stage in 1933, that the mechanical parts were completely hidden from the side. The lift had the advertising value the pit lacked in
permitting the customer to walk around the car and see the service performed. This is the first instance in which the design of the automobile actually affected the design of the filling station.

The development of equipment was even more complete than the design of the filling station. By 1934, the gasoline pump had become a mechanical masterpiece. Automatic computers registered the cash amount of the sale as well as the number of gallons. Different designs could be made by the application of pressed metal jackets over the mechanical equipment. The fastest possible service was rendered in the most accurate manner by the use of such equipment as this.

The study of function and equipment in planning and the use of new materials definitely showed that "The trend toward attractiveness in gas stations seems fully as marked as the tendency toward streamlining in the automotive and in the railroad passenger coach field." The function seemed to es-

tablish a definite form, but the architectural expression did not indicate it adequately.

The readiness with which new materials were accepted by the filling station showed a search for the correct medium. A small station in Ohio was the first commercial structure to utilize glass brick. It was adaptable to the requirement of attractive lighting at night, but the effect was disappointing in the day time since its transparency was not sufficient to permit clear observation of the drives.

"The race among oil companies to secure new station locations is over and in its place has come the sane program of rebuilding and modernizing the existing stations." Three major features of this trend were display, uniformity and utility. Display was the most important, so the building was designed as a large display cabinet to sell service

and materials. Uniformity was next in importance from the standpoint of advertising and investment. Utility was expressed in uniformity and applicability to a future expanding demand. Factory-built units met the dual requirements of uniformity and utility. This was an expansion, as well as an application, of the desire of semi-permanence that emerged during the years of the depression. Prefabrication was carried to such an extent that small central units were transported to their location completely finished even to the placement of furnishings and plumbing fixtures.

Specialization in one particular unit of service was sometimes undertaken. The most successful expression of this emphasis in plan occurred in the station that placed the greasing facilities, or lubritorium in the center bay of a three bay plan. This was done to force the customer to see the equipment and to remind him that the service was offered when he needed it.

Another interesting solution was built
in New York. It was located on an inside lot 37 feet wide. A revolving runway that carried three cars at a time was constructed. The runway worked about stationary pumps, accessory displays and an office. Upon entering, the car was carried one third of a revolution at a time until it emerged fully serviced.

A still further stunt in the theory of making the building advertise itself was tried in a trackside station in Cleveland. Two tank cars and a flat car were remodelled to resemble a streamlined train. The flat car served as the office after it took the appearance of a club car, and the two tank cars were used for accessory and storage space.

These unusual stations are interesting only in themselves. While they contribute no influence or valuable discoveries to the field of design, they show an understanding of the underlying problem in the liberties they took. Awaiting popular acceptance, the filling station was being
designed to suit its function.

The builders had at last accepted the community as a group of conflicting interests. "The architectural merit, i.e., the plastic value of a community, depends upon the easily perceived differentiation between the basic functions. They should be easily read. The home, the school, the city hall, the factory, and the filling station should be easily recognized. The desired plastic unity is a final result of a clearly formulated program and a rational use of material, form and color." ¹

Unfortunately, the filling station reverted to stylization. Small towers, wierd forms and odd shapes arose with little thought beyond that of being modern. The effect of the World's Fair of 1933 was felt in this field as in all contemporary architecture. The benefit of wide sweeping curves in circulation was realized but the design of the building

Odd shapes and rounded corners were used as an end in themselves. They deserve almost the same condemnation that was meted out to the architecturally styled stations of ten years before.

Dramatization has been stressed in the past two or three years. The cleanliness and attractiveness of the newer designs made definite improvements upon the older types, but they were carried to useless ends, for example, "an interior decorator was consulted on appointments, including even the color scheme for the grease containers in the lubrication department."

The form of the filling station had evolved into a two-fold consideration of the distribution of fuel and the upkeep of the vehicles to which that fuel was distributed. The latter was concerned with

1 See Diagram B
3 See Diagram C
CUSTOMARY CIRCULATION FOR CORNER SITE.
REVERSE TURN MAKES ACCESS TO PUMPS DIFFICULT.

- Heavy traffic flow.
- Light traffic flow.
PROPER CIRCULATION AND RELATION OF THE UNITS OF SERVICE.

1. GAS SERVICE: Gasoline, Air, and Water.
2. UPKEEP SERVICE: Lubrication, Accessories, Washing, Etc.
greasing, lubricating, battery service, washing, the sale of tires and of accessories. The majority of these were factors of the greater one-stop stations, but could they be included at the smaller unit?

