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Attention is called to the "Wants" column. All are invited to use it in soliciting information or seeking new positions. The name and address of applicants should be given in full, so that answers will go direct to them. The "Exchange" column is likewise open.

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HEALTH MATTERS.

Should Beer be drunk out of Glass?

THE Boston *Medical and Surgical Journal*, quoting from a German industrial periodical, says that a spirited contest has for some while been waged in Germany between the beer-glass and the stone-mug factions. Dr. Schultze claims to have established, by a very extended series of experiments, that beer, by as little as five minutes' standing in any glass, even when cold and in the dark, will be materially affected both in taste and odor. He sustains his claims by trial tests confirmed by some one hundred persons. The change, he thinks, is due to the slight solubility of the glass substance in the beer. This is of further importance from the fact that the glass most generally used contains lead, which has been added for its better and more easy manipulation in manufacture. From a series of experiments made upon glasses obtained from the leading sources of supply, he determined that one cubic centimetre of beer, by five minutes' standing in glass, dissolved 6 to 26 ten-millionths of a milligram of the glass substance containing 0 to 48 thousand millionths of a milligram of lead-oxide. This small quantity of glass substance he claims affects the taste of the beer, and, if it also contains this lead, renders it objectionable from sanitary reasons. He recommends for use as a normal test drinking vessel, whereby one can surely and easily determine the fitness or unfitness of any other vessel, a silver mug gilded upon its inner surface, the beer to be first tasted out of the silver mug, and then out of the other vessel. He gives the following comparative scale of fitness for beer vessels as made out of different material: All lead-glazed mugs are to be wholly excluded. Covered salt-glazed stone mugs he ranks as good, but tin ones as better, and gold-lined silver mugs as the best. Hard lead-free glass he ranks as poor, but soft-pressed glass as still poorer, and poorest of all lead glass, either pressed or blown. Porcelain, even that made at Meissen, he thinks not serviceable. Wood mugs are doubtful on account of the pitch varnish, which, even if it should not flavor the beer, yet is liable to induce loss of sleep and headache.

Dr. Schultze's conclusions have been discussed and disputed by Professor Linke, he claiming that, according to Schultze's own showing, 20,800 litres of beer out of the very worst kind of lead beer glass must be drunk within fifty-seven years, in order to take in even one milligram of lead-oxide into the body of one drinking a litre of beer a day. From an average quality of lead glass, it would take 74,000 litres and two hundred and three years to accomplish the same. Moreover, he claims that Schultze's lead quantities are seventy-six times too great, and that therefore it would require that much longer time to imbibe that small amount of lead.

A New Butter Substitute.

According to the Boston *Medical and Surgical Journal*, M. Heckel and Schlagdenhauffer have discovered and reported upon a certain Spanish broom-like bush, native of the west coast of Africa, which belongs to the Polygala family, and to which they have given the specific name of butyracea. The native name of the bush is Malonkang or Ankalaki. Its seeds yield 17.5 per cent of a yellowish butter-like fat of a very agreeable nutty flavor, and which could well serve as a substitute for butter. The fat softens between 28° and 30° C., beginning to melt at 35°, but does not become fluid below 52°. Upon cooling, it remains fluid for a long time, only beginning to solidify at 33°, when it regains its original consistency. Its density at between 35° and 38° C. is 0.904. It saponifies very easily with alkalies, and contains 31.5 per cent olein, 4.8 per cent free palmitic acid, 57.54 per cent palmitin, and 6.16 per cent myristin. It contains small quantities of formic and acetic acids, but no butyric or valerianic acid, and therefore it does not easily become rancid.

Is Fair Hair becoming Extinct?

The *British Medical Journal* concludes an article on hair as follows: "On various grounds, therefore, it would seem as if the fair hair so much beloved by poets and artists is doomed to be encroached upon, and even replaced, by that of darker hue. The rate at which this is taking place is probably very slow, from the fact that Nature is most conservative in her changes."

Denicotinizing Tobacco Smoke.

