AN ANALYSIS OF TRAILER HOMES PRODUCED
IN THE UNITED STATES IN 1953

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AN ANALYSIS OF TRAILER HOMES PRODUCED
IN THE UNITED STATES IN 1953

THESIS

Presented to the Graduate Council of the
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Fulfillment of the Requirements

For the Degree of

MASTER OF ARTS

By

223562
Billy E. Pennal, B. A.

Denton, Texas
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CHAPTER I

INTRODUCTION

Statement of Problem

The purpose of this study is to analyze trailer homes being produced in the United States in 1953 in order to determine how they might be made more livable and functional.

Need for Research

More than one and one-half million Americans are enjoying the benefits of mobile living today. This public acceptance of trailer coach homes has made the trailer coach industry a billion dollar business. A billion dollar industry is not unusual in the United States, but the trailer coach industry was not even in existence twenty-one years ago.

Prior to the birth of the trailer coach industry, production of units resembling present-day models was limited to custom built, special purpose trailers for business use. Vacationists were using various types of luggage and tent trailers, most of which were built either by the owner or to his specifications. This demand for vacation-type trailer shelters was the cause of the beginning of the trailer coach industry.

As Table 1 shows, in 1950 the largest segment of trailer coaches was used for temporary housing. This segment amounted
to 45 per cent of the trailer coach market, although it was practically non-existent before World War II. The second largest group was the "mobile occupation" group, consisting of people who must move around to follow their jobs. This group accounted for 35 per cent of the trailer homes. The third largest group, 15 per cent, was composed of retired people. The fourth principal market for trailer coaches was the "trailer life" group, who by nature prefer the kind of existence mobile housing offers. This group, in 1950, amounted to 4 per cent of the total. The fifth group, which amounted to only 1 per cent, was composed of vacationers.

By comparing the 1937 percentages with the 1950 percentages shown in Table 1, it is evident that the trailer no longer makes its main appeal to short-term or permanent vacationers.

| TABLE 1
<table>
<thead>
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<th>TRAILER USES IN 1937 AND 1950</th>
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<tr>
<td>Group</td>
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<td>Mobile occupation</td>
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<td>Retired</td>
</tr>
<tr>
<td>Trailer life</td>
</tr>
<tr>
<td>Vacation</td>
</tr>
</tbody>
</table>
However, although the above figures show the percentage of retired trailer occupants to be smaller in 1950 than in 1937, the percentage figure alone is misleading. The actual number of retired people living in mobile homes in 1950 was far above the 1937 figure. Older people retiring on pensions comprise a growing segment of the American population. An increasing number are taking up trailer living as a means of economy and because it gives them an opportunity to spend the winter in a mild climate.

On the other hand, the vacation group has dropped so sharply that it emphasizes the fact that trailer coaches are no longer a luxury; they are a necessity for the great majority living in them today.

In 1951, increased war and defense activities accounted for a drastic change in the market for trailer coaches. During the first six months, 93 per cent of trailer coach purchases, as reported by manufacturers, went to men in military service or defense work. Of this total, 25 per cent went to men in the armed services and 68 per cent to defense workers.

Trailer coaches became very important to military personnel because of overcrowded conditions near any military base. For the man in uniform and his family, mobile housing means immediate housing. His family can follow him from base to base. Also, mobile housing helps prevent poorly-built, temporary shacks and rent-gouging. By purchasing their own mobile homes, military personnel are helping to solve, in
their own way, the vexing problems of emergency housing.

Many military bases are recognizing the value of mobile homes, as is evidenced by the provision of space for trailers on the base.

Just as people want houses which differ from their neighbors', so purchasers of mobile homes differ widely in their needs and desires. This accounts in large part for the fact that no manufacturer can claim more than 10 per cent of the industry's total business. Individual needs and desires also account for considerable diversity in interior decoration and equipment, arrangement of furnishings and space, and in varying weights and lengths of trailer homes.

There are several factors involved in the design of a trailer coach which might make it perfectly suitable for one family and very impractical for another. A family's needs in a trailer coach are governed by the size of the family as well as by the way in which the trailer is to be used. Also, the family's financial situation must be taken into consideration, since trailers vary in price from a few hundred dollars for a small used one, up to $75,000. These are extreme cases, and average prices in new trailers now run from about $2,500 to about $7,000.

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1 Robert Hertzberg, *Trailer Coach Homes*, pp. 4-17.


3 Interviews with dealers.
The use of the trailer is of prime importance in its selection. Trailers are used for trips, where the trailer is on the move most of the time; for vacations when the trailer is moved and allowed to remain in one spot for a length of time; and as semipermanent dwellings, where the trailer is moved only when it is necessary to move from one city to another to live. Also, trailers are used as permanent dwellings, where the wheels and undercarriage are removed. Some companies even sell trailers with an agreement to purchase back the wheels and undercarriage once the trailer is moved to its permanent spot.\(^4\)

Thus, the use more or less dictates the size of the trailer to be purchased. A family that intends to use its trailer for trips would want a small, light, easy-to-tow trailer. Space on the inside could be sacrificed since only a small part of the vacation would be spent inside the trailer. This could be reduced to the barest of essentials, eliminating most luxuries which would demand too much space and weight. A trailer to be used for vacations in one spot could incorporate a few more conveniences and luxuries, and could have more livable space, since the trailer would be used as a home for a short period of time. This type of trailer involves slower, more difficult towing, but this would be offset by the fact that the towing time would be a very small part of

\(^4\)Hertzberg, op. cit., p. 88.
the vacation. The larger trailers, which make suitable per-
manent homes, are difficult to tow, and for this reason will
be moved only when necessity demands.

The interior of a trailer coach may vary greatly in in-
dividual needs and desires, whereas the exterior is limited
in size and shape. Interior designers for trailer coaches
have a greater problem than do designers of the stationary
home. Space is expensive in a trailer, and must be utilized
to the fullest extent. Every illusion must be employed to
produce a feeling of "roominess." There are certain items
which must be selected or manufactured with a thought to
size and shape. All these things must be skilfully incorpo-
rated into the design of the mobile home if it is to be a
comfortable and pleasant place in which to live.

Since trailer design presents many problems not present
in the same degree in the design of stationary houses, and
since the trailer industry is comparatively new, extensive
research is needed in order to reach the best solutions to
those problems.

Scope of Problem

The writer selects for this study a group of trailers
which are among the best-designed coaches on the market to-
day, and shows how the principles of good design can be ap-
plied to improve these coaches.

The trailers analyzed will be limited to those used as
semipermanent dwellings by families of from two to four
people. The year of the trailers will be 1953 since designs change each year. The analysis will center around the four models of trailer coaches produced by the Spartan Aircraft Company of Tulsa, Oklahoma.

Sources of Data

Information for this study is taken from personal experience, interviews with trailer owners and dealers, information secured directly from the manufacturers, investigations of trailers, trailer publications, and the North Texas State College Library.

Illustrations included in the study were taken from brochures and Hertzberg's Trailer Coach Homes.

Size Restrictions of House Trailers

The size of a trailer is the main factor which influences the design since the size is limited by state laws and by the area of the average trailer lot. Table 2 shows the maximum dimensions which the various states allow.

<table>
<thead>
<tr>
<th>State</th>
<th>Maximum Height</th>
<th>Maximum Single Unit</th>
<th>Length Combination</th>
<th>Width</th>
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<th>State</th>
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<th>Length Combination</th>
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<td>40'</td>
<td>60'</td>
<td>96&quot;</td>
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</table>

a No restriction if pulled by passenger vehicle.

b No restriction.

c Lateral projection of pneumatic tires—102".

d 12'6" on permit.

The above figures represent one aspect of limitations, either fixed by law or imposed by road conditions and trailer park facilities, which the designer must consider. The figures apply to the trailer only while it is being towed, and with the exception of California and Texas, a special permit can be obtained for a trailer longer than the limits imposed by a state. However, these laws should be taken into consideration, as well as the fact that crowded conditions in some trailer parks may often make it difficult to find room for an abnormally long trailer.

The length of automobiles must also be considered in order to conform to the limits of the length combination.

5 Woodall's Trailer Park Directory, p. 5. 6 Ibid.
Some long trailers, although conforming to the length prescribed, will require a very short car or special towing vehicle.
CHAPTER II

THE ESSENTIAL FACTORS IN A LIVABLE MOBILE HOME

Any home, in order to be comfortable and livable, must incorporate certain necessities into its design. These necessities must be so arranged and planned that they contribute to the efficiency of the living quarters.

General Precepts Governing Design for Use

Good, modern design incorporates both good engineering and aesthetic beauty into the design. Out of a hundred years of development in design of useful objects, certain precepts have come into being. These precepts are accepted as being descriptive of modern design:

1. Modern design should fulfill the practical needs of modern life.
2. Modern design should express the spirit of our times.
3. Modern design should benefit by contemporary advances in the fine arts and pure sciences.
4. Modern design should take advantage of new materials and techniques and develop familiar ones.
5. Modern design should develop the forms, textures and colors that spring from the direct fulfillment of requirements in appropriate materials and techniques.
6. Modern design should express the purpose of an object, never making it seem to be what it is not.
7. Modern design should express the qualities and beauties of the materials used, never making the materials seem to be what they are not.
8. Modern design should express the methods used to make an object, not disguising mass production as handicraft or simulating a technique not used.
9. Modern design should blend the expression of utility, materials and process into a visually satisfactory whole.
10. Modern design should be simple, its structure, evident in its appearance, avoiding extraneous enrichment.

11. Modern design should master the machine for the service of man.

12. Modern design should serve as wide a public as possible, considering modest needs and limited costs no less challenging than the requirements of pomp and luxury.¹

Modern life is now demanding modern design; not because it is less expensive or easier to clean, although sometimes these advantages are found, but because modern design suits our own special needs. Modern design cannot be totally standardized since it is intended to implement the lives of free individuals. Examples of the misuse of modern precepts of design are the teardrop shapes and other means of streamlining which are used on objects, such as ice crushers, that have no need for streamlining. Therefore, streamlining, itself, is not good design unless it is used on high velocity objects where it is needed.

