

## CHANGE OF FLOUR IN BECOMING BREAD.

In popular use we employ the word "bread" to qualify loaves which are served in slices. The rolls are much smaller. Both consist alike of crumb and crust. The crumb is made up of a multitude of cells of thin walls containing carbonic acid gas, the product of fermentation in the dough. These walls of the cells contain both gluten and starch, and traces of dextrine and sugar. As a consequence of the treatment of water and the application of heat, the starch grains, which, in their normal condition, are little sacks filled with minute granules of starch proper, have been swollen and burst. Starch similarly treated by itself, as in the preparation for stiffening linen in the laundry, when dried in a thin layer upon glass plate, for example, is transparent, and presents a glazed surface. When this glazed material is removed with a knife blade, it is seen to be stiff and horny. The gluten, which is mixed with it in the crumb of bread, and which may be conceived to be continuous, however thin throughout the wall of the cell, has been, by the process of baking, dehydrated; that is, the heat to which it has been subjected has driven out a certain amount of water, which chemically sustains something like the same relation to the gluten from which it has been expelled that the water expelled by heat from alum-crystals sustains to the original body of alum. This is the condition of the gluten from the crumb in the interior of the loaf at the instant of its removal from the oven. On drying, it abstracts the water from the starch with which it is coated, or intimately mixed, as the roasted alum absorbs the water that is sprinkled upon it. The starch, by this process, being dried and stiffened, gives its support to the walls of the cell, and renders the texture of the stale loaf more firm than that of the fresh loaf.—*Prof. Horsford.*

**DAMP ROOMS, DAMP BEDS, ETC.**—Damp rooms, as those in brick houses—in which the plastering is placed directly on the walls—are the fruitful sources of many of the acute or inflammatory diseases of our changeable climate. Rooms, also, seldom or never properly ventilated or sunned, in damp localities, with houses the cellar of which is wet for any considerable part of the time, are absolutely unfit for human residence. No families can occupy such houses, living on the north side, and ordinarily escape the rheumatism and kindred diseases. It is but little less than suicide to be subjected to such continued dampness. Of course the bedding of such rooms must be not only damp, but to a certain extent moldy, or have a musty odor—almost certain to produce colds and diseases, especially when the "spare bed" is used by those who are so unfortunate as to visit such houses. Such beds are unsafe, occupied only occasionally, even after having been thoroughly aired and supplied with fresh and dry blankets. If such localities must be occupied, it is judicious to use bedding that will absorb as little as possible of dampness and foulness—the mattress is superior in this regard to feather-beds—while almost daily airing becomes needful. Dark closets, closed trunks, handboxes and the like, containing clothing, need often to be aired, allowing sunlight, the prince of purifiers, free access, often to be removed and placed in the direct rays of the sun, with a careful removal of all mold. Some free absorbent of moisture, freshly slaked lime, salt and ashes, and the like, will absorb this moisture, which may be promptly removed, at least carrying off much of the dampness. These absorb more readily and more freely than the clothes do, and will obviate a part of the evils of damp houses, and yet nothing can be an adequate substitute for the light of the sun—not even a warm fire in the room.

The Board of Directors of the Pennsylvania Railroad have directed the restoration of the pay of all persons in the service of the company to the compensation in force at the time of the reduction in June, 1877, to take effect from and after April 1st.

## HOW ENGLAND TAKES HER CENSUS.

In Great Britain a census has been taken every ten years since 1801, and the system is now one of the most perfect in existence. Until near the close of the last century, there was no real method, and all previous estimations of the population of the United Kingdom were mere guesswork. It seems the more strange that such should have been the fact, considering that, in the American colonies, enumerations of the population had often been made by order of the home government. In 1790, a beginning was made in Scotland by Sir John Sinclair, who through his personal efforts in enlisting the co-operation of all the clergymen of the established church, collected returns which were of great value, though necessarily incomplete. After seven years he completed his compilations, and published the results in 21 volumes, probably the greatest statistical work ever undertaken and carried through by one private enterprise. Under the system adopted in 1851, the census in Great Britain is now taken in one day, the 31st of March. In 1851, 30,610 enumerators were appointed in England and Wales by the 2,190 district registrars in those countries, each enumerator having a distinctly defined district assigned to him. In Scotland the 32 sheriffs appointed the temporary registrars—generally parish schoolmasters—and 8,130 enumerators. For the smaller islands, the government appointed 257 enumerators, and in Ireland the census was taken by the constabulary. Some days before the census day, printed schedules were delivered at every house or tenement; in Wales these were printed in Welsh for the benefit of the lower classes. These schedules contained questions about the name, relation to head of family, condition, age, sex, occupation and birth-place of every person in Great Britain, and also as to the number of deaf, dumb and blind. Measures were taken to secure accurately the names of night laborers, persons out of the country, travelers, seamen, soldiers, etc. These schedules were all filled up in the night of March 30-31 and were taken up at an early hour on March 31, the collector filling up the parts that had been left blank through their negligence or inability. All unoccupied houses and buildings in course of construction were also noted. The floating population—persons who spent the nights in boats and barges, in bars, sheds, etc., were required to be estimated as nearly as possible. The enumerators were allowed one week to make their returns in, all transcribed, and the summaries and estimates completed according to detailed instructions. The district registrars had to complete their revision of the returns of their subordinates in a fortnight, paying particular attention to nine specially defined points. These revised returns were again revised by the "superintendent registrars," and then transmitted to the census office. The census was the most successful, in quickness and accuracy, accomplished in any country up to that time, and the same system has been pursued, with little variation ever since. The digestion of the census reports by the central authorities is conducted most thoroughly and scientifically, and the compilations are of the greatest value to statisticians and economists. The British system has served as a model for many other countries, where the census is now taken in one day by means of printed schedules.—*Boston Herald.*

