

A VISIT TO AN ARAB BREWERY

JAMES DEATH

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A glance at the above title will probably occasion the remark, "How can there be such a thing as an Arab brewery, since Mahometanism forbids the use of intoxicants?" This is a widely-diffused error: the Koran only discourages the use of wine.¹ At the date of writing the Koran, wine was the only recognised intoxicant; distilled spirits were unknown, whilst beer, although known to the ancient Egyptians, was probably regarded in the same category as *koumiss* (mare's milk fermented), a necessity to the wild nomadic tribes of the Arabian desert. Not alone is native beer drank by the Arabs, but considerable quantities of lager beer are consumed by the richer classes. In Mussulman India considerable quantities of English ale are drank ; in Ceylon I have myself seen Buddhists and Mahometans drinking beer.

While the process of making Arab beer possesses in its inner details considerable scientific interest, it can hardly be discussed without reference to the leaven of bread so frequently mentioned in the Biblical records. Apart from its serious aspect the subject presents to the European reader a somewhat comical aspect. Arab beer is a thick pasty fermenting liquor, made from baked and malted wheat. Its Arabic name is *Bouzah* or *Boōsa*. Lager beer is known as *Beērah* or *Birra*.

A few lines will describe an Arab brewery, or rather beer-drinking house. Ordinarily they consist of the most miserable class of dwellings. Four bare walls, or rather walls covered with dirt, one or two wooden seats, and

several mats spread on the floor. At one corner is the brewery, the mill, and the malt-house; in another is a pen containing the proprietor's donkey and two sheep-goats. Some few cups for drinking the beer are kept by the proprietor, but for the most part the company bring their own. A code of honour seems to dictate that nothing portable shall be left about.

Accompanied by an employé I visited the principal brewery. The walls were decorated with highly-coloured Italian prints of the Dandolo, Vesuvius in a terrific eruption, Tel-el-Kebir, and sensational pictures. The ceiling showed signs of better occupants; here and there fragments could be seen of the exquisitely carved stone tracery work to which Mahometanism has confined art; in the centre of the room, surrounded by the company, who were seated upon the ground, were some girls playing the lute, dulcimer, bandolin, and singing in the usual monotonous high-pitched treble discord. The company (all middle-aged men) smoked chibouks. The fumes of the forbidden drug Hascheesh² were more overpowering than those met with in an opium saloon, while here and there could be discerned a strange odour, probably, one of the mysterious African drugs which European chemists and toxicologists have failed to obtain.

Of the taste of *Bouzah* I cannot give a fair account. In the "Old Curiosity Shop," Mr. Richard Swiveller, a most eminent authority, asserts "that beer cannot be tasted at a sip;" beyond this my experience has not gone. It was faintly acid, with a harsh rough after-flavour.

In your own column, and in those of your contemporaries I have recently seen queries as to the fabrication of yeast in places removed from countries where it is impossible to procure yeast for pitching (such as is my

own position). In a subsequent article I will enter into this matter, suffice it at present to say that I shall then have to refer to the article now writing.³

In the series of lectures given by Dr. Graham on the Chemistry of Baking, special mention is made of the abnormal effects yielded by Egyptian wheat. Egyptian cereals are grown differently to those in any other part of the universe. Irrigation is here the wealth of the land, and this is conducted under the rays of a sun hotter than in any other part of the world. The roots are consequently watered, while the grain is ripened by scorching desert winds. Such accounts for the peculiar analytical constituents of the grain, and the consequently remarkable effects so frequently and accurately indicated. Since the date of these lectures (1880) yeast of the ordinary English type has for the first time in history been tried on Egyptian flour in an Egyptian climate by the military bakers, by an Arab baker, by a French baker, and by myself. Every instance has proved a failure. The natural ferment of this country is leaven. English brewers are acquainted with the strongly diastasic properties of Egyptian barley malt, and to the manner of making malt at a temperature in the shade of 108°, frequently rising to 112°F.

The manufacture of malt and *Bouzah* is thus conducted: Wheat is steeped in water in glazed-ware basins, of the size of an ordinary wash-hand basin, although somewhat deeper. Absorption is very quick; the basins are covered to retain the heat and moisture, but placed in tulle shade; after three and a half to four days the germination is completed. The temperature of the grain varies between 106° and 112° in September, but in July it is probably hotter. The green malt is so matted with rootlets that it forms a solid mass: this is now broken up and placed in a thin layer on mats on the roof exposed to the sun to dry. In summer this occupies about four hours. The dry malt is "pummelled" between the hands, the rootlets sifted, and the malt ground between two stones. It would naturally be thought that malt so prepared must be highly acid; such is not the case, the moist grain neither tastes nor smells acid, but probably the malt contains more acid than English malt made at some 50° lower of temperature. In England what would become of English grain so treated?

The next step is the brewing process. This is very simple. Unmalted wheat is ground and made into dough by