In the past two years, the use of shelved displays of merchandise in the building has become a definite expression of the different departments of filling station service.

I think this division of service is the factor that will determine the form of the filling station in the future. Some stations have sought expression of their equipment in plan with only partial success. Very few examples can be found that accept the separate units of service in plan.

The development of the automobile itself has had no little influence on the problem of circulation. Greater speeds, better brakes and shorter turning radii have all contributed a part to the necessity for wide sweeping curves. The first consideration of circulation must emphasize the fact
that the ease of access should dominate over the ease of exit. Next in importance comes the fact that access to each division of the service should be furnished without interference with the other. Finally, access from one division to the other may be considered less important but desirable.

This problem is one that varies with each plot, but the placement of the pump attendant in direct connection with the pump islands is a feature that goes far toward solving it satisfactorily. The office is the logical center of the working plan, but it should not be necessary for the attendant to go to and from the office for each gasoline sale. It should be considered more as the meeting point of the divisions of service.

The design of these related units should follow the lines of circulation rather than the rectangular limits of the plot, so that the building could express the circulation and the direction of its movement. Control of this movement should be exercised from the time the driver sights the station

1 See Diagram D
SIMULATION WITH DIVISION OF SERVICE UNITS.

ACCESS MUST DOMINATE EXIT.

- Access to Gasoline service.
- " " Upkeep service.
- Circulation between units
until he drives his car into the street after being served; the path traversed being as smooth and as free from twists and turns as possible.

Since the circulation of the filling station depends directly on the automobile, why has the exterior appearance not taken a like relation? K. Lönberg-Holm expressed the opinion that "tanks and stations are links in one chain. Why not apply the principles of tank design to the station?"

It is true that the tank and station are links in one chain, but the tank is not the fundamental reason for the existence of the station. Why not apply the principles of automobile design and construction to the filling station? Mass production, pre-fabrication or whatever other means that would bring about the attractive cleanliness of form that is present in the automobile should be used. The desired result will be economy of form and material.

Metal and glass used in the automobile are so directly applicable to the design of the filling station, yet the full worth of the combination has not been utilized. It has been used in the foreign masonry masses of modernistic styling. Awkward modernism must give way to contemporary functionalism as a true and frank solution of the problem. The relation of the building to the automobile should attract the attention of the motorist. E. D. Pierre, an architect has said, "I believe the traveling public is just as design conscious of the filling station as it is of the automobile."

The station must be sufficiently evident to attract the driver soon enough for him to enter the drives. It has been customary to designate the site by the use of huge signs and other forms of lighting and advertising at the corner of the plot with no relation to the building, a practice com-

parable to the great steel-constructed towers located in the center of the California-Spanish service communities of 1928.

By placing the attendant's booth at the corner, separate from the main building, the signs will have a definite relation to the structure. They will be more completely visible to both streams of traffic and may be combined in an attractive manner with merchandising display to the man on the sidewalk as well as the driver.

The nature of the advertising forms and the lighting is practically a field apart. The general characteristic of contrast should be expressed. Tall vertical forms should show opposition to the horizontal movement of the traffic just as the slowly moving lights of signs should contrast with the speeding lights of automobiles.

The division of service in the filling station has made the difference between the canopied and uncanopied types more apparent. The exclusion

1 See Diagrams E and F
RELATIVE VALUE OF CORNER SITES. STATION BUILDING ON GOOD SITE LIKELY TO BE HIDDEN.

 mùa  Heavy traffic flow.
 辈  Light traffic flow.
FILLING STATION MUST BE RECOGNIZED SOON ENOUGH TO ENTER.

Placing attendant's booth at corner aids visibility to both streams of traffic.
of the canopy in the North and East gave a freedom and openness to the drives since the location of the pump islands was dictated no longer by its conventional form.

This freedom is not present in the Southern and Western type where climatic conditions have demanded the retention of the canopy. Its form has been given new life by cantilever construction, but horizontals are created and shadows are cast over the driving lanes.

Modern lighting, however, has overcome the objection to the canopy that once formed the greatest argument against its use. The development of floodlighting has reached such a point that the station can be made as brilliant by night as by day and still evade objectional shadows by using lighting that is functional to service. Mercury vapor lamps and neon lights have replaced the use of many lights in endless strings under soffits and around canopies. Circulation and working space can be expressed by the use of directed illumination while
a diffused light can be furnished to the drives indirectly in such manner that shadows are avoided.

The adaptability of the newer mediums of steel, glass, and aluminum to the problem of lighting is inviting. Through their use, maximum plastic unity may be obtained. They are appealing, attractive, and adaptable to function.

