

LAGER BEER.

Whether Lager is intoxicating or not, was a question which, a short time ago, exercised the minds of judicial functionaries and caused many an anxious alderman to scratch his head and experience the novel sensation of using his brain; but as they have left the question distinctly unsettled; one party crying "aye!" and the other as loudly vociferating "no!" we shall not attempt to discuss it, but only write of that which is certain and fixed—in short, stick to facts.

Fact No. 1 then is, that in these United States of America, a fluid of a delicious dark amber-color is imbibed in immense quantities during the summer months.

Fact No. 2, is that the said fluid has a peculiar and pleasant flavor and much refresheth the inner man of the imbiber.

Fact No. 3 is, that it is known by the name of "lager" or laid beer.

And for fact No. 4, it may be stated that scarcely more than one in a thousand of those who daily enjoy this Tuetonic beverage (which some say is *too-tonic*) have any idea of the method of its manufacture or the manner in which it is produced, and on this point we intend to enlighten the nine hundred and ninety-nine.

There are only three articles required to make lager: malt hops and water. The first is made from barley, which should be of the best quality, and to make it into malt is to convert its starch into grape sugar, which is about five times less sweet than common cane sugar. To do this the barley is steeped in water for from forty-eight to seventy-four hours, and then placed in heaps upon a flagged floor and allowed to germinate for about ten days. It is then slowly dried, first by currents of air, and then by a suitable stove; and this part of the process requires much care; as, if it is dried too highly or too slowly the malt will be injured. After the barley is cleaned and has remained sometime, it is ground in a mill and becomes pure malt.

The next process is termed "mashing;" the malt is mixed with hot water of a certain temperature, which differs in various breweries, each one having their "secret," as they call it, for producing the particular flavor which especially recommends that of certain manufactures to the palates of one or other class of connoisseurs; and after all the saccharine matter is extracted, it is drained off by a fine sieve and the liquid is called "wort." The wort is then heated several times, the heat being increased at each time and mixed with the hop-wort in the hop-kettle. The manufacture of this hop-wort must be very carefully conducted or all the bitter will not be extracted, and the liquid is, when boiled sufficiently, drawn off into large shallow pans called coolers, where care must again be taken that it does not absorb too much oxygen or it will afterwards turn sour; therefore, pure dry air and rapid cooling are important. From the coolers it is drawn off into the fermenting rooms, where it is put in immense vessels and yeast added. In one brewery in this city, they can ferment 4000 barrels or 120,000 gallons at one time. The beer remains here ten or fourteen days when it is removed to the cellars to "ripen," where, as in the fermenting room, the air should be constantly changed by mechanical means or a perfect system of ventilation adopted; the impure warm air being constantly withdrawn, and pure, cool air supplied. Lager beer can only be made from about the first of October till the middle of April, and summer beer is kept for six months and winter beer for two after it is manufactured, before being introduced to the market.

A quarter keg of seven and a half-gallons costs about a dollar and a half, and it should be drunk as quickly after tapping as possible, as it soon begins to be flat and stale; indeed, in Munich, Bavaria, which is the greatest beer-drinking city in the world, when a barrel gets half empty the regular saloon frequenters spend the time in talking until another cask is opened and drink it while fresh. Families should bottle the beer immediately after the cask is opened or should order it in bottles.

That there is alcohol in lager every one knows, but the smallness of the quantity in proportion to the nutritive matter and bitter principle or tonic renders it so ineffective on the brain as to deserve the position, which much to our credit it has assumed, of a national beverage, to the exclusion of whiskey and other evil spirits.

Dr. Chilton of this city made an analysis of the lager

brewed at the Lion brewery, in this city, and he finds—

Alcohol.....	3.82 parts.
Saccharine matter.....	1.13 "
Starch, gluten, bitter extractive and aromatic principle of the hop with other vegetable extract.....	5.93 "
Acetic acid.....	0.41 "
Carbonic acid (gas).....	4.12 "
Water.....	84.59 "
Total.....	100.00

Of the numerous adulterations we have nothing to say, as we are only writing of the pure article, and the unscientific must depend upon the honesty and business-character or reputation of the manufacturer more than on any other source.

We find in a Bavarian periodical a scientific *resumé* of the effect of hops on beer, which may prove interesting in this place, and we have no fear of anything becoming uninteresting while writing about lager.

Hops contain a volatile oil, a resinous matter, a bitter principle and tannic acid. If the beer while being made is boiled too long, the volatile oil is driven off, and recourse has been had to distilling the volatile oil from the hops and adding it separately, but it imparted a disagreeable flavor and prevented clearing. The resinous matter is not easily soluble in fresh beer and even the dissolved portion is often thrown off during fermentation.

The bitter substance of the hops was formerly considered the most essential compound, but this view is now exploded. This bitter substance is found to be a strong narcotic and by drinking beers which contain large quantities of hops, headaches, dizziness, and a dryness of the the mucus membrane are quickly produced.

If a greater quantity of malt than ordinary is used, the beer contains more alcohol, but this is more healthy than a predominance of the bitter. Physicians should always prohibit bitter beer from all who suffer from hemorrhoids or incline to dropsy. More than from two to three pounds of hops should not be used to one thousand pounds of beer.

The tannic acid of the hops unites with the resinous matter; and when the beer cools, both separate, thus facilitating the clearing.

The brewer should carefully examine the hops, because if they have been exposed to dampness and are aged, the tannic acid changes into gallic acid, which gives to the beer a disgusting sour taste, and it does not combine with the resinous matter and separates from the beer, but gives it a dark red color.