the addition of water and kneading; it is allowed to stand for six hours, during which the dough slightly rises, due to saccharification and fermentation. The self-leavening of Egyptian flour is remarkably quick. Dough allowed to stand for twenty-four hours forms a true leaven, but weaker than the leaven from germinated grain. The discovery of the properties of leaven can be discerned in the mixing in of some old dough to avoid waste. Ordinarily, a piece of leavened dough is reserved till the morrow, and ground down with water, into which the flour is thrown. The Eastern leavened or unleavened bread is in reality a matter of degree only. Leaven must not be confounded with barm, which acts slower. At the end of this period the cake is baked in copper vessels at the public bakery. When cold the cakes are thrown into casks containing water, mixed with a small quantity of salt. One-fifth (of the weight of the cake) of ground malt is added, and the vessel covered. Within six hours signs of fermentation are visible, although no pitching yeast has been added.⁴ In twenty-four hours there is a vigorous fermentation, a head of yeast, and a copious evolution of gas. So strong and penetrative is this fermentation that the cake is entirely broken up.⁵ The thick mass is now rubbed by the hands on a sieve placed over a cash, the husk, bran, and glutinous matter is twice washed with water; the starchy and yeasty liquid in the cask forms *Bouzah*. The fermentation is retarded by the aeration due to sieving; it recommences, and may last four hours longer. Twelve hours after lactic acidity is developed, the solution curdles in two days, leaving a clear liquid; the lactic fermentation is then finished. Acetous fermentation of the alcohol ensues, etherification is rapid, the smell of impure acetic ether is strong. In this state the liquid will remain without change for weeks. With the exception of mastic, a locally made spirit (of Greek origin) resembling aniseed, no drink is so much liked by the lower class Arabs as *Bouzah*. It is not only the national, but the natural beverage of a country where nature, both geographically and meteorologically, has magnified the restrictions upon fermentation to an extent unknown in European countries.

An analysis which I made of *Bouzah* gave -

Solids dried at 230°F	13.1 per cent.
Specific gr. at 60°	1,041.62
After evaporation of alcohol	1,052.28

Unfortunately, I have not got the tables for calculation of gravity by the evaporation process with me, so I am unable to give either the original gravity (if that term can be applied) or of the percentage of alcohol.⁶ In boiling, the starch gelatinised, hence I used a little malt extract. This has been allowed for; the trivial excess due to hydration of starch would be inappreciable. These figures show that this beer contains more solids than does strong ale. It is alleged to be the cause of intoxication, but the few cases of intoxication which I have seen are more justly to be attributed to narcotics.

Under the microscope the ferment organisms consist of a highly impure yeast. The yeast cells closely resemble those of ordinary barm, but are somewhat smaller. The tube bacteria are irregularly-shaped rods, micro-bacteria abound. Proportionately the number of yeast and starch cells are equal. In a few hours bacteria swarm the liquid. On ordinary beer wort *Bouzah* exerts a much stronger and rapid fermentation than does ordinary yeast. In sugar solution I have not tried its effects. Probably it constitutes the strongest alcoholic ferment. In bread-making it is used in preference to leaven, which latter, in a moist loaf, quickly becomes sour. In the Lord's Prayer the words, "this day our daily bread" apparently imply a repetition; the full meaning of the expression becomes clear when the custom of throwing the waste to the leper without the gates is taken into consideration.

In the method of malting Egyptian wheat, self-heating with production of ferments is encouraged. The malt differs entirely from English malt in being powerfully diastasic, and containing sufficient spores or moulds to start fermentation or leavening, as soon as the malt flour becomes wetted. In the method of germinating rice malt for the Chinese beer, the development of heat is retarded, and freedom from germs assured by mixing and burying the rice in the earth. The comparison between the two methods and their resulting beers would not be without interest.

Note

This description applies only to the Egyptians resident in the large towns. In the villages each householder generally makes his own *Booza*. The scene above described is interesting in indicating the readiness of the natives of the towns to Europeanise their customs. The proprietor

of this place was in what would be called a large way of business: he employed assistants and sold, partly consumed on the premises as beer, and partly outside as leaven, &c., about two hogsheads per diem. I noticed that a great many boys came in with small saucers, who were sent by the women for the purpose of obtaining beer for leavening cakes. Although I have visited several of these breweries, I do not recollect ever seeing a woman (except the singers) therein. Professional singers occupy a very low position amongst the natives of the east. When Mr. Gladstone claimed the "Free Mash Tun" as his own, he appears to have omitted to mention the prior claims of the Arabs, nor does it seem that the classical scholar's lieutenant, the able "Historicus", has reminded him. Perhaps, however, comparisons would have been odious, as the Arab "mash tun" never pays a duty.

References

1. Differences of opinion exist on this point; the reading of the Koran itself seems to imply that the use of wine was discouraged, not absolutely condemned. "They will ask thee concerning wine and lots. Answer, in both there is great sin, and also some things of use unto men; but their sinfulness is greater than their use." (Koran, chapter ii.; vide also similar injunction, chapter v.) Beer or leaven is nowhere mentioned in the Koran. Some Mussulmen authoritises interpret wine to refer to anything intoxicating, including wine, beer, palm-juice, opium, bhang, and even coffee and tobacco. The drinking of coffee was introduced after the writing of the Koran, and has been publicly condemned and subsequently re-allowed on many occasions. The constant infringement of the command, including gaming, by Mahometans is a matter of notoriety. The Bedouins keep the injunction.
2. Hascheesh (Indian hemp) is another instance of the impossibility to prohibit local vices: although not grown in the country, and supposed to be destroyed at the Customs port, it was easy enough to purchase it. You were openly asked if you wanted the picked or commoner varieties. The police seemed very partial to it. It stupefies and gradually paralyses the brain tissues: its constant use is worse in results than opium.
3. A promise which I never performed.
4. Sometimes *Boosa* of a previous brewing is used to facilitate fermentation, but its use is not necessary.
5. The Biblical definition of leaven as "diffusing" (Smith's *Dictionary of the Bible*) can be seen to apply here as well as

to leavening dough.

6. From the author's results, and without taking into consideration the acidity, which is not given, we have calculated the original gravity and percentage of alcohol in this Arab beer.

They are as follows: -

Original gravity = 1,100.78 equal to 36.3 lbs. per barrel.

Percentage of proof spirit by volume = 13.9 "

Percentage of alcohol by weight = 6.35 "