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The Editor is always glad to receive for examination illustrated articles on subjects of timely interest. If the photographs are *sharp*, the articles *short*, and the facts *authentic*, the contributions will receive special attention. Accepted articles will be paid for at regular space rates.

FREE ALCOHOL FOR INDUSTRIAL PURPOSES.

There is an important measure before Congress, known as the Boutelle free alcohol bill, which should command universal support, once its purpose and scope are understood. The bill provides that alcohol for use in manufacturing and the industrial arts shall be free of tax, when suitably denaturized or made undrinkable by a mixture with noxious substances. The United States is the only leading commercial nation in the world that fails to make a distinction in the matter of taxation between distilled spirits intended for consumption, and alcohol intended for industrial purposes. All European nations permit the use of alcohol free of tax, when it has been denaturized in accordance with officially prescribed processes, and this for the reason that it is established as a sound principle of government that industrial alcohol should be made as cheap as possible. In Germany the laws upon this subject are particularly effective. As the matter now stands with us, industrial alcohol and alcohol for beverages are treated alike, being both classed as distilled spirits and subjected to a tax of $1.10 on the proof gallon of 50 per cent alcohol, which is the normal strength of alcoholic beverages. The strength of commercial alcohol is 94 per cent, and as this is 1.88 times the strength of the proof gallon, the tax on it is nearly $2.07 per gallon.

Now alcohol as a subject of manufacture may be purchased cheaply and with ease. The Department of Agriculture reports that 94 per cent alcohol, if it were not taxed, could be sold profitably for about 15 cents per gallon, and other authorities have asserted that, under the large demand that would result were the tax removed and under favorable conditions of manufacture, it could be sold at a profit for 10 cents per gallon. As matters now stand, however, manufacturers have been driven to adopt substitutes usually more expensive than untaxed alcohol, and frequently dangerous. Among such substitutes may be mentioned wood alcohol, naphtha, acetic acid, carbon bisulphide, gasoline, and many others. All of these substitutes are free from tax, and they are resorted to, not because they are better than grain alcohol, but because under the existing conditions they are cheaper.

The general public has but little idea how widely extended is the use of alcohol in all countries where it is not taxed. It is a better fuel for internal combustion engines and, therefore, for the automobile, than gasoline. It is preferable for domestic cooking and heating; and as an illuminant when used with an incandescent mantle, it is superior to kerosene and rivals the electric light. Alcohol is necessary in the manufacture of a thousand different articles, and it is a serious item of expense in making varnishes, lacquers, gilding, and bronzing. It is used as a solvent in the manufacture of hats, straw goods and fine shoes. One and a quarter pounds of alcohol are consumed in making one pound of the best smokeless powder, and it is claimed that the present tax more than doubles the cost of this important commodity to the government. It enters also largely into the manufacture of celluloid, with its many dependent industries; hence, it affects the interest of the photographer. It is one of the most important of the costly raw materials in the manufacture of various colors for silk, cotton, and woolen goods, wall paper and printer's inks, and in dyeing it is a valuable agent in fixing the colors. Indeed, the majority of the manufacturers in this country make use of alcohol or some derivative therefrom, to a greater or less extent in the production of their goods. There are some industries that have been driven out of the country altogether by the present tax, a case in point being fulminate of mercury, the explosive material of percussion caps, which is now imported from Canada at a cost from one dollar to one dollar and fifty cents per pound cheaper than it can be made here.

The benefits resulting from the repeal of the alcohol tax would be felt immediately by both the maker and user of the automobile. At present gasoline is practically the only motor fuel available, and there is no doubt the development of the automobile is handicapped somewhat by the present price of this fuel, to say nothing of the apprehension that it will steadily increase in price with the development of the automobile industry. Alcohol has been tested very extensively abroad, and it is considered in France to be in every way a superior fuel to gasoline, being free from all obnoxious qualities, and far less dangerous to the user.

It is claimed by the sponsors of this bill, and we think with every show of probability, that the removal of the tax and the cheapening of this easily-made and extremely useful commodity would, in addition to its indirect benefits to the many industries affected, so stimulate its manufacture as to result in the development of an entirely new industry that would afford a promising field for the investment of capital and for the employment on a large and increasing scale of labor. It is also claimed, and we think on good economic grounds, that the reduction of government revenues due to the repeal of the tax would be more than compensated by the increased demand for other articles that are the subjects of taxation, whose cost would be considerably reduced were grain alcohol exempted.

INDIAN SUMMER.

No period of the year excels in loveliness the one sometimes known as "the fifth season." Beginning about the middle of October, it is often prolonged into December. Its characteristics are a calm, soft, hazy atmosphere, through which day after day the sun, shorn of his beams, rises and sets like a sphere of copper or gold, according to each beholder's degree of poetic perception. Sounds at great distances are distinctly audible. Objects, unless close by, are discerned with difficulty. All nature, as if to prepare itself against the blasts of winter, appears somnolent. The mornings are cool, with lowland fogs soon dissipated by the sun, and the atmosphere maintains a stillness which scarcely stirs the richly-tinted but rapidly-fading foliage.

The northern hemisphere enjoys the finest displays of this supplementary season, the geographic limits of which the records of meteorologists and climatologists enable us to define. Its characteristics are particularly noticeable in the far Northwest. Matthew Macfie, F. R. G. S., is authority for the statement that in Vancouver Island and other portions of British America there is a second growth of verdure lasting until after Christmas. This period annually beautifies the zone running through New England and Canada westward to Lakes Michigan and Superior, thence southwestward to Kansas and Nebraska, and, including Minnesota, the Dakotas, Montana, Idaho, Wyoming, Washington, Oregon, and Northern California, northwestward over British America to the Arctic Circle. While it does not extend into the lower limits of the United States, it is referred to by two or three of the historians of Mexico.