Good design in any period is the best its designers can produce to suit the needs of that period. Therefore, that which is good design in one period may not be good design in another.

Good design may well be asked to live up to the three qualities which Thomas Aquinas listed as requisite to beauty: integrity, clarity, harmony.

- **Integrity** is most surely expressed in the oneness of form and function already mentioned.
- **Clarity** is forwarded by a maxim of modern design: let all functional parts be visible and all visible parts, functional (another way of stating the unity of form and function).

¹Edgar Kaufmann, Jr., *What is Modern Design?,* p. 7.
Harmony may well be thought of as inward and outward. Inward harmony will be found where there is an agreeable relationship between the components of an object. Outward harmony will be found where the object is able to take its place graciously in a larger ensemble.

These rules of thumb, or similar ones, can guide the successful hunt for good design.2

**Standards Applied to Trailer Design**

Limitations Imposed by Mobility

Dimensions and weight

Since the very purpose of a trailer is to provide living space that can be easily moved from one place to another, the designer should not, in his zeal to make it comfortable and homelike, lose sight of the fact that it must be travel-worthy; and the whole design of the trailer is necessarily limited by existing road conditions, trailer park facilities, and the means of transporting it. It should not be so long and so heavy that it cannot be easily and safely towed on our present highways, nor so large that it cannot be parked in a trailer park. It must be designed and constructed always with the fact in mind that it is a home on wheels, not an artificial house.

As can be seen in Table 2, the largest trailer coach legally acceptable in all states but Massachusetts would be not longer than 35 feet or higher than 12 feet 6 inches, or

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2Ibid., p. 9.
wider than 8 feet. Massachusetts differs in that the single unit is limited to 33 feet, but a permit is issued for over-length operation. Since neither Texas nor California will issue a permit for the moving of trailer coaches exceeding these dimensions, and it would be difficult to get a permit in some other states, it would seem to be inadvisable to manufacture a coach which could not be legally moved in these states. There are no legal limits on the weights of trailer coaches, but in some instances, such as crossing bridges, anything in excess of a certain weight is prohibited. The main problem that excessive weight causes is difficult towing.

External form

The principles of good design should be followed as closely as possible in designing the exterior shape. Of course, there are limits as to size, as stated in Table 2; however, the exterior should be geared to the needs of the interior as far as size and strength requirements will allow. Since a trailer is not a high velocity object, there is little need for streamlining, but the design of the trailer will be different from that of a house since it will be traveling on ordinary highways.

Planning Activity Areas

Food preparation and consumption

Range.—The main purpose of the kitchen is for preparing food, usually by cooking. Since cooking is such an important
part of living, and is done so often, it should be carefully considered in the planning of a home. The range is the main feature involved in cooking. It should be located so that any heat that may get to surrounding objects will not do any damage. The side of the range should not be directly against a wall or refrigerator.\(^3\) A good plan would be to have a work area on each side of the range. The range should be arranged so that when the oven door is opened it will not interfere with other doors or be in a position to damage something or be damaged. The oven should be in such a position that it will be easy to look into without bumping into some other object. If possible, the range or oven should be raised so that stooping will be minimized.

The size of the range is limited when used in a trailer, where space is scarce. If the trailer occupant likes to spend a great deal of time and effort in cooking and would like a large, multi-purpose range, some space usually allotted to some other activity would have to be sacrificed. In this case the larger range would be justified, but usually it will be found that a smaller four-burner range with an oven and broiler will suffice for practically all cooking needs.\(^4\) The range could, therefore, be large or apartment size according to individual preference, but it should be understood that a large range is not actually needed by most families.

\(^3\) Tessie Agan, *The House*, p. 552.

\(^4\) Interviews with trailer owners.
The range should be of a type that can be converted to burn either natural or bottled gas, since many trailer parks are now supplying natural gas lines to the trailers. Natural gas is much more convenient since the bottles have to be filled at intervals. However, the range must be equipped to burn bottled gas since that is all that can be used in most trailer parks. All that is needed to make this conversion is a small orifice on each of the burner mixers, which adds but little to the cost. An electric range is not suitable for a trailer, since all the electric current which the trailer uses must come into the trailer by means of an extension cord which is plugged into the park outlet and the trailer. This would not carry the amount of current needed for an electric range. In order to have an installation permitting operation of this type of range, extra wiring, not available in most present-day trailer courts, would have to be installed.

There must be a hood over the range large enough to catch the cooking odors and vapors. The vent in this hood should have a suction type of blower; that is, it should draw the odors out through the vent. Cooking odors are a much more serious problem in a trailer, because of its size, than in a house.

Work area.—In the kitchen the work area should be as large as space will allow. There should be plenty of space to set pots and pans and various other kitchen items while

Woodall's Trailer Park Directory.
preparing meals. A flat work area on each side of the range makes it possible to place food and equipment conveniently in relation to cooking. There should be some work area for the preparing of foods, such as a cutting board, and a place to use electrical appliances, such as a toaster and mixer. These work areas should be of a material that will withstand water and hard wear. The area around the range should be able to withstand splattering of hot grease and the like. All these surfaces should be easy to clean.

Dining table.—The dining table can serve a double purpose if it is located near the central part of the kitchen. In this way, the table can be used as a work area as well as for dining. There is much controversy as to whether the dining table should be permanently installed or folded so as to require less room. This would be a matter of individual desire, because some people will want to have the space for other activities, and use a folding dining table that may be set up in the living room. This is somewhat inconvenient, but in some cases limited floor space makes it necessary; for example, when an extra bedroom is required, there is no space for a permanent dining table without sacrificing other more important items. The large working surface provided by the table is very desirable in the kitchen, however, and should be incorporated in the design of the trailer if possible. In defrosting the refrigerator, for example, when it is necessary to remove all the contents and place them somewhere while
cleaning the inside of the box, a table is almost indispensable. If a table is included, it is desirable to have it large enough to accommodate guests as well as the family. If the table must be removable, it should be constructed so as to make folding it as simple as possible. A table that can be simply pulled out will be most satisfactory. This constant sliding of the table will, however, prove to be very hard on the sliding surfaces and the floor with which it comes into contact. There should be some provision to prevent this wear.

Sleeping

Main bedroom.—In every home it is necessary to have adequate sleeping space for each member of the family. The type of bed and arrangement of the bedroom should be flexible enough to provide for individual preference, because a person's sleeping quarters should be arranged to suit his needs and desires. Sleep is a necessary human function, and a person's efficiency and health are due in a large part to how well he rests at night. For this reason, the bedroom should be designed so as partially to conform to the individual's needs instead of forcing the individual to get used to the bedroom. There are two types of bedroom to consider in the trailer. Each will satisfy only the wants of those who prefer the particular type. The main object of individual preference is the type of bed; whether a double bed is to be used or twin beds are preferred. Some people cannot sleep with anyone
else, and would therefore prefer twin beds. However, for the sake of saving space, the double bed is definitely the better. Twin beds require almost all the space in the bedroom, and it is almost impossible to achieve the island bed effect which is very desirable in a trailer. When a bed is directly against a wall on more than one side, which would be the case in any type other than an island bed, it is very difficult to make.

Couch bed.---Any home should be able to accommodate overnight guests, but with no extra bedroom in the trailer, guests would be unable to stay overnight unless there were some way to temporarily provide a place for them to sleep. The answer to this problem is the couch bed. In the daytime no space is lost with extra bed space, and at night the couch has no use. It seems, then, that this is the ideal way to provide an extra bedroom where space is at a minimum.

Extra bedroom.---It would grow very tiresome to have to make up the couch into a bed every night and unmake it every morning. When the family consists of more than two people, another bedroom is needed. Therefore, persons purchasing a trailer should be able to choose whether to have one bedroom or two. Since the extra bedroom will usually be for the children in the family, bunk beds would serve the purpose very well. With one bed above the other, only half as much room is needed. Should an adult be using the extra bedroom, a standard bed may be more desirable. All of this would be dictated by individual preference, so trailer designs should allow for these variations.
Privacy.—Each bedroom should have a provision for privacy. This can be done in the case of a single bedroom trailer by providing a door between the bedroom and the living room where the couch bed is located. For the sake of convenience it would be better to have a sliding door, which could be incorporated into a wall or partition and thus take only a few inches of space. In a two-bedroom trailer, which would have the couch bed as well, there should be doors to separate all three rooms.

Social activities

The social activities in a trailer home will be centered largely about the living room. Such activities as watching television, playing cards, or just sitting are a part of every family's life, and must be included in the planning of a home.

Furniture.—In a trailer there should be sufficient furniture to satisfy at least the minimum requirements of a small home. Such complementary furniture as tables and chairs should be complete instead of partially furnished, thus leaving it up to the buyer to augment it with furniture which he owns or purchases separately.

The furniture in a trailer must be light both in appearance and in weight so as to allow more space inside the trailer as well as keep the total weight at a minimum. Such furniture should be unobtrusive and simply designed so as not to detract from the interior as a whole.
Accessories.—It is difficult to avoid a cluttered look in a trailer, because of the small interior and the large number of items that must necessarily be included. Many trailer designers, in an attempt to decorate the interior, incorporate small knickknack shelves, scalloped plywood window valances, shelves with scalloped plywood frameworks, and cabinet doors with cut-out designs, which not only detract from the appearance of the interior, but create a cluttered effect. Adding to this effect is the combination of various colors, patterns, and textures in upholstery, draperies, plastic coverings and floor coverings used in some trailer interiors.

If a trailer interior is carefully and simply designed there is no need for applied decoration.

Sanitary facilities

The sanitary facilities of a trailer center around the bathroom with the water and plumbing as an important factor.

Water.—One of the essential items in any home is a water supply which will fulfill the needs of the occupants.

Cold water is used for many purposes other than for cooking and drinking. There must be a plentiful supply of cold water to the kitchen and bathroom. In the kitchen one faucet for cold water is sufficient; however, in the bathroom there should be one faucet for the lavatory, one for the bath, and an adequate supply of water for the toilet.

