THE COMMUNAL BARRACKS OF PRIMITIVE RACES.

BY S. E. PEAL.

NOWADAYS, when the doctrine of evolution has taken such a firm hold of the scientific world, and the origin of marriage by capture is occasionally under consideration, it may not be out of place to draw attention to the remarkable communal barracks for the unmarried seen over such a large portion of the earth's surface among primitive races.

Many anthropologists have come to the conclusion that man has been from the first a pairing animal, and that the family was the primary unit. Mac Lennan, who has given us so much on primitive marriage, has endeavored to show that marriage by capture arose from a paucity of females due to female infanticide, and that some form of peaceful monogamy preceded it. But the accumulation of recent evidence tends to show us that, after all, Sir John Lubbock's surmise is possibly correct, i.e., that while marriage, or the private right to one particular female by any man, arose by capture, this stage of social evolution was probably preceded by one of communism, as in a small horde or clan. The existence of these singular communal barracks for the unmarried, as possibly the relics of such a stage, appear not to have been realized by anthropologists, hence it is desirable to draw attention to the large stores of information on this question already in hand but not utilized.

Letourneau, in his "Evolution of Marriage" (in the Contemporary Science Series), has exhaustively traced for us the early stages of marriage and the family among the lower animals, showing that it is by no means a peculiarly human institution. The various and peculiar forms of sexual association, past and present, he has clearly laid before us, but singularly enough has entirely omitted all account of these communal barracks, which apparently are unknown to him.

Under many forms and innumerable names, these singular social institutions extend from the Himalayas and Formosa on the north to Australia and New Zealand on the south; from the eastern Pacific and Marquesas to the west coast of Africa; and thus are found among races now classed as distinct, such as Dravidians, Indo-Mongols, Malays, Papuans, Polynesians, Australians, and Africans. Taken by themselves, these barracks for the unmarried are sufficiently suggestive; but when we notice that they are but one out of many peculiar social customs found surviving more or less among all these races, the case is doubly noteworthy, first, as evidence of former racial affinity; second, as an important factor in social evolution generally.

There seems to be internal evidence that their origin preceded monogamy, or marriage of any kind, and thus that some customs may outlast physical and even linguistic characteristics. As might naturally be expected, there has been marked geographical variation, not only in the barracks, but in the allied social customs, some of which have died out entirely. These customs are: Recognized sexual liberty before marriage, pile dwellings, head hunting, platform burial, aversion to milk, blackening the teeth, the double-cylinder bellows, large canoe war drums, tabu, tattooing, etc. Last, but most important of all, there is the universal tabu of these barracks to the married woman. She is not allowed in or, at times, even near them; whereas the unmarried young women and girls are not thus invariably prohibited, and in not a few cases are expected to sleep in them with the young men. In some races they have special houses or "barracks" built for them.

No doubt much remains to be discovered on this subject; but one thing seems to be already certain, that among all these races having "barracks," and where juvenile sexual indulgence is viewed as a harmless amusement, it was not the "horror of incest" which drove them to exogamy. With regard to these so called "barracks," it is necessary to point out that both in structure and function they vary so much that no description of one will cover all, except in so far as the tabu against the married woman is concerned. As a general rule, they are long houses, the recognized sleeping-places of the unmarried young men, council-halls devoted also to guests, and at times skull trophies, the guard-houses among head-hunting races, and canoe-houses in the Pacific.

Among the more civilized Buddhist shans of eastern Asam, the "Chang" is now a semi-temple, and school-house for boys, tabu to women. Among the Abors the "Mosup," 200 feet by 30 or so, is the young men's sleeping-house, also guest, guard, and council-house; among the less warlike Miri, the "Deri" is very similar, and also the sleeping place of the unmarried young women and girls. The Nogas call them "Pah," and being head-hunters in many cases, they are placed at the fortified entrances to the villages, being, as usual, on piles. The Mikirs call them "Tarengs," and the Lushais, "Zalbuk;" in both these cases they are the club-houses of the young men, and, as in most of the other cases, their authority dominates the community, even that of the parents over their offspring after ten or twelve years of age. Under elected heads they control a large amount of communal work, training and discipline of youths, clearing of roads, maintenance of fortifications, bridges, etc.

