

allow the stock to run down which results in inadequate provision to take care of the current models. This naturally leads to poor service on cars more than one or two years old. Another disadvantage to the service station manager is the one which he always has in training his mechanics. Some of his crew are familiar only with the present models and it is pitiful to see them try to repair one of the older models.

It is highly essential that the manufacturer keep his product up-to-date, for in no other industry do we find such rapid development as in the automotive industry. Therefore, I do believe that serious attempts should be made to perpetuate a fundamentally good design over a period of several years. It is inconceivably bad, in my estimation, to bring out a new motor in which the cylinder bore has been increased only a small fraction of an inch in order to gain a little power, and at the same time pile an unusually great weight upon the chassis and body by substituting a large amount of sheet steel for sheet aluminum in building what is generally considered a high grade car.

Precisely the same thing applies to many other parts. Why make very slight dimensional changes in shackle bolts so that they are not interchangeable with the last model; likewise with respect to connecting rods, various bearings, and innumerable small parts all over the structure? The hardware and locks on the bodies result in nervous annoyances to the owner who does not live adjacent to one of these "Super Service Stations"—advertised so proudly.

In making my plea for an enduring design, I think that I have made it perfectly plain to you that I am in favor of constant betterment. You would, indeed, be much surprised to see how you could improve the various component parts of the motor car and still have them interchangeable with the old parts, were you to make up your mind to do so.

If you develop a more efficient intake manifold system, why not have it fit your old cars which are running around the country by hundreds of thousands? Why not attempt to give better service to these owners of old cars? If you change the radiator design, why not make it possible to put the new radiator on the old car with possibly a service hood to fit? This has been done very successfully on one high-priced car, and incidentally I have found that owners have greatly appreciated this feature.

There is a very important psychological effect in a case of this sort because although an owner might

not actually decide to make such a change, he would feel that if at some future time he should want to dispose of his car, he could exercise this option. Unquestionably he appreciates the fact that the manufacturer is bearing him in consideration, and is not, as is usually the case with the yearly model manufacturer, deliberately depreciating the owner's investment.

The wonderful progress in metallurgy has made it possible to decrease the weight and at the same time increase the strength of many motor and chassis parts. And, I have found it possible to make such improved parts interchangeable with the older "vintage." I find that in pursuing such policies a great plant can be operated without shut-downs year after year.

The sales department can assure the prospect that there is no need waiting a few months before buying—just think what a wonderful argumentative leverage the salesman possesses when he can look his prospect straight in the eye and say, "When an improvement is made at some future time, you will be able, at nominal cost, to apply it to your car."

In this discussion I have made very little reference to the design and engineering of the body. A body may be beautified and redesigned continually. Parts that have been shown to be fundamentally weak can be strengthened with better material and improved designs, but it is highly desirable that even a new body should interchange with an old one, for many times after serious accidents in which the old body is wrecked, it is more satisfactory to the owner to buy a new one. In such a case, it is certainly more desirable to furnish him your very latest design. Furthermore, many people might care to buy new bodies of a different type and they would, of course, appreciate it if it could be readily fitted to the old chassis. A policy of this sort makes it a simple matter to maintain service stations without the necessity of carrying the aggregation of stock which is absolutely necessary to service several models. Also in reconditioning the cars and motors, it will enable them to sell many new parts for the sake of bringing them up-to-date. This makes it possible for the service station greatly to increase its profit; I know this to be true by actual investigation.

I wish it thoroughly understood that I have the best interest of all concerned in mind. By that I mean the factory fabricating the product, the sales organization, the stock-holders, and finally the great buying public.

## Should Automobile Manufacturers Make or Purchase Their Accessories?

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THE meaning placed upon the term *accessory* must be clear in our minds before an intelligent discussion of this subject can take place. The common definition of this word, without consideration of its semi-technical meaning in the motor industry, is an attachment in the nature of an appendage that is an aid in the attainment of some desired result. In the motor industry the meaning is not clear, in that some believe an accessory is an attachment to an automobile not essential to its operation but an aid to its efficient, convenient and comfortable use, while others believe that it is any part of an automobile with the exception of possibly the motor and transmission.

No attempt will be made strictly to define the meaning of the term, accessory, for the purpose of this discussion. Apparently the question concerning both the manufacturer of finished motor cars and the maker of parts or attachments or accessories, whichever they may be called, is the extent to which the manufacturer of the finished product should go in making everything that enters into the finished product.

The answer to this question probably must be based on the proposition that, in the last analysis, the plan which results in obtaining the desired quality of finished product at the lowest ultimate cost is the one that competition will require to be followed, for whatever business practices or methods result in the greatest economy are the ones that are developed and used in any competitive industry. The question under discussion then becomes, Is it more economical for a manufacturer to make or buy the accessories entering into the finished product?

In discussing subjects of economy we must have in mind not only the prime cost of labor and material

but the indirect cost involving organization, development and engineering, all of which depend to a large extent upon volume of operations.

Accessories can easily be divided into two classes: first, those parts of an automobile which though formerly accessories have through development and use become essential parts of all cars; and second, those appurtenances to a motor car that are not primarily essential to its operation.

Under the first division come headlamps, starting and lighting equipment, speedometers, storage batteries and even windshields and tops, all of which at one time in the history of automobile development were considered as non-essential. Not many years ago cars were sold without tops, windshields and headlamps. It was not long, however, before tops and windshields became a permanent part of all motor cars. After oil lamps came gas headlamps with an acetylene generator and then the pressure storage tank. Ignition current was furnished with magneto and dry batteries. With the advent of electric headlamps came the lighting generator, the storage battery and the starting motor, all of which have since become essentials of every automobile. Speedometers are now considered necessities and are no longer sold as special equipment.

All of these parts, once accessories but now considered essentials, are still almost universally made by separate businesses.

In the second classification, still considered as attachments, are bumpers, tire covers, spot lights, gasoline gauges, motometers, rear view mirrors and others, though some of these are now fast coming to be considered essentials.

If we consider some of the other parts of a motor car not looked upon as accessories, perhaps some light may be thrown upon the subject under discussion.

There are very few manufacturers in the business of producing an automobile who make coil and leaf

<sup>1</sup>Papers presented at a meeting of the Taylor Society, Ann Arbor, Michigan, May 15, 1925.