And now as we have written of beer until we are thirsty, we shall desist for fear of inducing a corresponding dryness in the thorax of the reader.

SALES OF UNPATENTED INVENTIONS--NEWSPAPER POSTAGE.

Messrs. Editors:—Enclosed please find one dollar, for which send the first volume of your "new series" to \* \* \*. This is the best I can do for you at present. Several have promised to take the SCIENTIFIC AMERICAN; but when it comes to sealing up the dollars, they resemble the Irishman's flea—when wanted, they are not there. I have long been a subscriber to your valuable journal; and even if you had increased the price as well as the size, I should still have subscribed for it. I am glad, however, that you are able to afford it so low, for I am a poor man. Since I began to take it, I have procured you three other subscribers, and am sorry I have not been able to do better; but send me a prospectus, for "it is never too late to do good." Please answer the following questions: If A invents a machine and puts it in operation, and B asks A to sell him the right to construct such machines, can the inventor legally sell that right to B, and receive pay from him, without possessing any patent upon his invention? If illegal, what is the penalty? Also, please let me know what will be the postage on each number of your "new series," when paid in advance. Postmasters sometimes obtain more than their due from newspaper-subscribers, by charging heavier rates than the law requires.

Summit, Miss., July, 1859.

J. J.

[We publish the foregoing letter in order that our answer may interest and instruct others as well as the party seeking the information. In the first place, we thank our friend for what he has done to extend the circulation of the SCIENTIFIC AMERICAN, and although its amount, in comparison with the achievements of others, is only as "the widow's mite," yet it shows the good

feeling of our correspondent. In reply to his first question, we state that A can sell a right to construct duplicates of a machine upon which he contemplates to obtain a patent, but which is not yet legally secured. It would scarcely be considered honorable in A, however, to impose upon B, by selling him a right, if he (A) did not intend to patent his invention; although we are not aware that he would offend against the United States law, although perhaps, he might become amenable to certain State laws for fraud. As to the postage on the SCIENTIFIC AMERICAN, when paid in advance, it is six and-a-half cents per quarter (three months), for any distance within the United States, outside of the county of New York; to subscribers within this county our journal is delivered free. Our Mississippi friend is not the only person who has recently complained to us against postmasters overcharging postage on the SCIENTIFIC AMERICAN. We hope our patrons will no longer submit to such extortions; and for the benefit of all our readers and such postmasters as do not possess a copy of the "Laws and Regulations of the Post-office Department," we publish the following extract from that work:—

RATES OF POSTAGE ON NEWSPAPERS AND PERIODICALS, WHEN PAID QUARTERLY IN ADVANCE.

	Daily.	Tri-weekly.	Semi-weekly.	Weekly.
Weekly newspapers (one copy only) sent by the publishers to actual subscribers within the county where printed and published.....	Free.	Free.	Free.	Free.
Newspapers and periodicals, not exceeding 15 ounces in weight, when circulated in the State where published.....	22½	9½	6½	8½
Newspapers and periodicals of the weight of 3 ounces and under, sent to any part of the United States.....	4½	1½	13	6½
Over 3 and not over 4 ounces.....	91	39	26	13
Over 4 and not over 5 ounces.....	136½	58½	39	19½
Over 5 and not over 6 ounces.....	183	74	53	26
Over 6 and not over 7 ounces.....	227½	97½	65	32½
Over 7 and not over 8 ounces.....	273	117	78	39

AMERICAN JOURNALISM.—We believe, says the *New York Tribune*, there are now printed within the limits of the Union not less than four thousand newspapers, at least five hundred of them daily, and five hundred semi-weekly. Their average circulation we estimate at two thousand each for the dailies, twenty-five hundred for the semi-weeklies, and fifteen hundred for the weeklies, making a total circulation in this country of more than four hundred millions of newspaper sheets per annum. Yet in 1813—less than half a century ago—the total circulation of newspapers in this country was estimated by Isaiah Thomas, in his "History of Printing," at only a little more than twenty millions of sheets per annum. At that time there were 359 newspapers, of which 27 only were daily. What an advance in less than half a century!

THE VALUE OF POSTAGE STAMPS.—Few of our readers, we imagine, can be aware of the immense correspondence which is carried on by the editors and publishers of this journal. They receive, on an average, at least one hundred letters per day; and they are confident of the fact that hundreds of them are carefully answered which would quickly find their way into the waste basket of almost every other newspaper-office in this city, and receive no other attention. Our postage tax is a heavy one, amounting to from \$3 to \$5 every day, and we would request our correspondents to be more cautious in future and enclose a stamp to pay return postage. It would relieve us very considerably. Please take this hint, kind reader.

EGYPTIAN PROGRESS.—The census of the population of Egypt, taken by order of the Viceroy, on the French method, has just been completed and gives the following result: The population, which in 1798 was 2,500,000, amounted in 1817 to 3,700,000, in 1847 to 4,250,000, and is now 5,125,000. The inhabitants of Alexandria, which in 1798 only amounted in number to \$30,000, had increased in 1817 to 230,000, and are now near 400,000.

DRILLING HOLES IN GLASS.—We are informed by Mr. D. Mackenzie, of Canada West, that a composition of camphene and turpentine is the best which he has ever used for drilling holes in glass with a file drill. The drill is kept constantly wet with the solution, which appears to give it more "bite" than turpentine alone, which is commonly used for the purpose.