Amongst the Gouds, Kouds, Kols, etc., the "Damkuria" are the sleeping-places for the young men, boys, and girls, where they drum and dance to their heart's content. In Formosa the "Palangkans" are the guest and council-halls, the sleeping-places of the unmarried young men, issuing orders, and, as in all others, tabu to married women. Among the Battaks of Sumatra the "unmarried young men live together in a large house, sometimes of two stories, which is set apart for them." All over Papua we see the Dupu and Marea in every village as guest, council, and skull-houses, the sleeping-places for the young men, and tabu to women and children. In New Zealand the "Wharre Matoro" is still "the bachelor's hall or barrack, a Polynesian institution;" wharre meaning house, and matoro, "the advances made by young girls to the other sex." In the Louisade Archipelago, the Solomon Islands, and till lately in New Hebrides and Polynesia generally, the feature was common, the "Ti" of the Marquesas, 200 × 30 feet, tabu to women, being indeed fully developed ere marriage was common. Mr. J. Thomson tells us in Proceedings of Royal Geographical Society, Dec., 1884, p. 701, that among the Massai, "the boys and girls up to a certain age live with their parents; at 12 the boys and at 12 to 14 the girls are sent from the married men's kraal to one in which there are only unmarried young men and women. They live in a very indescribable manner till married." So pleasant do they find it that they seldom marry till past the prime of life.

The nomadic Australians are exogamic, and marry by capture or exchange; yet even here we seem to have a relic of the barrack system. Mr. Brough Smyth tells us that "the unmarried young men have a place set apart for them in each camp." Girls may entertain any of them as lovers till married. A man calls a woman of his own clan "Wartoa," or sister, and cannot *marry* her. Yet connections of less virtuous character which take place between them do not appear to be considered as incestuous. "Intercourse between the males and females belonging to the same clan appears to be regarded without disfavor," though *marriage* is very strictly prohibited between them. Thus the Australians, who (as Mr. Horatio Hale observes) are probably a degenerate race, practically live as roving communistic hordes, in which "marriage," or the monopoly of one female of their *own* clan is impossible (though sexual intercourse is permitted), a "marriage" being possible only by capture or exchange from another clan.

While, therefore, the prevalence of these singular communal barracks over such a vast area, and amongst such distinct races is a proof of great antiquity, their being so invariably tabu to the *married woman* amounts almost to a demonstration that marriage arose by capture. Thus what we now call the "wife," was the private property of the successful warrior.

As soon as property in captured spoils was recognized by races wherein there was sexual communism and hence less competition for females, the right of the stronger warriors to keep their female spoils (as wives) would be less disputed, and we may be certain that with the power they would have the desire to tabu to such females the communal quarters of the (unmarried) young men. Naturally it is with some reluctance and hesitation that one ac-

cepts these communal barracks as evidence of a former stage of promiscuity, and the universality of their tabu to the married woman as proof that "marriage" arose by capture; but the evidence all along the line (which is barely outlined here) seems to be irresistible. After all, perhaps, when we recollect that our ideas of incest, chastity, and modesty were pretty certainly as unknown to our remote ancestors as they are to some races even in our own day, it does not very much matter whether the primary "unit" was the family or the horde; if anything the horde is *preferable*.

A feature of the races having these barracks is (as a rule), that there are no juvenile marriages. At 18 or 20 the young women and at 20 or 25 the men settle down as fairly staid couples while yet in the prime of life, and divorces are rare. There are, as a rule, no old maids, and until civilized races appeared upon the scene, there were probably no prostitutes. Possibly a more extended research may reveal traces of the communal barrack system and its accompanying tabu in other countries; but enough has been stated to show that the subject is worthy the attention of all those interested in the question of the origin of marriage and social development.

Rajmai P.O., Sibsagar, Asam, Sept. 4.

THE UTILITY OF VEGETABLE ACIDS IN FOOD.

BY H. J. PATTERSON.

TECHNICALLY speaking, a food is generally described as a substance supplying material for maintaining the vital processes, renewing the waste and forming additional tissues in the animal system. It is a question whether it would not be well to broaden this definition so as to include those substances which serve the purpose of increasing digestibility and assimilation, and of preventing destructive metabolism. If these substances are not worthy of being classed as true foods, it may be well to class them as auxiliary foods. Whether the vegetable acids fall in the first class or in the second is still an open question; but they most probably belong to that of auxiliary foods.

The study of the definite character, quantity, and functions of the vegetable acids which exist in our foods has received but little attention, and consequently their true utility is but little understood or imperfectly defined. In the dietary of man acid foods have generally been considered to simply serve to gratify the senses of sight, taste, and smell, promote the appetite, and contribute to pleasure. It is well recognized that organic acids occur in small quantities in most feeding stuffs, but in the natural state they are generally in combination with bases. In the proximate analyses of foods the organic acids fall into that general dumping-ground of nitrogen-free extractive matter, and, with the rest of the members of that class, have until very recently received little or no attention.