A plentiful supply of water hot enough for most household purposes is needed in each of the aforementioned places.
with the exception of the toilet. In a house trailer the problem of space is very important, and therefore the hot water heater must, of necessity, be fairly small. The uses of hot water must next be considered. The most volume consuming use of hot water is the shower bath or tub. Another use of hot water where a large volume is needed is dish washing. It has been determined by actual experience that a 6-gallon tank will hold sufficient hot water for a short bath, but for comfort a 10-gallon tank would be more suitable. The disadvantages of a 10-gallon tank over one of 6-gallon capacity are the greater expense in operation, slower heating, and the larger amount of space needed. Any tank with more than a 10-gallon capacity would not be practical in that it would take too long to heat, and the extra water would be seldom if ever needed. With a 10-gallon tank there would be plenty of hot water to wash dishes unless a shower were to be taken at the same time.

**Plumbing.**—Water pipes should be made of some material that resists extreme corrosion because the corrosive ability of water varies from place to place, and there is no way of knowing how corrosive the water will be that is to be used in the trailer. At the same time the pipes must be light, since weight is an important item in a trailer home. Copper or brass tubing meets these needs very well. The pipes do not need to be large because with sufficient pressure, water will

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flow in ample quantities from a brass or copper tube 1/2 to 3/4 inch in diameter.\(^7\)

The toilet in a house trailer should have some means of pulverizing waste, such as a garbage disposal or grinder, because of the smaller diameter pipe or hose required for the sewage hookup. For regular flush type toilets a 4 inch diameter pipe would be recommended, but for a toilet with a grinder, a pipe diameter of only 1 1/2 inches would suffice.\(^8\)

The drain pipes should all be joined at one outlet for added ease when connecting the trailer drain with the sewage line in the trailer park or wherever the trailer may be.\(^9\) Of course, all the sanitary standards and laws must be complied with pertaining to traps, vents, etcetera.

The pulverizing toilet can also double as a garbage disposal unit. In the home the garbage disposal is usually located in the kitchen sink. However, in the trailer home, since the bath must of necessity be located near the kitchen, the extra steps required to dispose of garbage would be inconsequential.

The bathing facilities may include a shower, or tub, or both. When manufacturers first began installing bathrooms in

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\(^7\)James Ford and John M. Gries, editors, *House Design Construction and Equipment*, p. 204.


\(^9\)Trailer Coach Care and Upkeep (author not given), p. 31.
trailers, the standard bath included only a shower; and to save even more space, some showers were installed so that the whole room was used as a shower stall, and it was necessary to wipe down the walls and bath fixtures after taking a shower. Now, however, most bathrooms have at least a separate shower stall, and a majority of the new trailer bathrooms feature a bathtub. Many trailer owners state that a bathtub and shower combination is the ideal facility, and that a tub is necessary and desirable enough to warrant the extra space it may require, even when space is at a premium.

The lavatory should be large enough to accommodate the regular uses of any lavatory, such as shampooing and the washing of small items of clothing. An outlet with some type of strainer to prevent toothpaste caps or hair from going down the drain would be desirable. In the lavatory, as well as in the bathtub and shower, the hot and cold water mixing type faucet is best, since it will help prevent accidental burning from water that is too hot.

In the kitchen a double sink of ample size to hold the average family’s dishes is desirable. With the double sink, an adjustable mixing faucet is needed.

Storage

Kitchen.—In a trailer storage presents a very different problem from that encountered in a house. There is no room

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10 Interviews with trailer dealers and inspection of trailers.
for large storage units. Every available space must be utilized to the utmost. Storage should be planned in relation to what is to be stored; the use of the articles to be stored should determine the location of the storage space. For instance, dishes should be stored in the kitchen in a cabinet easily reached and conveniently located. There should be plenty of space for all the dishes, pots, pans and other items necessary for kitchen work. Linens and dish cloths and the like which pertain to the kitchen should be allowed storage space convenient to the kitchen. The space allotted for this storage should not be so small as to crowd the items together, nor so large as to have waste space. The spaces should be planned to fit the articles to be placed in them whenever possible, although in the trailer it is not always possible to design units in this way, since the size and shape of the unit will sometimes be dictated by the size and shape of the trailer.

Storage for food is another problem in the kitchen. The refrigerator, an essential item in food storage, should be in a convenient location away from the range. The door should not interfere with anything when opened, and it should open in such a direction that the opening will be toward the kitchen. There should be some sort of stop for the door to keep it from hitting anything that would mar the finish. Again, bending should be minimized in the trailer by raising the refrigerator

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11 Interviews with trailer owners.
from the floor level, but it should not be raised so high that it will be difficult to reach into the top compartments.

Here, some mention should be made of the type of refrigerator required in a trailer. A gas-operated refrigerator would not be at all practical because of the possibility of having to use bottled gas. There would be at least a momentary stoppage of gas flow when the supply in one bottle was exhausted and it was necessary to refill the bottle or switch to another. This would necessitate relighting the flame for the refrigerator. It would be very dangerous to leave the bottled gas turned on while the trailer was being pulled from one place to another, and the necessity of relighting the refrigerator flame would prove to be very inconvenient, as well as dangerous. The use of an icebox would not prove worthwhile unless the expense had to be cut everywhere possible, and if this were the case, the trailer would not be very livable.

This leaves the electric refrigerator, which is the most practical in a trailer.

The refrigerator should be well insulated to keep food when the electricity must be disconnected while the trailer is being moved. By making several ice cubes and getting the refrigerator very cold before making a trip, it is possible to keep food quite well for at least one day.\textsuperscript{12} There should be a thermometer inside the refrigerator to indicate the

\textsuperscript{12}Experience of the writer.
temperature and danger of spoilage. The interior arrangement of the refrigerator should be designed for the different items of food which ordinarily are stored under refrigeration.

**Bedroom.**—The storage problem in the bedroom is that of providing space to store bedding as well as part of the clothing, keeping as many of these items as possible in the bedroom. Since most of the dressing takes place there, the articles of clothing essential to a person's complete costume should be kept in one area to prevent going back and forth while dressing to get different articles of clothing. However, things such as coats and hats might be kept in another room—perhaps in a living-room or hall closet. The space underneath the bed is an ideal storage space, and should be treated as such. It should be constructed so that the items stored there are protected from dust and dirt. This space should be easily accessible; that is, walls or other objects should not be so close as to hamper reaching into the area.

**Living room.**—There is no definite amount of storage space that will be required in the living room. It is wise to use every bit of space that is available, and if some space cannot be used for some other purpose, then it should be treated as storage space. These spaces will serve to hold the many miscellaneous objects which are a part of any household. It would also be desirable to have a closet in or near the living room to hold coats and hats. Items related to social activities should be allotted some storage space in the
living room also. Books, records, and other similar items should be kept near their place of use.

Bathroom.—In the bathroom, there are certain items common to all families which should be stored near the lavatory; the medicine cabinets found in most bathrooms will satisfy these requirements. The cabinet, however, should have plenty of space for all the medicines, toothpaste, and other items which accumulate. There should be several shelves to eliminate having to place several objects in front of each other, and there should be at least one taller space inside the cabinet to provide for tall bottles and large objects. There should be some large storage space in the bathroom. For this the area under the lavatory is ideal, since it is space that would otherwise be wasted. If there is room on the walls, some cabinets might be located there, but care should be taken to prevent placing them where they will be in the way of anyone standing in the bathroom.

Mechanical Equipment

Certain mechanical equipment is necessary in order to control the environment to a certain extent. Such items as temperature and ventilation have much to do with comfort and well-being.

Heating

Insulation.—Space heating in a trailer coach presents a problem different from that in a house since the space is
much smaller and more compact. Insulation can be a great aid in controlling the temperature inside the coach if the other necessary control items are also included.

A trailer should be insulated with a good, fireproof insulation material, and dead air spaces. If a trailer is thoroughly insulated, it is much easier to keep the interior cooler in summer and warmer in winter.

Heating units.—A gas heater in a trailer is not so practical or efficient as an oil heater. Since a trailer is subject to moving stresses, the fewer gas lines in the trailer the better. Leaks can develop while moving, and a gas leak in a closed trailer could prove fatal in a short time. Also, if a trailer must use bottled gas the space heater would necessitate frequent fillings of the bottle. The gas heater would prove more practical than an electric heater unless the heater were to be used in a small space such as the bathroom. Electric heaters, although the cleanest and easiest to operate, use a great deal of electricity and are, therefore, expensive. This expense would rule electricity out as a space heater except where it would be used for only short periods of time in a small space. In this case the electric heater would have to be used in conjunction with another type of space heater. The gasoline heater will not even be considered because of its danger in operation. The last, and most

13 *Trailer Coach Care and Upkeep*, p. 32.
practical, type of space heater that could be used in a trailer is the oil burner with a power blower. Kerosene or No. 1 fuel oil is burned in this type of heater with little or no danger. An oil heater is more difficult to light, but with this exception it is a better heater for a trailer than are other types of space heaters.

