unite them by agitation or churning, but by a simple mechanical proc
they can be just as perfectly agglomerated into the product we call butter.

This simple study of some of the physical characters of milk explodes
lot of theories previously referred to.

Butter fat is lighter than water, and skim milk has a specific gravity
1030, or a vessel holding 1000 ounces of water would hold 1030 of the mil
or it has so much more floating power than water, hence the fat will rise to t
top if it can, but it has adherent to it a viscous, sticky, or thin jelly like flui
that keeps it from rising when it is so finely divided up in this fluid
the motes in the sunbeam which, though so much heavier than the air th
are suspended in, yet take some time to fall owing to the viscority, or
may say stickiness of the air which increases the friction when the particl
are in motion. (The hypothetically perfect fluid would have no friction;
it would permit a body to pass through it without sticking to it or hinderi
it, but such an one does not exist.)

However the motes will fall and the cream will rise, if kept free fro
motion or agitation in their enveloping fluid.

Knowing these properties of milk, we can, by calling to our aid anoth
natural law, assist the separation by the difference of the specific gravit
of the fat or cream and the skin milk, this brings me to the first of the di
coveries of recent date, that has been referred to.

To explain, *if bodies be put in motion and kept moving the speed and di*
tance of their travel is proportional to their size and weight or specific gravit
To farther illustrate, suppose you take a leaden and wooden ball and thro
them both from the hand at the same time and with the same force, t
leaden ball will go farther and faster than the other and the wooden one wit
lag behind, being of less specific gravity.

If the leaden ball be very small its speed will be proportionaly less, b
the greater the speed of their travel the more would the small one get ahe
of the larger, so that with sufficient speed an infinitely small leaden b
would still keep farther way than the wooden one.

How can this law be applied to milk? It can be accomplished by th
centrifugal machine or separater.

Put milk into a vessel and cause the circumference of this vessel to travel
a speed of over a mile a minute, or from 1200 to 2000 revolutions a minute
a vessel 18 inches in diameter. The fluid of the milk is heaviest and for a
of its viscosity travels farth and faster towards the circumference, while th
cream, or fat, lags behind or is pushed inwards out of the way of the fluid o
its travel to the circumference. Very soon the cream forms a layer on th
inner side of the mass of milk in the rotating vessel and by proper applianc
can be readily removed.

This explodes all the theories about milk setting deep and shallow,
hot and cold surroundings, at least as far as the handling of any quantity
milk is concerned.

Hence we may in the *dairy of the future* have the cream perfectly pur
and sweet, and not necessarily a half hour from the cow.

Next we will enquire into the second of the late discoveries—the getting
of the butter.

The separater cream has had the fluid of the milk so well removed fro
between the little globules of fat that by removing it a little more they ca
come together as much as we want them to, for as you are aware, if they
were brought perfectly in contact the butter would lose its granularity—one
of the special points in choice butter—and become as it is termed greasy o
like lard.