It is a common practice in medicine to use vegetable acids to cause a decrease in the amount of flesh and to retard or stop flesh formation. Again, we know that in some cases these acids are used to facilitate digestion and to give a general toning up of the whole animal system. Some investigators have suggested that these acids have certain fuel values closely related to the carbohydrates, and that their combustion will save the consumption of other materials; this would class the acids as a true food. With the now almost universal use of silage and brewers' grains in our feeding economy with animals, and the considerable quantity of acids in the free state which are formed in the fermentation which these feeds undergo, it is a matter of considerable importance to know the true effect which these acids exert in the animal system, and whether they themselves are foods; whether they exert a beneficial influence on other foods; whether they aid or retard digestion, assimilation, and tissue and albuminoid consumption.

The investigations which have been conducted bearing upon this question have been very few and have not taken up the question as much in detail as it is desirable or as the matter deserves. The first experiment[1] in this line, and the one that brought this subject prominently before the author, was where a dog had been fed considerable organic acids in addition to his other food, exact records of the amount and composition of the food eaten and matter voided kept, with the result that there was produced a greatly increased consumption of the albuminoids. H. Weiske and E. Flechsig[2] performed experiments with a rabbit and sheep, feeding in addition to ordinary food the calcium and sodium salts of lactic and acetic acids; their results varied, but generally large quantities of the acids increased the albuminoid consumption, while small quantities had the opposite effect. A. Stulzer[3] compared the different organic acids found in feeding-stuffs and in the stomach in the artificial digestion of albuminoids, with the result that most of them have a high value. Acetic acid was found to be surprisingly low. We know from the investigations of Woehler and Lehmann that organic salts are changed in the animal organisms into carbonates and pass off as such in the urine. Charles, in "Physiological and Pathological Chemistry," states that oxalic acid, with animals in normal condition and when active oxidation is going on, rarely appears as such in the system, but is burnt into carbonic acid and water.

During the winter of 1891, experiments were made at this station by the author to test the effects of silage in connection with other foods on the digestibility of the different constituents and on the albuminoid metabolism. The foods used were corn-meal, wheat-bran, cotton-seed meal, germ feed, and gluten meal, in connection with corn-silage *versus* the same foods in connection with corn-fodder (stover). The animals used in the experiment were two one-year-old, and two two-year old steers. The silage contained on the average 1.86 per cent free acid,[4] and as the two-year-old steers ate on the average from 20 to 25 pounds of silage per day, and the one-year-old steers ate on the average about 15 pounds of silage per day, this would make about 180 grams and 100 grams of free acid taken by the steers, respectively, per day. The two-year-old steers averaged about 950 pounds, and the one-year-old steers about 550 pounds. These quantities of acid are only from $\frac{1}{4}$ to $\frac{1}{5}$ as much as were fed in the experiments of Weiske and Flechsig; with the smaller quantities they concluded that the acid served to conserve the albuminoids, and with the larger quantities to increase albuminoid consumption.

The average results of my experiments showed that with the rations containing the corn-fodder 33.7 per cent of the nitrogen fed was stored in the body, while with the rations containing the corn-silage there was only 26.6 per cent of the nitrogen fed stored in the body. From this we gather that even with small quantities of acid in the free state, they do not serve to conserve the albuminoids, but rather to increase nitrogen metabolism. The acid of the silage had a tendency to increase the digestibility of all the food constituents except that of the protein; this was slightly less digestible in the acid ration.

The experiments performed and the data at hand will justify the following summary: 1. Large quantities of vegetable acids, either in the free state or combined with bases will produce an increased consumption of albuminoids. 2. Small quantities of vegetable acids in the combined state and very small quantities in the free state have a tendency to increase the digestibility of foods and to decrease nitrogen metabolism or conserve the albuminoids. 3. The vegetable acids may, in some cases and to a slight degree, serve as conservatives of carbohydrates through their own oxidation. 4. That exclusive or excessive feeding of very acid foods, such as silage or brewer's grains, is detrimental to the animal, and causes a waste of the nitrogen or albuminoids of the food and of the animal body.

College Park, Md., Oct 8.

[1] Reference lost.

[2] Journal f. Landw, 37, pp. 199-234.

[3] Landw Versuchs., 38, pp. 257-279.

[4] Principally acetic and lactic acids.

ON Tuesday, Oct. 18, there was opened a telephone line between New York and Chicago. The length of the line is 950 miles, which makes it nearly twice the length of any previously in regular operation. Professor A. Graham Bell was present and easily conversed with one of his early associates in telephonic work, who happened to be in Chicago. The formal opening of the line was made by Mayor Grant of New York, who conversed with the Mayor of Chicago at the other end.