Any kind of heater, however, should have some method of circulating air. Fresh air should be brought in from outside, heated, and then circulated through the trailer. The stale air should be expelled. This will cause a constant supply of fresh, warm air to circulate in the trailer at all times while the heater is in operation. Also, the oil heater should have a connection for an outside tank as well as a tank inside the heater. It isn't practical to have a very large oil tank inside the trailer because of lack of space and the difficulty in filling the tank. If a trailer is to be left in one spot for a long time, it would be practical to install a large tank outside the trailer and connect it to the heater inside the trailer. Such a tank can easily be made from a 50-gallon drum, which usually can be had for the asking from the place where the oil is purchased. This type of tank would almost be a necessity in very cold weather when the heater would have to be in almost constant operation. In mild weather, however, the small tank inside the heater is sufficient. In order

15 *Trailer Coach Care and Upkeep*, pp. 26-27.
to save oil and have a more constant, uniform heat in the trailer, a thermostat is needed. The cost is definitely offset by the comfort and saving afforded by thermostatic operation of the oil burner.¹⁷

Ventilation

Windows and vents.—Ventilation is a very important item in a trailer home. There should be a large degree of control of ventilation. Windows should be plentiful, and properly spaced to afford good cross ventilation. These windows should be adjustable so that the amount of air entering can be controlled, and should be air tight when they are closed. A feature that is almost universal with trailers now is the overhead vent. This type of vent is a rectangular opening in the roof of the trailer with a cover which can be raised to any height desired until the vent is completely open. This cover is usually hinged on one end and controlled by a crank with gears and a raising arm. The cover, when open, will deflect air down into the trailer. Each room in the trailer should have at least one of these. These vents allow the hot, stale air to leave the trailer even on a still day, thus providing a circulation of air when there is no breeze. Of course, these vents have to be closed when it is raining. All windows should be constructed so as to prevent rain from entering when they are open. If the windows are hinged at the top

¹⁷Ibid., p. 38.
and swing out from the bottom, they will be rainproof to a certain extent, although if the wind is blowing very hard no open window can be rainproof.

**Forced ventilation.**—There are times when, no matter how many windows and vents are open, the air in a trailer will remain stale. For this reason there should be a power blower to draw fresh, outside air into the trailer. With the roof vents open, the air will then circulate inside the trailer. The most practical method of utilizing this power blower is to combine it with the heater so that one blower will do the work of two. When the heater is unlighted, the air will remain cool for summer use.

Of course, in the kitchen there should be a power vent and hood over the range to expel cooking odors.\(^{18}\) The problem of moisture inside the trailer is much more pronounced than in a house. Moisture will warp and distort the plywood,\(^{19}\) which, because of its lightness and toughness, is the standard material for finishing the trailer's interior. The power vent over the stove serves another purpose besides removing cooking odors. The burning of 1 gallon of LP gas in the trailer will produce about 1 gallon of water in the form of vapor.\(^{20}\) The vent over the stove should operate continuously


\(^{19}\) Charles B. Norris, *Technique of Plywood*, p. 150.

\(^{20}\) *Trailer Coach Care and Upkeep*, p. 25.
while the stove is burning in order to remove this moisture. Also, the shower bath produces a great deal of moisture in the air inside the trailer. For this reason there should be a power vent in the shower stall or near the shower. By actual experience the writer has seen a coating of water covering all the walls in the bathroom of a trailer after a shower. However, within ten minutes after turning on the power vent this moisture was entirely gone.

Air conditioning.—Air conditioning is a desirable feature in any home, for no matter how good the ventilation, at times ventilation alone will not keep a house cool enough for comfort. The water cooler type of air conditioner is particularly unsuitable for a trailer because of the moisture it expels. Any air conditioner which must be installed in the window is unsatisfactory for several reasons: the windows of most trailers are built either in several long, narrow sections, into which a standard home air conditioner will not fit, or are of the large picture window type which would not permit the installation of the unit without cutting into the glass; the air conditioner, if installed, would block off light; if installed on either end, the unit would increase the length of the trailer, and if installed in a side window, would have to be removed when it became necessary to move the trailer to a different location. In any case, the necessity of purchasing an air conditioner will cause extra cost and the problem of installation. Therefore, the ideal solution
would seem to be the installation by the manufacturer of an air conditioning unit designed expressly to fit inside the trailer, using ducts which the heating system could also use to circulate the air into each room.

Electrical system

Electrical circuits. — The electrical system of a trailer is usually designed to operate on 110 to 115 volts A.C. This is the voltage and type of electricity with which most trailer parks are equipped. All electrical wiring should be safe, and of sufficient capacity to carry the current required. There should be a method of safety release in case of an overload. \(^\text{21}\) This may be effected by the use of circuit breakers or fuses. Most trailer courts have a fuse box at the park outlet, but one should be provided in the trailer for double protection and in case the trailer park does not have a safety system or has one that is insufficient. The most efficient and convenient safety device is the circuit breaker. There is no danger in resetting a circuit breaker, but when replacing a fuse it is possible to get a shock from the bare switch inside the fuse box. The circuit breaker is also very convenient for turning off all the electricity in the trailer. It is used in this respect just like a switch. When a circuit breaker is tripped by an overload there is nothing to replace. It is reset simply by pressing the switch to the

reset position. This eliminates the expense of replacing blown fuses, or as in the most usual case provides electricity when fuses would probably not be on hand or immediately available.

Electric outlets are an important item in an age in which much of the housewife's work is done by electrical appliances. These outlets should be plentiful, and conveniently located. There should be several located in the kitchen to provide for the many appliances which could be used there. In short, the outlets should be located everywhere that any electrical appliance could be used. Electrical wires or cords are dangerous as well as unsightly when strung out over a room because of lack of outlets.

Lighting.—The light fixtures should be adjustable and should be designed so that they are independent of one another, in order to provide the amount of light desired in the place desired. The usual inadequacies of illumination are glare, insufficient amounts of light, and poor distribution of light. These inadequacies should all be eliminated. There should be no dark corners or places where there is insufficient illumination. If the inside of a closet or cabinet is not near enough to a light to be illuminated when opened, there should be a light inside the space so that there will be no place inside the trailer where it is too dark to see. All switches

\[\text{22} \quad \text{Ford and Gries, op. cit., p. 262.}\]

\[\text{23} \quad \text{Agan, op. cit., p. 458.}\]
for the electric lights should be in places convenient for the respective lights. Usually the switch should be placed on or near the light unless it would be more convenient elsewhere.
CHAPTER III

PRESENT-DAY TRAILER DESIGN

Undesirable Features of 1955 Trailers

Imitation of Houses

Some designers, in an attempt to create an air of livability and "hominess" in their trailers, make them look as much like a house as possible. They have lost sight of one of the principles of good design: that modern design should express the purpose of an object, never making it seem to be what it is not.¹

Pontiac Ranch Type Trailer

One of the outstanding examples of house imitation in trailer design is illustrated in Figure 1. This trailer, produced by the Pontiac Company, is called the Pontiac Ranch Type Trailer. The exterior is finished in wood siding, painted white; the windows are equipped with imitation wooden shutters; the roof is gabled, in order to resemble the roof of a house. The undercarriage is designed so that it can be removed, and the buyer may purchase the trailer, if he desires, with the understanding that the wheels and undercarriage will

¹Kaufmann, op. cit., p. 7.
be removed and returned to the company when the trailer reaches its destination.²

This trailer has neither the advantages of a trailer, nor the good points of a well designed house. The exterior of a trailer, when covered with a metal skin, and especially when covered with unpainted aluminum, requires no upkeep except an occasional rinsing, is flexible enough to withstand the strain of being towed on the road, and when constructed correctly, serves as a protective covering and imparts extra strength to the body of the trailer. The wood siding on the Pontiac Ranch Type Trailer, besides being an imitation of house construction and thus in violation of the principles of good design, is impractical as a covering for a mobile structure, since the material is inflexible and more easily cracked and damaged in transit than a metal skin. Also, wood must be painted frequently. The shutters are merely decoration without function and the gabled roof has no purpose except to contribute toward the house-like appearance, at the same time adding unnecessary height. Used as a house, with the

²Advertising brochure from the Pontiac Company.
wheels and undercarriage removed, the only advantage of the Pontiac Ranch Type Trailer would be the fact that it is already built and would require only to be moved to its location. When this structure is regarded from the standpoint of house design, it is apparent that there is no beauty in the exterior. While the width and length of a trailer are limited by the size of the roads it must travel and the state laws, such limitations are not imposed on the size and arrangement of a house; and if the structure is to be located permanently, a more convenient and desirable arrangement could be attained.

Liberty Two Story Trailer

The Liberty Two Story Trailer uses a folding technique to convert a two-story trailer which resembles a house into a trailer which is small enough to be moved. In Figure 2 this coach is pictured folded down and ready to be towed.

Fig. 2.—Liberty Two Story Trailer collapsed
It is shown in Figure 3 after it has been jacked up and is ready for occupancy. This is achieved by two hydraulic jacks built into the framework, which are operated electrically. Although the exterior is covered in aluminum, it simulates the effect of wood siding; the windows on the front, as illustrated in Figure 3, are decorated with imitation shutters. The porch and stairways, also seen in Figure 3, are furnished with the structure, and must be moved separately. The front porch is 10 feet deep, and extends the entire length of the front of the trailer.
The interior of the Liberty Two Story Trailer actually is similar to that of conventional trailers, as is evident in the two interior views shown in Figure 4, the main difference being the presence of two bedrooms and a bath upstairs in addition to the one bedroom downstairs.

Considering the difficulty which would be experienced in moving with this trailer, and the fact that it is priced at about $15,000, it would seem that not enough advantages are gained to warrant the elaborate construction and high cost, and that the trailer in its present form is impractical.

Wrong Solutions to Problem of Providing Extra Room

The satisfactory trailer is one which incorporates the necessities for comfortable modern living in a coach which can be easily moved when necessary. The purpose of a trailer is to provide a mobile home—to do away with the necessity for packing and the many chores that are a part of moving from a permanent home. The essence of good trailer design is the wise use of available space, rather than inordinate length or the addition of areas which will only encourage the collection of extra items which will either add to the weight of the trailer or make necessary the shipping of an additional load of furnishings, as in the case of the Liberty Two Story Trailer. Careful use of available space and the employment of illusion to create an effect of greater space can be far

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3Hertzberg, op. cit., p. 104.
more effective than increasing the weight and size beyond safe and legal limits.

Rollohome expanding side trailer

Another example of a folding trailer is the Rollohome trailer pictured in Figures 5 and 6. A part of the front room is enlarged by pulling out an expandable section on the left side. As can be seen by the illustration, more floor space can be obtained in this manner of construction, and less difficulty is encountered in moving than in the two-story trailer previously mentioned. The side is simply pulled out by hand when the trailer is parked. Other than this feature this trailer is similar to other types. In some instances this type of construction may be justified; however, it would seem that the added cost and greater chance of leaks and

Fig. 5.—Rollohome Trailer collapsed for traveling
mechanical failure would offset the extra floor space. If a trailer can be constructed with sufficient space and still

![Fig. 6.—Rollhome Trailer with side expanded.](image)

meet the legal requirements as to size, there is little need for additions such as this in order to achieve greater roominess.

