koumiss it is also found that, in the second stage of fermentation, the cheesy matter appears in separate layers, which, however, by shaking, can be easily reduced to a homogeneous milky fluid by combining with the serous layers, and the molecular condition is then so uniform that no flakes are noticeable, as in the genuine mare's milk koumiss. I may notice here that cheesy matter in the solid form, separated from the milk by means of rennet, curds, etc., is quite indigestible, even in small quantities, and can only be adopted for food when fermented in the shape of Stilton or Cheshire cheeses, etc., which are prepared, with or without the addition of cream, all over the globe; whereas, in a well fermented koumiss, the cheesy matter appears as a homogeneous, soft mass, which constantly develops bubbles as long as it is moist, and the flakes dissolve on the tongue like snow, with an acidulous and a pleasant sensation. No wonder, then, that it does not give the stomach the slightest trouble in digestion or absorption; and I can safely say that I have never found any other form of cheesy matter, by any course of preparation, that possessed similar properties, although I have made innumerable attempts to produce a soft cheese which would prove digestible in larger quantities, so as to replace loss of flesh in certain wasting diseases. In my experiments, I found that the dry residue of koumiss, after filtration or evaporation, affords a granular mass of acidulous taste, containing undecomposed lactose, albumen, and salts, which, when made into lozenges with the necessary additions, are so easy of digestion, that a few of my friends consumed nearly a pound of them after dinner—*pour la bonne bouche et digestion!* I would not seem, however, to recommend A koumiss after a hearty meal, though I shall never forget Plymouth, where, after reading my paper on koumiss, a very eminent gentleman contended in sober earnest that, having taken some of Chapman's Full Koumiss in the museum, for the supposed purpose of removing indigestion after a full breakfast that had disagreed with him, instead of feeling better he became worse, as if "a plenus venter digerat libenter" when it becomes still more extended.

I have been often called upon to answer most amusing questions with regard to koumiss, though I must confess I correct with the greatest pleasure the errors committed by others on the subject of milk-fermentation. Many look upon koumiss as a drug-medicine, and think that with one or two bottles, taking a tablespoonful every two hours, a decided effect ought to follow; just as some persons fancied that guano, when first introduced, would make plants grow *ad oculos demonstrandum* (before their own eyes!). I regret that the age of wonders has passed, although there is still a credulous portion of humanity to conjure up wonders in their own imagination. Koumiss is, however, undoubtedly entitled to be regarded as a medicine that "heals to nourish, and, in nourishing, gives strength and weight in the shortest possible time;" which is a truth daily confirmed in proper cases. In any case, this remedy is, at all events, harmless, occasioning no anxiety to the physician, and much more likely to produce the good effect he desires, especially in cases where drug-treatment is apt to fail. I ought to state that I never had the opportunity of procuring a sufficiently large quantity of mare's milk for koumiss, so as to make fair trial of it in practice; and my conclusions as to the comparative merits of mare's and cow's milk koumiss are strictly of a deductive nature, based on the analysis.

REMARKS ON ICHTHYOSIS LINGUÆ FOLLOWED BY EPITHELIOMA LINGUÆ: WITH NOTES OF THREE CASES.

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IN patients suffering from epithelioma of the tongue, it is not so rare a thing as is sometimes represented to find the mucous membrane of the tongue or cheeks, or both, covered by white leathery or cornified patches of thickened epithelium, with or without distinct naked-eye appearances of enlargement of the papillæ. This condition was called, first, I believe, by my colleague Mr. Hulke, ichthyosis glossæ; and, at the time when he communicated the report of a case to the Royal Medical and Chirurgical Society in 1864, Sir James Paget narrated an account of a case in his private practice, of a lady who, some years after the occurrence of ichthyosis, became the victim of epithelioma of the tongue. This case of Paget's was the first recorded notice of the association of ichthyosis and epithelioma; and Mr. Hulke's paper contained, so far as I know, the first description of the nature of the morbid change which he had so named. Several isolated cases of ichthyosis have been since reported; but there can be no doubt that in many instances this condition of the mucous membrane has preceded or coexisted with epithelioma, without having

been ascertained from the history of the case, or paid attention to when seen. I am led to this opinion by the fact that, during a period of less than six months, three well marked cases of epithelioma supervening on ichthyosis linguæ have come under my notice in the cancer out-patient department of the Middlesex Hospital; because, too, I can bring to mind other cases in which I have seen such a change, and can refer to my notes for instances in which it is stated that there were "hard superficial patches on the dorsum", or that "the mucous membrane, from the lower surface of the tongue to the inner surface of the maxilla, is thickened and raised"; or, again, "the tongue is coated with a thick yellow fur".