Formerly the smokiness, and the somewhat greater degree of warmth, were thought to be caused by mountain fires, or the burning of the vegetable decidua collected in the autumn for that purpose. The haze and increased warmth are due to the annual formation of what has been termed the "aerial Gulf Stream," or "vapor plane." This high current, generated in equatorial seas by ascending masses of vapor-charged air, flows northward through the upper atmosphere, oversweeps the Southern and Gulf States, and descends toward the earth or ocean as it approaches New England and Canada on its journey toward the polar circle. In the afternoon and night, when the earth throws off the heat received during the day, especially in the autumn weeks, when the temperature is declining and the capacity of the air to retain moisture is on the decrease, the presence of this mantle of vapor arrests radiation. The heat-absorbing power of this "blanket of aqueous vapor" has been clearly demonstrated by Prof. Tyndall. Covering the remaining vegetation and the harvests as with a shield, it protracts the grain-ripening period to meet the necessities of the higher latitudes.

The earliest explorers of America recorded their appreciation of the beauties of this season, but did not assign to it a specific name. Our pioneer historians, notably Jefferson, note its features as among the most fascinating exhibited by our climate, but do not designate it as "Indian summer," a name which now belongs to it by the common consent of the people of the United States, Canada, Australia, and a portion of Europe.

The first recorded appearance of the name "Indian summer" is found under date of October 13, 1794, in the journal of Major Ebenezer Denny, an army officer stationed at Fort Le Bœuf, near the site of the present city of Erie, Pa. The term seems to have been already well known and clearly recognized. The New England tradition is that the term "Indian summer" is derived from the prevalence, at that time, of the southwest winds, which the Indians supposed to be sent as a peculiar favor from their good deity, Coutanowoit, to whom, says the Rev. James Freeman, they believed they would go when they died.

A more logical reason is that, in many portions of the United States, it was the Indian's hunting season, not only on account of the plenty and perfect condition of the game, but because of the density of the atmosphere, which favored a close and unsuspected approach to the creature pursued. Among the Indians of the Northwest, it was the period between the gathering and storing of summer supplies and the selection of winter quarters in the haunts of large game. Hence, Indian summer in that region was the season of migration, its mildness being favorable for journeys. On being asked when they intended to go to their hunting-grounds, their usual reply was: "When the Great Spirit sends us our fall summer." Persons whose imaginations are sufficiently vivid may find in the appearance of the November sun a resemblance to the Indian complexion.

According to the exhaustive researches of Mr. Albert Matthews, the term "Indian summer" first made its appearance in the last decade of the eighteenth century; was "established about twenty years after its earliest appearance; had spread to New England about 1798, to New York by 1809, to Canada by 1821, and to New England by 1830." Mr. Matthews states that it "is not merely an Americanism, but has become part of the English language in its widest sense, having actually supplanted in England expressions which had there been in vogue for centuries, and is now heard among English-speaking people throughout the world; that it has been adopted by the poets; that it has been employed in a beautiful figurative sense, as applied to the declining years of a man's life; and that it has given rise to much picturesque if also to some fantastic writing."

This season is well defined in England. It is peculiar also to central Europe. In the old world as in the new it is characterized by dry fogs, a glowing sky, absence of heavy rain, and mild temperature. In different localities it is known by the names of various saints and religious festivals, all of which are celebrated in the autumn months of the calendar. In England its early name was "All Hallows' summer." In Wales and Belgium it is known as "St. Michael's summer," in Germany as "St. Gall's summer" and the "summer of old women," in Bohemia as "St. Wences-laus' summer," in Sweden as "St. Bridget's summer," and in Lombardy as "St. Theresa's summer."

In Belgium, most gorgeous are the Indian summer displays in the vicinities of St. Hubert and in the celebrated old forest of Ardennes, which localities, at this season, doubtless taught Van Dyck, Rubens, and other Flemish painters their brilliancy of color. Among other European names for this period are "the after-heat" and "the red leaf."

In some portions of France it is named in honor of St. Denis, but is chiefly known as "St. Martin's summer," to keep in pious memory the bishop-saint who died at Tours in 397, having successfully brought to Christianity every person in his diocese. He changed an autumn festival in honor of Bacchus to a Christian celebration; and centuries after it became his own day in the calendar (November 11), it was still burdened with heathen usages. To this day St. Martin is the patron of drunkards who are endeavoring to reform. Not only is "St. Martin's summer" the most charming period of the year in France, but it is identified with the good cheer and hilarity of the vintage, as well as with the abundance of the harvest and the chase.

This season's influence extends over Prussia, Austria, and Hungary. Its close marks also the passing of the deadly miasma from the Pontine marshes. The beauty of Lakes Como, Maggiore, and Garda is never seen to better advantage than during this golden period. Covering the vintage time of Greece, it insensibly merges into the days which, immediately preceding and succeeding the winter solstice, were known to the Hellenes as the "halcyon days," because at that period the halcyon brooded. Their winter seas were then free from storms.

In Indian summer and all its cognates Nature discloses a brighter purpose than mere scenic display. In it may be recognized the gigantic and ever-active atmospheric forces, which not only temper the regions from which the sun makes an early autumnal retreat, but ordain fertility, verdure, and health over vast territories of the earth.

Steatite or soapstone, $Mg_3H_2Si_4O_{12}$, gives very good fibers when fused to a clear bead in an illuminating gas-oxygen blowpipe flame working small and steady, and then drawn. The fibers become brittle if afterward heated in a Bunsen flame. The fibers show all the characteristic properties of fused quartz, and the material is readily obtained from an old gas-burner (steatite hardened by heat).