Portable room

Another method of achieving additional floor space in a trailer home is by the addition of a portable room which fits on to the side of the trailer. Such a room is manufactured by the Modern Metal Craftsmen, Incorporated of Miami, Florida, and is called the Alum-O-Room. This room is made entirely of aluminum, and is dismantled or assembled in sections, making it portable. The Alum-O-Room is illustrated in Figures 7 and 8. These rooms are available in practically any size needed. The price of such a room, measuring 30 feet long by 9 feet wide, is $1,104.40. The price includes one door but no other
openings. Jalousies, extra doors and other equipment are offered at additional cost. Such a room would grant a great deal of additional floor space, but would decrease the mobility of the trailer, since it would be necessary to ship it, as well as the furniture it contains, separately. This would involve extra expense and trouble.
Over-length trailers

There is an ever-increasing trend in trailer design toward the manufacture of longer coaches. As may be seen in Table 2, the largest trailer which is accepted in all states does not exceed 35 feet in length, 12 feet 6 inches in height, and 8 feet in width. It is apparent in studying both the Spartanette Tandem and the Royal Spartanette, which are discussed later, that sufficient living space is available in a coach of 35 feet or less, and it would seem that it is unnecessary to produce coaches which exceed the legal limits. As is indicated by these state laws, a coach exceeding the maximum length apparently constitutes a road hazard.

Two-section trailer

The attempt to produce a long coach which will meet the legal requirements in all states has resulted in the Overland Twin Liner. This coach is 50 feet long, and consists of two

![Fig. 9.—Overland two-section trailer](image)

sections, as is illustrated in Figure 9. These sections are towed separately. The disadvantages of this trailer consist
in the fact that it would be necessary either to make two trips to move it or to have two tow cars, as well as the difficulty in finding a trailer park able to accommodate a trailer of so great a length.

Poorly Designed Interiors

A very common trend among trailer designers is to attempt to decorate the interior instead of designing it to be good looking without decoration. This added decoration usually creates a cluttered effect and makes the interior seem smaller.

Fig. 10.—Interior of Lighthouse trailer
One method which is used extensively is the ornamental shaping of plywood used in the interior as is illustrated in Figure 10. This illustration also shows a common type of decorating which greatly decreases the appearance of spaciousness and adds to the clutter found in so many coaches. The use of large, ornate patterns in upholstery and curtains, particularly when the patterns are different, is very distracting and adds to the apparent confusion.

Another type of interior decoration is illustrated in the "Chinese-Modern" interior shown in Figure 11. This type of decoration is neither modern nor Chinese. It adds only to the cost, and nothing to the function or beauty of an interior. It does not reflect the spirit of our times.

Fig. 11.—Zimmer Chinese-Modern interior
The interior pictured in Figure 12 shows how a room, even though fairly simple in its original design, can be cluttered by unnecessary items collected by the trailer occupant. The designer of the trailer can discourage the collection of such items by excluding knickknack shelves from the design.

Desirable Features of 1953 Trailers

Front Bedroom in Several Coach Designs

Some families with children express a desire for a trailer with the second bedroom located at the front, so that the two bedrooms are separated. Several manufacturers offer this arrangement. In some trailers of this type, the front
bedroom serves in the daytime as an extension of the living room, and can be closed off at night, usually by sliding doors.

Folding Door of Schult Coach

The use of sliding doors to close off this front bedroom causes the two rooms to be partially separated even when the doors are open, since the partitions enclosing the doors must protrude from the walls on each side of the room. The manufacturers of Schult coaches have developed a folding door which pulls out from one wall, eliminating the need for partitions. Figure 13 shows the front bedroom with the door in the folded position.

Spartan Trailers

The Spartan trailer coaches are produced in four different models, listed in order of increasing size: the Spartanette Tandem, the Royal Spartanette, the Imperial Mansion, and the Imperial Spartanette. These models differ from one another in size and arrangement of the floor plan, as well as in body shape; however, within each of these there are many possible variations in interior arrangement, equipment, furniture and
color schemes, so that it is possible for the purchaser to choose practically any interior that he desires.

Use of design standards

In most respects, the Spartan trailers fulfill the requirements of good modern design.

Incorporating the necessities of a modern home in a structure which is as mobile and as easily and safely handled on the road as its size will permit, the Spartan trailers meet the needs of the family which desires to have its own home wherever it goes, and wants a home which is good looking and easily cared for. All necessary appliances such as refrigerator, range, and heating system, as well as the furniture and curtains, are provided as standard equipment, making them immediately livable.

The beauty of the interiors is derived from color, texture, good arrangement and good craftsmanship, rather than a conscious attempt at decorative treatment. The walls, ceilings and cabinet work are all of plywood—birch, except in custom models—which has intrinsic beauty in the grain and finish of the wood. Joints and other construction details are clearly visible; they show good craftsmanship and no attempt is made to hide them under some form of ornamentation. All the construction is sturdy, requiring no added braces or supports.

The simply designed furniture may be covered in one of a variety of fabrics, the color of which harmonizes with curtain
materials and seat coverings throughout the trailers. Large mirrors are mounted on several walls throughout the coaches, serving to create an illusion of greater space and to help diffuse light through the interiors.

The designers of Spartan coaches have realized the importance of treating them as trailers instead of attempting to make of them artificial houses. The interior arrangements are geared to the shape of the frame, which in turn has evolved from the need for strong construction combined with lightness. The strength and ruggedness of these coaches have been illustrated on occasions when they have been turned completely over with surprisingly little damage.\(^4\) Lightness, durability, and the ability to withstand rust are provided by the use of aluminum as a skin. This aluminum skin also imparts much of the strength of the frame, which itself contains the strength of the entire coach, independent of the inside partitions. This principle, taken from aircraft construction, is in contrast to the method of building a coach so that the weight rests on the inside partitions, with the outside serving merely as a covering.

Spartanette Tandem

Mobility.—The Tandem is the smallest Spartan coach, measuring 31 feet 9 inches long with an interior length of 28 feet 10 inches. The overall height of the exterior is

\(^4\)Advertising pamphlet published by the Spartan Aircraft Company.
8 feet 8 inches, the interior 6 feet 8 inches. The gross weight is 5,925 pounds and up, and the hitch weight is 880 pounds and up, depending upon furnishings and equipment. The

accompanying illustrations (Figure 14) show the exterior of the Tandem coach.

Activity areas.—There is one basic floor plan in this model, the variation being in the choice of twin beds or a double bed. As is shown in Figure 15, the coach consists of
a living room, kitchen or galley, bedroom and bath. The living room is converted into a dinette by pulling out an extending table situated in one corner next to the kitchen. (See Figure 16.)

Fig. 15.—Alternate floor plans of Tandem

Fig. 16.—Living room with dining table extended.
The working area of the kitchen in the Tandem coach is illustrated in Figure 17. At the extreme right of the photograph is a portion of the dining table in the folded position, above which is a row of narrow open shelves. To the right of the range is a plastic covered working counter, below which are drawers. To the left of the range is the double sink, placed across the corner, with a cabinet underneath containing shelf space and water heater. On the wall to the left of the sink is a narrow condiment shelf; the wall area below this shelf, as well as the wall behind the range, is covered in plastic. The overhead cabinets are equipped with sliding doors of a fiberboard composition in a color matching the plastic covering the counter. The hardware is chromium plated. On the opposite wall, not shown in this illustration, are the refrigerator and more storage drawers and cabinets.

Two views of the interior are illustrated in Figure 18. Here also, the dining table is in the folded position, forming a desk. The sofa, which occupies the entire front end of the coach, pulls away from the wall and folds down to make a bed. Looking toward the rear from the living room, in the right-hand photograph, the end of the bed can be seen at the
extreme rear. At the back of the hallway, to the left, are the closets. To the right, not visible in this photograph, is the bath, containing tub and shower, lavatory, and toilet.

![Living Room](image1)
![Aft View](image2)

Fig. 18.—Two views of Tandem interior

The bath has storage space below the lavatory and overhead cabinets along one wall, all with sliding doors of the same material and color as those in the kitchen. Next is the kitchen, shown in the photograph, with the refrigerator and storage space to the left and the working area at the right. In the living room, next to the door, is the heating stove. On the other side of the door may be seen a portion of the window, which is identical with the window on the opposite wall of the living room; both are covered by draw curtains. The shape and construction of these windows, not visible in
this illustration, is apparent in the exterior view, Figure 14. Finally, in the right foreground of this photograph is the folded dining table. The small items shown here, such as the lamp, radio, figurines and plants, are not part of the furnishings; the curtains, however, are standard equipment.

Royal Spartanette

Mobility.—The Royal Spartanette is the second in the series. It is 35 feet long with an interior length of 32 feet 1 inch. The outside height is 8 feet 8 inches, and the inside height is 6 feet 8 inches. The gross weight of the Royal Spartanette is 6,860 pounds and up, with a hitch weight of 970 pounds and up depending on furnishings. The form is similar to that of the Tandem coach, as is shown in Figure 19.