According to the *British Medical Journal*, Dr. Gautrelet, of Vichy, claims to have discovered a method of rendering tobacco harmless to mouth, heart, and nerves without detriment to its aroma. According to him, a piece of cotton wool steeped in a 5 to 10 per cent solution of pyrogallic acid inserted in the pipe or cigar holder will neutralize any possible ill effects of the nicotine. In this way not only may the generally admitted evils of smoking be prevented, but cirrhosis of the liver, which in Dr. Gautrelet's experience is sometimes caused by tobacco, and such lighter penalties of over-indulgence as headache and furring of the tongue, may be avoided. Citric acid, which was recommended by Vigier for the same purpose, has the serious disadvantage of spoiling the taste of the tobacco.

LETTERS TO THE EDITOR.

Source of the Rocky Mountain Precipitation.

IT has often been a question whether more of the moisture of Colorado came from the Gulf of Mexico or from the Pacific Ocean. The fact that the rivers that drain the western slopes of the Colorado mountains, such as the Yampa, the White, the Grand, and the San Juan, are larger in the aggregate than the streams that flow eastward, is proof that the Pacific is better watered than the Atlantic slope. Most of this precipitation occurs during the winter as snow. The snow-fall rapidly increases as we

go from Central Utah, at an elevation of 4,500 feet, north and eastward to the high mesas of the Yampa and White Rivers, at an elevation of 8,000 to 10,000 feet, where several feet of snow cover the ground for two or three months. In that region during the great snow-storms the wind usually blows from the south or south-west. Some precipitation occurs on a north wind, but it is preceded by west or south-west winds. It thus becomes evident that the precipitation on the western slope of the mountains is chiefly derived from the Pacific. Where does the moisture come from that falls on the eastern slope?

The larger part of the precipitation on the eastern slope of the mountains takes place while the surface wind is blowing from the north or some quarter from the eastward: hence it has often been stated that this is Atlantic moisture. Doubtless much of it comes to us from the Gulf of Mexico by way of the Great Plains, yet in most cases it is easy to prove there has been a large supply from the Pacific.

First as to the storms of the colder months from October to May. These storms usually cover large areas. The precipitation is from stratus or cumulo-stratus clouds moving over the mountains. Several days of south-west wind in most cases precede the shifting of the wind into the north or some eastward quarter, at which time the precipitation takes place. During some of these storms the wind blows from some westward quarter for several days, so that it is often certain that sufficient wind has passed eastward to permit air direct from the Pacific Ocean to reach eastern Colorado and the Great Plains. As the storm-centre advances, this same air must often be deflected backward toward the mountains. It is obvious that in the case of cyclonic storms there is an influx of air from the west (the "Chinook" winds) in the region south of the storm-centre. In the larger storms the distance travelled by the wind is so great as to permit air direct from the ocean to cross the mountains.

Occasionally storms break upon us without the premonitory south-west winds. Thus a blizzard struck south-eastern Colorado Oct. 30, 1889. The winds had been light and variable. Suddenly the wind shifted into the north to north east, and for several days raged at a high velocity. There was a heavy precipitation of snow, and not even the rotary snow-ploughs could keep the railroads open for travel. Several thousand miles of wind from the direction of the plains and Missouri valley were driven obliquely up the slopes of the mountains. The signal maps show that the storm-centre passed north-eastward over northern Texas, and the area of west winds was far south of here. Over Mexico and Texas there must have been a large movement of Pacific air eastward.