**SNOW EATING UNHEALTHY.**—A writer in the *Phrenological Journal* admonishes parents to guard their children from the practice of snow eating, claiming that it has much to do with head colds of many girls and boys, because of the chilling effect of snow upon the palate or thin partition between mouth and nostrils producing congestion in the fine membrane which lines its upper surface. As this membrane is almost entirely constituted of delicate nerves and blood vessels, inflammation is likely to follow the congestion, and perhaps degenerating into nasal catarrh, an affection so common with persons in our northern latitude.

## POPULAR CONFIDENCE IN SCIENTIFIC DISCOVERY.

The popular mind in its attitude towards scientific progress and discovery has undergone a wonderful change in the last five or ten years. The great facts in science brought to view by the labors of investigators, so long as they had no special practical bearing upon the affairs of every-day life, were regarded with little interest, and made no deep impression upon the mind or belief of the general reader. Statements were made in the newspapers regarding this and that new fact brought to light in some department of science or art, but the news was seldom thought of or talked about in the homes of the people in the country or city.

Important and wonderful discoveries, like the spectrum analysis of new chemical elements, or new asteroids, have interested men within the circle of those engaged in research, but outside few have taken the trouble even to inquire as to the importance or significance of the new acquisitions to human knowledge. A class of discoveries, however, which seemed to involve religious beliefs or theological dogmas quickly attracted popular attention, and brought about a fierce war of words. Mr. Darwin, when he published the results of his studies and discoveries upon the origin of species became at once a marked man and an object of popular attack. He might have been the discoverer of 50 new stars, and his name would hardly have been known beyond the circle of his associates and scientific investigators generally. His views, now almost universally admitted and adopted in the world of science, continue to be derided and combated by theologians and laymen, and in some instances with considerable sharpness and ability. The popular confidence, so far as it is influenced by such writers, does not rest with Mr. Darwin. The stupendous problems involved in astronomical science, and upon which it rests, puzzle and bewilder the popular mind, and but a kind of half assent is given to them. When the astronomer states in a public assembly that the sun is distant 92,000,000 miles, a majority are tempted to inquire, "How do you know that?" or when he states, further, that the orb is enveloped in a vast covering of incandescent hydrogen and other forms of matter, the unspoken reply is, "It may be so." We hesitate not to say that if astronomers and mathematicians had not been able to foretell eclipses, occultations of stars, approach of comets, etc., the great facts and principles of astronomy would have occupied in the popular mind a place scarcely higher than the astrology of the ancients.

This former state of indifference and doubt has now been broken, and the pendulum swings far the other way. The popular mind is ready to believe devoutly almost anything which men of research offer for consideration. The impossible, which once was observed in every direction, now has faded from view, and science seems to work miracles as did the apostles of old. The full establishment of the telegraph in all parts of the world immensely increased the popular respect for science; but when to this are added the telephone, microphone, audiphone, phonograph, electric lighting and the numerous other recent triumphs of science and art, the possibilities of scientific accomplishment have no longer a limit. There is a danger that this extreme development of faith may lead uninformed persons into errors through misapprehension, or extravagant claims of inventors and experimenters. Owners of gas stocks and other kinds of property supposed to be influenced by new discoveries should be cautious about sacrificing their securities in consequence of what is published in the newspapers. There are still many fallacies in the world claimed to be the outgrowth of science, and a wise discrimination and reserve should be maintained in all actions based upon what is claimed as new in science and art.—*Boston Journal of Chemistry.*