Activity areas.—A greater variety of floor plans is offered in the Royal Spartanette than in the Tandem; for instance, in the choice of one or two bedrooms and in the variation in
dining quarters. Differences in types of furniture, sizes of the beds, and colors, weaves and patterns of the curtain and upholstery materials make possible a greater variety of interiors than it is possible to show here, but some alternate floor plans in the Royal Spartanette are illustrated in Figure 20. Although double beds are pictured in each of the floor plans in Figure 20, twin beds are optional at no extra cost. Looking at these plans, which are arranged here so that the bedroom is at the bottom of the page, the living room pointing toward the top, the main differences are apparent.
Plan "a" represents the two-bedroom model. The extra bedroom necessitates a smaller main bedroom, making it impossible to achieve the island bed arrangement, and there is no dinette. The kitchen is U-shaped, with the range to the left of the sink, and the refrigerator is on the opposite wall. Plans "b," "c," "d," and "e" have only one bedroom each, allowing more space for the other rooms. In plan "b" the dinette is U-shaped, and the kitchen area is arranged along the opposite wall. The dinette is separated from the living room by a closet and a storage cabinet containing either drawers or a television cabinet. In floor plan "c" the kitchen is arranged somewhat differently, and the dinette, in the shape of an "L," is not separated from the living room. The arrangement of plan "d" is the same as that of "b," except that the dinette is of the booth type rather than the curved arrangement. The kitchen placement in plan "e" is like that of "c," but dining facilities consist of a drop-leaf table rather than a built-in booth.

Figures 21 and 22 show two different cutaway views of the Royal Spartanette, picturing floor plan "b" of Figure 20. In Figure 21, showing the right-hand wall of the Royal Spartanette, the living room is at the front of the trailer. Above the couch, across the front wall, is a book shelf. Below this shelf and concealed by the cushions of the couch is a 7 1/2 inch high storage space with let-down doors. In the daytime the couch is pushed back partly underneath this structure; when
it is pulled out and the cushions are removed, the couch is ready for use as a bed. To the right, barely visible behind the kitchen wall, is the heater. The front door, not seen here, is adjacent to the stove, to the right of the side window. Counter space for working is on either side of the range, with drawers and storage space below. The double sink, between the range and refrigerator, has a window above it and storage space below it. Built-in overhead cabinets are along the entire kitchen wall. The material covering the wall, work counters, and drainboard is a hard, smooth plastic. In the hall to the right of the refrigerator are closets, and a three-quarter-length closet with drawers below opens into the bedroom. On the wall to the right of the foot of the bed is the back door. The two night stands flanking the bed contain drawers and storage space, and there is also storage space under the bed. The wall lamp, like the one on the opposite wall, is adjustable.

The left-hand wall of the Royal Spartanette is shown in Figure 22. Illustrated here are the closet and television cabinet separating the living room and dinette. Two windows run the length of the wall behind the living room chair. The dinette, overlooked by a window, is U-shaped. There is a drawer at each end of the base of the seat structure, and the seats may be raised to reveal more storage space. The table top, movable on a stationary shaft and base, is covered in the same plastic covering the working areas in the kitchen,
and provides additional working space. The bathroom arrangement is shown in this view. The same plastic used in the kitchen and dinette covers the counter and part of the wall around the counter and lavatory. The medicine chest and window occupy the wall above the lavatory and counter, and there is a storage area below the lavatory. The shower, partly visible in the illustration, is at the left of the lavatory, and a small electric heater is set into the wall between the shower stall and the door. The small corner dressing table to the left of the bathroom door is equipped with a light, not shown in this view. The dressing table seat, covered in a flexible plastic matching the dinette seats, is hollow and may be used for storage or as a clothes hamper.

Imperial Mansion

Mobility.—The Imperial Mansion is next in size, with an overall length of 37 feet 2 inches and an interior length of 35 feet 5 inches. Its overall exterior height is 8 feet 6 inches, its highest inside point measuring 6 feet 6 3/4 inches. Its gross weight is 6,697 pounds and up; its hitch weight is 1,050 pounds and up. The exterior appearance of this coach is illustrated by Figure 23. Although not clearly shown in the photograph, the rear of the trailer is shaped like the front, and the large three-section front window is identical with that in the back.

Activity areas.—Variation in the floor plans, as illustrated by Figure 24, is obtained through the choice between
double and twin beds, and between a shower stall and a tub with shower. Also, several different types of divans are available.

Fig. 23.—Right and left views of Imperial Mansion.

Four alternate floor plans are illustrated in Figure 24. In plans "a" and "b" the bathroom has a tub with shower, but there is no dressing table in the bedroom, while in "c" and "d"
there is a shower only, and a small dressing table in the bedroom. The differences in arrangement with double and with twin beds are also illustrated in Figure 24.

Fig. 24.—Alternate floor plans of the Imperial Mansion

A cutaway view of floor plan "d" is given in Figures 25 and 26. The living room, which is at the front of the coach, is shown here without a chair. In this presentation, the sofa is the folding type of sofa-bed, and has on either side a storage table with drawers. In Figure 25 the heater is located in the left-hand corner next to the door, and in the right-hand corner next to the dinette is a combination
television table and storage cabinet. At the left, opposite the dinette, is a double closet with sliding doors. Overhead cabinets are built in along the walls above the range and sink. On the wall to the left above the sink is a window, and on the other wall above the sink, partly cut away in the drawing, are a condiment shelf, a towel bar and a soap dish. The walls and work area around the sink and range are covered with plastic, as is the dinette table. The bathroom shown here is equipped with a shower stall only. The counter and the walls around the lavatory, as in the bathrooms in other Spartan coaches, are covered in plastic matching that on the kitchen walls and counters. A medicine chest is above the lavatory. The double bed is flanked by night stands, curved to fit the shape of the trailer. As above the sofa in the living room, an alcove effect is formed by built-in storage cabinets at the ceiling; in conformity with the treatment in the living room, lights and a power vent are set into the under side of these cabinets.

The other wall of the Imperial Mansion is shown in Figure 26. Here, a better view of the dinette is obtained. Under the seats, which may be removed, is storage space. The wall between the dinette and the refrigerator—on the dinette side—and the wall area between the windows of the dinette and the living room are faced with mirrors. Beyond the refrigerator are drawers and closets. A part of the back door, located in the bedroom, is visible in the illustration.
Fig. 26.—Gutaway view of Imperial Mansion
Large mirrors, not clearly shown in either of these cutaway views, are on the wall opposite the shower in the bathroom, and on the two walls above the dressing table in the bedroom.

A better idea of the actual appearance of the interior of the Imperial Mansion may be obtained from Figures 27, 28, 29 and 30. It will be noticed that an illusion of greater height, in comparison with the Tandem and Royal Spartanette models, has been achieved by the shape of the ends of the coach; although the interior height of the Imperial Mansion is 1 1/4 inches less than that of the Tandem and Royal Spartanette at their highest points.
A view of the living room is shown in Figure 27, looking toward the front of the coach. The draw curtains, closed in the photograph, may be opened to admit the light; there are no Venetian blinds. Indirect light is installed above the side windows in the living room and the window in the dinette.

The television and storage table is seen in the right foreground of Figure 28, with the heater to the left. A portion of the kitchen may be seen toward the left, and at the rear in the photograph is a part of the bedroom.

Better views of the kitchen and bedroom of the Imperial Mansion are shown in Figures 29 and 30. In the left foreground of Figure 29 is the double closet, beyond which is the kitchen. The refrigerator is opposite the range and sink. The ceiling
fixture in the top right foreground lights the dinette. A light above the sink illuminates the kitchen.

The bedroom is pictured in Figure 30 with the draw curtains closed. As in the living room, these curtains may be opened to admit light. Ceiling fixtures and light above the dressing table and the head of the bed provide artificial illumination.

Imperial Spartanette

Mobility.—The Imperial Spartanette, pictured in Figure 31, is the largest in the series of Spartan coaches. Measuring 39 feet 10 inches overall, with a body length of 38 feet 3 inches, it weighs 7,830 pounds and up. The hitch weight is 830 pounds and up. It will be noted that the hitch weight is less than that of the lighter Imperial Mansion and Royal Spartanette; this results from the placing of the wheels closer to the center of the body of the Imperial Spartanette. This method of lessening the hitch weight is not necessarily desirable, however; the trailer is more easily controlled while towing if the wheels are placed closer to the rear.

Activity areas.—The Imperial Spartanette is available with either one or two bedrooms, as is illustrated in the floor plans pictured in Figure 32. In plan "a" the one-bedroom model with dinette is shown. In plan "b," the extra bedroom has necessitated the elimination of the dinette and rearrangement of the kitchen. In this model a drop-leaf
table is provided for dining. The bathrooms in both models are equipped with a tub and shower.

Fig. 32.--Alternate floor plans of the Imperial Spartanette.

Figure 33 shows a cutaway view of the interior of the Imperial Spartanette, illustrating floor plan "b" of Figure 32. The bedroom, which is in the rear of the coach, is pictured in the foreground. Although twin beds are shown here, a double bed is obtainable. The bath is equipped with a full-sized tub with shower. The center bedroom may be shut off from the rest of the trailer by sliding doors. There is a double bed, above which are built-in storage cabinets. The kitchen is arranged in a "U" shape, and overhead cabinets line both walls. A window, partly visible in the illustration, overlooks the sink.

The opposite wall of the same coach is illustrated in Figure 34. Here the living room is pictured with the draw
Fig. 34.—Cutaway view of Imperial Spartanette.
curtains opened, revealing the front window. At the base of
the window, behind the sofa, a shelf is built across the
width of the trailer, and above the window are storage cabi-
nets. Next to the sofa is the drop-leaf dining table. In
the kitchen, to the left of the refrigerator, is a closet,
and to the right are drawers and cabinet space. In the cen-
ter bedroom is a chest of drawers, on either side of which is
a closet. The window above the chest of drawers is opposite
the window above the bed on the other wall, providing cross
ventilation. The central exhaust fan in this room, and the
forward exhaust fan in the living room take the place of
overhead vents. The double closet with sliding doors, and
the small vanity with mirrors and drawers, are provided for
the rear bedroom.

Sanitary facilities

The water supply for the Spartan trailers is brought
into the trailer from an outside inlet. There is a connec-
tion for both cold and hot water, in case the trailer court
provides running hot water. In the kitchen, one faucet of
the hot and cold mixer type swings from one side of the double
sink to the other. There are also mixer-type faucets in the
bathroom. There is a cold water supply for the toilet. The
electric water heater, with a 10-gallon capacity, is located
under the kitchen sink.