Second, the summer thunder-storms. These also are preceded by west to south-west winds. In general, the longer the west winds continue, the more violent will be the storms when the final break-up comes. A common type of development of the July storms is the following. Warm winds begin to blow from the south-west, and continue four or five days. The temperature becomes progressively hotter. Some day we see a cumulus-cloud over the mountains begin to throw out filmy streamers above and a fringe beneath. It rains a little above timber-line, and there may be a discharge of cloud-lightning. Then, as the cloud passes eastward over the plains, it loses its ominous fringe, and becomes an ordinary sleepy cumulus with a sharply defined edge. Next day the attempt at a storm is repeated, the fringe is longer and the cloud is larger, but the ranchman who is wishing for rain looks on in disgust at the abortive effort, and remarks that there is a lack of ginger in the upper air. Meantime the general movement of the lower mile or two of the air continues from the south-west. After a few more days of failure, we some day see high cirrus streamers and films begin to form before noon. Soon after, there are big cigar-shaped masses of cirro-stratus far below the cirrus. Still farther below are innocent-looking cumulus-clouds with rather definite margins. As the afternoon advances, one of these begins to bristle with an indefinite fringe above and below. The fringes grow longer. Presently a marginal belt of rounded festoons appears outside the central fringes and beneath the storm-cloud, while above it the high streamers radiate outward in the sheaf-of-wheat pattern. In the mean time a halo, or part of one, has appeared around the sun in the higher filmy clouds. Before midnight there will be hail and cloud-bursts on the mountains, and these storms will go hundreds of miles eastward onto the plains. It often happens that the first storms go northward or north-eastward. The next day they shift toward the west. In a few days they will come from the north-west or north. Then the air will be cool, the general movement of the air is from the north, and there will be no more storms until after another season of south-west winds.

Thus the summer showers, as well as the winter storms, derive most of their moisture from the Pacific. There are different types of these local electrical storms, but they all are alike in one respect: they appear as local disturbances in the midst of an area of relatively heated south-west or west winds.

The present summer has been remarkable for the amount of Pacific air. Heretofore, during several years of observation, the wind has never been known to blow briskly from the south-west for more than one to three weeks without the formation of some kind of storm, or at least attempted precipitation, which interrupted the west wind.

This year, during late May, June, and July, there were more than two months of almost constant wind from the south-west over the mountains. It should be noted that the wind in the valleys, near the base of the mountains, is often variable, and there are local movements this way and that, while all the time the clouds on the mountains show that the wind is there from the south-west. Several thousand miles of air fresh from the heated regions of Southern California, Utah and Arizona, have passed eastward over the mountains. Hot weather prevailed simultaneously over eastern Colorado, Kansas, Missouri, and eastward. Such a movement I have not noticed before in eight years of observation. The thunder-storms have this year been late in forming in Colorado, notwithstanding the great supply of Pacific air. For nearly two months the clouds seemed to be at a rather low level in the air, and there was much less of the high cirrus than usual. No solar halos appeared till about the middle of August. Their appearance was followed by very violent hail-storms and wash-outs. In short, we appear for once to have had for most of the summer too much Pacific below, and too little Arctic up above.

It is noticeable that the tornado belt this summer lies far to the north and east. Is not this the result of the vast body of Pacific air which has invaded the Mississippi valley? It appears as if for some cause the meeting-ground of the warm and cold currents had, during the early summer, been pushed north-eastward to the line from Minnesota to New England, instead of the ordinary Missouri-Ohio line.

G. H. STONE.

Colorado Springs, Aug. 23.

Professor A. Graham Bell's Studies of the Deaf.

I AM always ready to welcome intelligent criticism of my labors on behalf of the deaf; but the articles published in *Science* (Aug. 15, pp. 85-88; Aug. 29, pp. 117-119) from the pen of Mr. W. J. Jenkins unfortunately contain so many misstatements of fact as to render reply distasteful.

Mr. Jenkins commences his criticism (p. 85) by "entering a gentle protest" against the truth of a statement I never made; and he ends it (p. 119) with a long paragraph containing a series of statements relating to the census of 1880, no one of which is correct. The intervening matter is so full of inaccuracies, that I should take up a great deal of your valuable space were I to attempt to point them all out.

His chief objective is an attack upon what he calls my "theory of a deaf-mute variety" (p. 85); but he nowhere states exactly what this theory is, so as to enable your readers to judge for themselves whether or not his attack is well founded. Let me therefore supply this deficiency.

The theory referred to is contained in a paper, "Upon the Formation of a Deaf Variety of the Human Race," which I had the honor of reading before the National Academy of Sciences, Nov. 13, 1883 (see *Memoirs of the National Academy of Sciences*, vol. ii. pp. 177-262).

In the preface (p. 130) the theory is formulated as follows: "If the laws of heredity that are known to hold in the case of animals