The function of the filling station has resulted from a continual development in the oil industry over a period of thirty years. In an appreciation of the filling station, Warren C. Platt, editor of the National Petroleum News, has set down the fundamental aims of the industry. "The gasoline service station of the oil industry is one of the public's most efficient servants. It is where the public wants it at the time the public needs petroleum products. It is direct in its service, and economical in its investment and operation."

Various forms and materials have been adopted from time to time, only to become obsolete because of the ever-changing requirements of the automobile.

Development of the filling station has reached the point where the functional elements seem established, and the true solution is beginning in the union of economic considerations and architectural form. These are developing the following factors:

- Maximum appeal to motorist;
- Minimum cost of construction and upkeep;
- Maximum flexibility of the units;
- Fitting organic relation to the community.

Maximum appeal to motorist.

A basic principle of merchandising should be observed by the adoption of standardized design which is readily recognizable in any location. Such form should be simple and expressive of function.

The driver should be impressed by evident ease of access through wide drives to pumps grouped
at the driving lanes. Placement of pumps in this position will establish the logical division of service and create an orderly appearance. Mushroom lights or lines in the drives can do much toward directing the circulation to elements of service which may be further designated by focal lighting. The service elements should be clearly visible from the pump islands.

Color should be applied in simple masses in order to be adaptable to color schemes in commercial advertising and to afford maximum reflection of light. Increasing popularity of color in the automobile suggests color in the filling station. Materials of permanent nature should be employed for this expression so that periodic repainting need not occur.

When canopies are used, they should be connected to the attendant's booth by cantilevered construction so that vertical supports may be eliminated. Maximum visibility of the drives and areas of display may thus be afforded. These large glass
surfaces not only aid in accessory sale but show the cleanliness of the station; a point which is of important appeal to the motorist.

Minimum cost of construction and upkeep.

Pre-fabrication in mass production reduces the cost of construction and the time of erection. A site can be made productive more rapidly when pre-fabricated units are used in place of masonry construction.

Standardized design executed in the new materials such as aluminum, glass, porcelain, enamel, steel, etc., is highly desirable because the nature of these materials lends itself to pre-fabrication and to permanent attractiveness requiring little upkeep. Their textures are smooth and may be cleaned by spraying with water.

These materials give a station the appearance of permanence, yet they enable it to be entirely flexible in plan and completely salvagable.

Maximum flexibility of the units.

The fact that forms have remained static
for several years is no indication that the ultimate development of the filling station has been reached. Throughout its history new requirements have appeared frequently. Therefore flexibility has become more and more important.

Additional requirements will continue to appear, and the provision for future expansion in the present units as well as the application of units of an entirely different nature demands attention in design.

We might interpret the increasing popularity of the trailer as a possible factor for the future. In fact, some stations have attempted to establish "trailer appeal" by adding a grocery department to the usual lines of service.

Fitting organic relation to the community.

Through the judicious use of materials, the true function of a building may be recognized. The direct relation of the filling station to the automobile, if expressed in similar materials and
characteristics of design, would identify it in the community, and with, we may hope, an increasing beauty and appropriateness.
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In preparation of this thesis the architectural and sales periodical files of two oil companies of this city were used extensively.
THE DEVELOPMENT OF THE FILLING STATION IN FOREIGN COUNTRIES

W. H. Berry, founder and editor of The Filling Station, London, has said that, "Experience and demands during the War brought about the filling station as a successor to the old methods of selling gasoline in tin cans." European countries commandeered all such containers during the World War.

The first curb pump was installed in 1913 at Shrewsbury, England. Twenty Drive-in stations in 1923 increased to nearly 45,000 stations in 1926. These took the masonry garage type that was common in the United States at the time. The development in England and in all Europe has been in the single trend of modernization of wayside garages, since revenue was more dependant upon the immediate vicinity than upon tourist trade.

The incongruity of the new building type in locations like Eton or Canterbury made the styl-

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ing of stations such a problem, that in 1933, England decided to regulate the styles to "preserve rural amenities, beauty spots, and places of historic interest," by rigid control of materials, color schemes, and advertising.

Development in continental Europe was about five years behind that of England. The first station was erected in Berlin in 1927. There, the name 'service station' was adopted immediately, but was soon changed to native titles such as 'autodienst' or 'dienst am auto'.

Development in Cuba and Canada have naturally followed that of the United States. Their forms were the American forms. The Cuban 'castillos del servicio' in 1928 differed little from the super stations of California five years before.

Thus, the direction of architectural in-

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fluence has been reversed. The filling station is an American building type and the development in Europe has drawn directly from it.