The pipes are brass, and are 3/8 inch in diameter for
the cold water and 1/2 inch in diameter for the hot water.
The drain pipes, of 1 1/2 inch plastic or galvanized iron, are joined at one outlet which is 2 inches in diameter.

There is a choice between two different types of electric pulverizing toilets. A separate shower stall is provided when the trailer is not equipped with a tub and shower combination. The lavatory and kitchen sink are of porcelain.

Mechanical equipment

Heating.—Spartan trailers are equipped with blanket insulation and breaker strips in the walls and ceiling, and a double insulated floor. A complete blanket of glass fiber with a heat-reflecting vapor barrier is attached to the interior of the wall and ceiling ribs by wooden breaker strips. A five-ply plywood floor is set on breaker strips which provide dead-air space, with glass fiber insulation and a heat-reflecting vapor barrier on top of the frame. A cover attached to the underside of the frame provides additional protection and dead-air space.

The space heaters burn oil, with thermostatic operation as optional extra equipment. Each model has a duct with a power blower which supplies warm air to the bedroom. The oil heaters are equipped with an internal tank, but can be connected to an outside tank if desired. These heaters bring fresh outside air into the trailer and heat it, while the stale air inside the trailer is burned and expelled through the flue. The bathroom has an electric heater in each model,
with a blower attached to the heaters in the Imperial Mansion and Imperial Spartanette.

**Ventilation.**—Cross ventilation is possible in the Royal Spartanette everywhere except in the bathroom; in the Tandem, however, it is achieved only in the living room and bedroom. The Imperial Mansion has several large windows that will not open, which provide plenty of light but no ventilation; cross ventilation in this model is possible only in the bedroom and living room. It is effected in the Imperial Spartanette in the living room, center bedroom and rear bedroom.

The adjustable windows open out from the bottom, and may be opened to one of three positions. In the Royal, each room has an overhead vent, opened by means of a small crank on the inside. However, the Tandem has only one vent, located in the center of the trailer, and the Imperial Mansion and Imperial Spartanette are equipped with power vents which substitute for the overhead vents. The power blower in the heater may be used in the summer to draw in fresh air. The range in all models is equipped with a power vent and hood. Both the Tandem and Royal Spartanette models are equipped with an exhaust blower in the shower; the blower in the Tandem also connects with the bedroom to remove stale air. The Imperial Mansion and Imperial Spartanette each have an overhead power vent in the bathroom to expel moisture.

**Electrical circuits.**—All 110 volt wiring in Spartan trailers is 10, 12 and 14 gauge, two-conductor insulated
cable, approved by Underwriters' Laboratories. All light fixtures, service outlets, and multi-circuit breakers are approved by Underwriters' Laboratories also. The trailers are equipped with four-wheel electric brakes, clearance lights, stop lights, signal lights and license plate light, all supplied by six-volt wiring. Electrical outlets are numerous and are present in every room, the number depending on the model and arrangement of the coach.

Lighting.—The lighting varies in the four Spartan models. The Tandem is lighted by adjustable wall lamps and ceiling fixtures. The living room is illuminated by two wall lights, one at each end of the couch. In the kitchen are an overhead light and a fixture over the sink. The bathroom has an overhead light, and there are two wall lamps in the bedroom—one at the head of the bed, and one by the back door, which is opposite the foot of the bed. The large double closet in the hall has an interior light.

In the Royal Spartanette living room there are four adjustable wall lamps—one at either end of the couch, one by the front door, and one opposite the front door. A fluorescent fixture lights the sink and work area, aided by a ceiling light when there is no dinette. The dinette, when present, is illuminated by two wall lamps and an overhead light. The bathroom has a ceiling fixture, as well as a light above the medicine chest. On either side of the bed is a wall lamp, and above the dressing table is a light.
The Imperial Mansion is the only Spartan trailer with indirect lighting. This lighting is concealed above the dinette window and the two side windows in the living room. In addition to this, two lights are set into the bottom of the overhead cabinets above the couch. The double closet opposite the dinette has an interior light. A ceiling fixture illuminates the dinette, and in the kitchen there is a light above the sink. The bathroom has an overhead light and one above the medicine cabinet. There is a fixture above the vanity in the bedroom; the bedroom is also lighted by a ceiling light and two lights set into the bottom of the overhead cabinets above the head of the bed, like those above the couch.

In the living room of the Imperial Spartanette, there is an adjustable wall lamp on each side of the sofa, and the kitchen is illuminated by a fluorescent fixture above the sink. The center bedroom has wall lamps at the foot and head of the bed, and two wall lamps light the chest of drawers on the opposite wall. The rear bedroom is also illuminated by adjustable wall lamps, at the head of the bed.

**Storage**

The amount and placement of storage space varies according to model and arrangement.

*Tandem.*—Storage space behind the couch, found in some of the other models, is lacking in the Tandem. In the kitchen above the working area are overhead cabinets. The water heater takes up a part of the space under the sink, but there is room
for other items. To the right of the range are drawers, and next to the refrigerator, reaching from floor to ceiling, is a row of drawers and cabinets. Under the refrigerator is service and storage space. The refrigerator itself is electric, and is equipped with a freezing unit. As in all Spartan coaches, the refrigerator is placed so that the inside is easily accessible.

A full-length double closet is located in the hall, and a half-length closet with drawers below is in the bedroom. Also in the bedroom is a night stand with drawers. The bathroom has overhead cabinets along one wall, as well as a storage area below and a medicine cabinet above the lavatory. The space under the bed has not been utilized as a storage space; it is enclosed and is not accessible from any side.

Royal Spartanette.—In the Royal Spartanette, storage space is present in every room. Use is made of hollow places inside furniture; for instance, the dressing table seat doubles as a clothes hamper with hinged lid, and the dinette seats have drawers and storage space underneath. A book shelf and a storage space 7 1/2 inches high by 12 1/4 inches deep run the width of the trailer across the front, extending out over a part of the couch, which is pulled out from underneath this structure when made up as a bed. There are a full-length closet in the living room and one full-length and two three-quarter-length closets in the hall and bedroom.
Arrangements of storage space in the kitchen vary according to floor plan. In any Royal Spartanette kitchen, however, there are built-in cabinets above the work area, and some storage space under the sink. In coaches with a dinette, there is space under the seats, and when the dinette is U-shaped, there is an overhead cabinet above it. A chest with drawers, which is built into some models between the living room and dinette, is handy to the kitchen and may be used for silverware, kitchen towels and table linens.

The refrigerator is of the same type as that in the Tandem coach.

Besides the closets and clothes hamper, storage space in the bedroom includes a drawer in the dressing table, night stands with drawers—two stands in a bedroom with a double bed, and one with twin beds—and the area under the bed. The space under the bed is enclosed on all sides and is accessible through a let-down door on one side.

In the bathroom, storage space is provided by a cabinet under the lavatory, a medicine cabinet, and a large drawer beneath the counter next to the lavatory.

**Imperial Mansion.**—In the Imperial Mansion living room, the storage space behind the sofa, when present, is smaller than that in the Royal Spartanette. However, there are cabinets above the sofa, and in some coaches, at each end of the sofa is an end table with drawers. The combination storage and television table affords some cabinet space.
A double full-length closet is located opposite the dinette. As in the Royal Spartanette, the space under the dinette seats may be utilized for storage. In the kitchen are overhead cabinets above the working area, drawers to the left of the range, space beneath the sink, and storage space next to the refrigerator.

Storage space in the bathroom consists of the medicine cabinet, the area under the lavatory and counter, and a drawer.

In the bedroom, besides the two closets, are two night stands with drawers. If twin beds are furnished there is only one night stand. The vanity, when present, also has drawers. Built-in cabinets are constructed across the width of the trailer above the head of the bed.

**Imperial Spartanette.**—In the living room of the Imperial Spartanette, there are cabinets across the front of the trailer over the sofa. In the working area of the kitchen are overhead cabinets, space below the sink, and two rows of drawers. Next to the refrigerator are a closet and drawer and cabinet space.

The area under the bed in the center bedroom is usable for storage, and on the opposite wall are the chest of drawers and two closets. The rear bedroom has a full-length double closet, vanity with drawers, and one or two night stands—depending on whether twin beds or a double bed are chosen.

The bathroom has a medicine chest, and storage space below the lavatory.
CHAPTER IV

SUGGESTED IMPROVEMENTS IN TRAILER DESIGN

Improvements Needed in Most Trailers

Trailer coaches produced in 1953 are generally lacking in certain features which, if included in their design, would increase the efficiency and livability of the mobile home.

Ironing Board

An ironing board is an item that should be incorporated in the design of the trailer. There is no room in the closets to waste on a large, oddly shaped item like a standard-size ironing board. It could be built into a wall or the side of a cabinet, where it could be folded away when not in use, and would be worth the small amount of space required. Few trailers, if any, have a folding ironing board built in or provide suitable storage space for one of standard size. There is no provision in Spartan trailers for an ironing board, or any place to store one except in a closet.

Broom Closet

A broom closet is useful, and should be included in the design of the trailer if possible. The broom closet can have small shelves or some other means of storing miscellaneous objects used for cleaning, such as wax, furniture polish and dust cloths. Such a closet requires little space, and will
serve to keep cleaning items together and eliminate the necessity of storing them in clothes closets or cabinets. Some trailer manufacturers include a broom closet, but the Spartan company does not.

**Clothes Hamper**

A clothes hamper is a necessary item in any household and should be included in the design of the trailer rather than left as a problem for the owner, who now has to procure one and try to find a place for it on the floor, taking up valuable walking space. The hamper, if built into some cabinet or closet, would not obstruct any walking area.

**Furniture**

Most of the furniture in present-day trailer coaches, including the Spartan trailers, tends to be heavy and bulky. There is little to indicate that the trailer manufacturers choose or design their furniture specifically for a trailer. Bulky furniture not only adds to the weight of the trailer and occupies more space in the room than would be required for a lighter type of furniture, but also appears to take up even more space than it actually does. In other words, if the furniture were so designed as to be lighter both in weight and in appearance, with excess padding and boxlike forms eliminated, it would somewhat lessent the weight of the trailer; also, it would not only aid in making the interior seem more spacious, but would actually make more space available.
On the following two pages are photostatic reproductions of the working plans for two pieces of furniture designed by the writer for a trailer.

