Our country has long since outgrown the supply of butter and lard for use as cooking fats and it has been necessary to look to new sources of supply. Substitutes have had to be found and the demand has been met to a great extent by utilizing the cotton oil which was once left in the seed and wasted.

Although cotton oil has sometimes been used for cooking without other treatment than refining, the custom of using a semi-solid plastic fat was so deep-seated and its convenience in use so pronounced that it was necessary to furnish cotton oil in this plastic form or else to overcome the fixed habit of a nation. To meet this demand, so-called lard compounds were introduced, which, for many years, were merely mixtures of oleostearin and cotton oil. Later, a hard stearin, made by hydrogenating cotton oil, was used by many makers of compound in place of oleostearin. This gave an all-vegetable fat, which may be regarded as a decided step in advance, and although it had many desirable features it was not the ideal cooking fat, its chief fault being that when exposed to the air it soon became rancid, which property it had in common with lard and butter.

After several years of experimentation it was found to be practicable to add hydrogen to the liquid constituents of oils, in other words, to the portion unsaturated with hydrogen, in such a manner as to obtain an entirely new fat or, as it may be called, a primary fat. Owing to the manner of its manufacture and chemical composition it is known technically as a hydrostearoleine.

This primary fat was soon placed upon the market by The Procter & Gamble Company under the brand name of Crisco.
It is not necessary that Crisco be made of cotton oil, although it is particularly well adapted to the purpose. Other pure vegetable oils can be used provided their glycerides are of such a nature that hydrogenation can readily be carried to the proper consistency. But it so happens that cotton oil has been produced in greater quantities than any other vegetable fat; it has been the subject of more investigation than any other oil; the methods used in refining have undergone an unusual degree of development; and it stands today the premier edible oil on the market. However, there would be practically no difference in Crisco if other suitable oils were used, as hydrogen can be added in varying quantities according to the character of the glyceride combination of the oil used.

Control of the hydrogenation process makes possible the production of a primary fat which does not have the faults of the natural product, since Crisco does not readily turn rancid nor smoke when heated to the frying temperature.

Rancidity and the tendency to form gummy oxidation products on heating in the case of most of the natural oils and the compounds probably have a direct bearing on their digestibility, especially after they have been reheated several times.

The effect of the hydrogenation process may be illustrated by taking typical glycerides which exist in practically all vegetable oils as examples:

\[ C_3H_5(C_{18}H_{31}O_2)_3 - \text{Linolein (Liquid)} \]
\[ C_3H_5(C_{18}H_{33}O_2)_3 - \text{Olein (Liquid)} \]
\[ C_3H_5(C_{18}H_{35}O_2)_3 - \text{Stearin (Solid)} \]

These are all triglycerides. They are not the only glycerides to be found in fats and oils; there are also mono- and di-glycerides, besides those in which two or three different fatty acid radicals are combined together to form a single glyceride. There may also be many other glycerides in an oil, such as palmitin, myristin, laurin and others, together with their varying combinations which render the possible characteristics of fats almost infinite.

It will be noted that the three glycerides, linolein, olein and stearin differ chemically only in the amount of hydrogen they contain. The addition to linolein of two atoms of hydrogen transforms it into olein, which in turn is transformed into hard, solid stearin by
the addition of two more atoms of hydrogen. It is the change of linolein into olein and in part into stearin which gives hydrostearoleine its peculiar characteristics and makes Crisco superior to the natural oils for all cooking purposes.

Several leading Jewish rabbis have declared Crisco to be strictly kosher and have given a certificate to the effect that it complies with the Jewish dietary laws in every way.

Due to the elimination of the objectionable unsaturated glycerides in the process of hydrogenation and to its neutrality, it may be heated to 425 degrees F., or even higher without giving off smoke or unpleasant odors. This is much higher than the temperature necessary for cooking and it therefore gives up its heat more rapidly so that foods fried in it are drier or less greasy than would be the case if other fats were used.

Since it contains nothing but pure fat, its energy-yielding equivalent is very high, in fact, it is about 18 percent higher than butter which, as is well known, contains considerable water and other materials, which yield much less energy or none at all.

Crisco is made from carefully selected oils and every manipulation is carried out with constant vigilance in order that a product may be obtained that is absolutely clean and wholesome—100 percent pure, white fat. The result is that Crisco is an appetizing, hygienic cooking fat of pure vegetable origin which makes an instant appeal to the discriminating consumer from the standpoint of its superiority. Crisco is therefore outstanding as the ideal fat for cooking and shortening.

THE PROCTER & GAMBLE COMPANY