Figure 35 presents working drawings for a folding occasional chair. In order to make it more comfortable, this chair is upholstered with a one and one-half-inch pad of foam rubber covered with fabric. Both the seat and back, which are the same shape, are curved to fit body contours to provide more comfort. The seat is inclined slightly with the front higher than the rear, better to support the body.

The back folds down against the seat, and the front and back legs fold in opposite directions for compact storage. When folded, the two front legs extend beyond the seat a short distance, providing supports on which to rest the folded unit. This chair is designed for comfort combined with compact storage needed in a trailer.

Figure 36 presents working drawings for a combination phonograph and coffee table. This table provides a permanent place for a phonograph and has a leaf that can be folded down when not being used as a coffee table. This will allow extra walking area when a coffee table is not needed.

As can be seen in the illustration, the section of the table which will not be covered by the phonograph is hinged and has an extra leg for support. This leg is folded back obliquely and the hinged section of the table folds down at a 90 degree angle. The legs can be removed by unscrewing them from their attachments for storage of the table.
Fig. 35.—Working drawings for folding occasional chair, designed for a trailer
Fig. 36.—Working drawings for drop-leaf phonograph and coffee table, designed for a trailer.
Air Conditioning

Air conditioning greatly increases the comfort of the trailer home in summer. To prevent the extra trouble and expense encountered by the trailer owner in installing an air conditioner, and to provide a more efficient cooling system, an air conditioning system should be designed for the trailer and installed by the manufacturer. Such a system, having the correct cooling capacity for the amount of space involved and circulating the cool air through ducts to each room, would be far more satisfactory than a fan or air conditioner installed by the occupant.

Master Switch

A master switch installed in the lighting system would prove to be very convenient and would add little to the cost. Such a switch turns off any lights which are turned on at their individual switches, making it possible to operate any desired number of lights by one switch.

Good Craftsmanship

In a space as small as the interior of a trailer, flaws in craftsmanship are more noticeable than in a larger area such as the interior of a house. Particular attention given to the finishing of the interior construction is necessary for the good appearance of the trailer. While some trailers show very poor craftsmanship and flimsy construction, Spartan coaches feature good workmanship; however, even in Spartan
trailer coaches, already among the best designed on the present market, could be improved by some changes in design. The Spartan trailers are well designed in that the coaches as a whole are built to be functional, with beauty resulting from good workmanship and the intrinsic qualities of the materials used, rather than from reliance on ornamentation for interior decoration. With this foundation, further steps toward better utilization of the available space would result in an even more functional and attractive mobile home.

Storage Under Bed

In Spartan trailers, the area under the bed could have been better utilized for storage. This space is enclosed on three sides, the end next to the wall being open, and is raised from the floor about three inches. This open area next to the floor is waste space, and acts as a trap for dust and lint. In one model the enclosed area is accessible through a small door; in another a single drawer is installed; in still another the space is entirely wasted, since there is no opening at all. If this structure were built directly on the floor, more storage space would be available, and the accumulation of dust and lint would be eliminated. In order fully
to utilize this space, there should be doors on three sides: one, on the most accessible side, opening the full width and height of the area, and a smaller one on each of the other two sides. This would permit the storage of large objects, for which there is no provision in the present design of the Spartan coaches. The side against the wall, which is left open, should be enclosed to prevent dust from collecting inside the storage area.

Trash Cans

At present there is no provision for a trash can in the Spartan trailers. If the previously suggested broom closet were installed, possibly a small trash can, made to fit the inside of this closet, might be included as standard equipment. A trash can is also needed in the bathroom. Such a container could either be installed in a cabinet or drawer, or provision made for placing it where it will be out of the way, yet convenient to use.

Sliding Doors

The narrow passageways encountered in a trailer make the use of sliding doors particularly desirable. Although they are used to a certain extent in the Spartan trailers, they are not used as extensively as possible. A more extensive use of sliding doors in the interior would prevent the blocking of passageways, the jamming of doors, or the swinging open of doors due to faulty catches.
Windows

There is a growth in public demand for so-called "picture" windows. Most trailer manufacturers, including Spartan, have tried to satisfy this demand. All models of Spartan coaches now have at least one of these windows, the Imperial Mansion having several. These windows do not open, and do not aid in ventilation in any way. The Tandem and Royal Spartanette have smaller windows used in conjunction with these large windows which allow air to enter; but the large front window in the Imperial Spartanette, and the several large, fixed windows in the Imperial Mansion are used alone. The Imperial Mansion relies upon power vents for most of its ventilation, thus adding to the electric bill.

If these windows continue to be used, some means should be devised to make them serve to admit air as well as light. This might be done in several ways: perhaps a casement-type window might be used; or if it is not possible to incorporate a large window that will open, it should be used in conjunction with opening windows which will admit sufficient air to provide good ventilation.

Curtains

In most cases the curtains in the Spartan trailers tend to create a cluttered effect because of the use of fabrics with large, intricate designs and the folding and gathering of the material. If the windows and Venetian blinds were
designed to be attractive and the curtains omitted entirely, the interior would appear larger and less cluttered than at present. However, the use of curtains has become so instilled in the public mind that they are practically necessary in order to please the public; therefore, if they are to be installed, the fabric should be plain or of a small and simple pattern, and the fabrics in the various rooms should be carefully chosen to harmonize with one another. Careful attention should be given to the draping of the material to avoid excessive gathering and ruffles. Moreover, all of these trimmings should be optional.

Mobility

As shown in Table 2 (see pages 7, 8 and 9), the largest practical trailer coach would be not longer than 35 feet, higher than 12 feet 6 inches, or wider than 8 feet. Since neither Texas nor California will issue a permit for the moving of a trailer coach exceeding these dimensions, it would seem to be inadvisable to manufacture a coach which could not be legally moved in these states. Both the Imperial Mansion and the Imperial Spartanette exceed these limits in length, the Imperial Mansion by 2 feet 2 inches and the Imperial Spartanette by 4 feet 10 inches. In either case, particularly in the Imperial Mansion, little has been gained which could offset the fact that the coach could not be legally transported.
in some states. This extra length adds to the difficulty in towing a trailer, particularly in maneuvering or turning corners.

External Shape

Of the three body shapes in the Spartan series, the shape of the Imperial Mansion allows the most room in the interior of the coach. The rounded ends of the Tandem and Royal Spartanette cut down greatly on their interior space. This rounded body design probably developed through an attempt at obtaining the greatest possible strength and at facilitating towing through streamlining; however, there is little need for streamlining on a trailer, since its size and weight make it impractical to travel very fast while towing it. From the standpoint of the interior design, the shape of the Imperial Mansion is better, in that it not only makes the interior appear more spacious, but also allows more head room and makes available more storage space.
CHAPTER V

CONCLUSION

The writer has made an analysis of trailer coaches produced in the United States in 1953 in order to determine how they could be made more suitable for use as semipermanent homes.

At first, trailers were used primarily for vacationing, but in recent years the trailer has been accepted as a form of housing which has the advantage of mobility. This study concerns the trailer which is used as a semipermanent home, and does not deal with the vacation trailer.

The analysis was undertaken because of the apparent need for improvement in trailer coach design, and it takes into consideration both the legal and physical limitations imposed by the mobility of the trailer.

There are many undesirable, as well as desirable, features in the trailers produced in 1953. The undesirable features usually center about a few misconceptions of trailer design. One of these is the imitation of house design, in external form and decoration as well as in the materials used. Instead of fully utilizing the space available, many designers attempt to provide extra room by increasing the length of the trailer beyond reasonable limits, adding extra rooms, or
incorporating elaborate construction features, which not only make moving more difficult but add to the expense. Poorly designed interiors are another common fault found in trailers. Poor arrangement of interiors, poor choice of fabrics, badly designed furniture, superfluous ornamentation, and poor workmanship are among the examples of poor design most frequently encountered.

After examining a number of trailers on the present market, the writer has chosen, on the basis of their conformity to the accepted standards of good modern design, one series of trailers which he believes to be among those which are of the best design and which most nearly fulfill the needs of the trailer occupant. The four models of coaches produced by the Spartan Aircraft Company, although they lack some features which would improve their design, are among the best of the mobile homes produced in 1953. Therefore, each of the four Spartan coaches is described in detail in order to show the different factors that are included in a well-designed coach, and to show not only how well they meet the accepted standards of design, but how they could be improved by better utilization of these principles.

Suggested improvements which will benefit the design of any trailer coach pertain to air conditioning, furniture and craftsmanship. Among suggested additions are an ironing board, a broom closet, a clothes hamper, and a master switch. Changes
and additions are suggested for Spartan trailers, some of which changes are already incorporated in other trailer coaches. These suggestions deal with the storage space under the bed, installation of trash cans, more extensive use of sliding doors, changes in windows and curtains, the length of the coaches in regard to mobility, and the external shape of the coaches.

Working drawings of two pieces of furniture, a folding chair and a combination phonograph and coffee table, designed by the writer as possible additions to the furnishings of a mobile home are presented. The table was designed to meet the need for a permanent stand for a table-model radio-phonograph and for a coffee table. The latter is provided for by a drop leaf which may be folded down to provide more floor space when not needed.

As a result of the study, the writer concludes that by following certain accepted principles of good design, the designer can make the trailer more livable and functional. Better utilization of the available space, limited by the necessity for mobility, will result from the application of these design principles in planning for activity areas and for the incorporation of necessary mechanical equipment. The activity areas—which provide for food preparation and consumption, sleeping, social activities, sanitary facilities, and storage—as well as the mechanical equipment, which helps
to control the environment—such as the heating, ventilating, and electrical systems—must all be more intelligently incorporated into the limited space to form a unified and harmonious living unit.
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