No one who is familiar with Mr. Hulke's description of this abnormal state of the tongue in the second volume of the Clinical Society's *Transactions*, could fail to recognise the affection; but, though the condition is unmistakable, some objection has been raised to the term used by Mr. Hulke to express it. In a recent excellent monograph upon diseases of the tongue by Mr. Fairlie Clarke, exception is taken to the name ichthyosis, chiefly for the reason that in ichthyosis of the skin the sebaceous glands are concerned, whereas in the mucous membrane of the tongue there are no such glands. But that form of so-called ichthyosis of the skin in which the sebaceous glands are involved otherwise than by being simply occluded—just as, in very severe cases, the hair-follicles also are affected—is not true ichthyosis, but the seborrhoea sicca of Hebra. True ichthyosis is primarily and fundamentally a deviation from the natural state of the epithelial structure of the skin, although in severe cases it may be associated with a hypertrophy of the epithelial sheaths of the papillæ, and in still more severe cases with a hypertrophy of the cutis vera.

Another objection which has been raised to the name ichthyosis is, that this condition of the tongue is only a local one, and is not associated with a similar change in the mucous membrane of other parts or in the skin. But ichthyosis simplex or cornea may be local, and not general, as we sometimes see about the ankles, shins, and elbows; and, moreover, it is not correct to say that the mucous membrane of the tongue is in all cases the only part affected, for the mucous membrane of the cheeks and floor of the mouth are sometimes, though, so far as I have seen, to a less extent, affected also.

On the other hand, the reasons in favour of retaining the term ichthyosis for this state of the lingual and buccal mucous membrane are these. The morbid change is essentially a change in the epithelial layer of the mucous membrane, although sometimes attended with a hypertrophy of the sheaths of the papillæ, and sometimes with a hypertrophy of the basement-membrane, as in Mr. Hulke's case and in one of the cases described below. Again, in this condition of the tongue, as in ichthyosis of the skin, the surface is rough and leathery to the touch; the scales of epithelium are closely imbricated or matted together, and adhere firmly to the subjacent structures; the little furrows, which are more or less well marked, map out the scaly patches into little segments in a tessellated manner; and, though never disappearing altogether, the degree of change in the tongue, as in the skin, varies at different times. Further, the change in the tongue is due, no doubt, to an alteration in the nutrition of the part, and is not in any way dependent upon local irritation. In no one of the cases now reported was there the slightest ground for thinking that irritation had provoked the change. The positions upon which it occurred discountenanced such a hypothesis; whereas the fact mentioned in the report of Case II, that the patch varied in size and soreness with the state of health, favours the assumption that the condition is dependent, in some way, upon the processes of nutrition.

It is true that the tongue, from its situation, is continually exposed to considerable irritation; but this is all the more reason why we should require the cause and kind of irritation to be very definitely known before attributing a more or less general change in the structure of the lingual epithelium to such irritation.

It will be well to determine, for the sake of analogy, if the chemical constitution of the epithelial cells of the tongue affected with so-called ichthyosis is altered; and, if so, in what manner, and how far the changes correspond with those which have been proved to occur in ichthyosis of the skin. It would also be satisfactory to ascertain if, or to what extent, if at all, ichthyosis is hereditary. If it be found to be so in any marked degree, we shall have a further point of similarity between this change in the mucous membrane of the mouth and the ichthyosis of the skin.

With all the features of likeness above mentioned, there seems no more objection to apply a term used for this abnormality of the skin to the similar abnormality of the tongue, than there is to speak of the eruption of scarlatina or erysipelas as occurring in the throat.

The object, however, in view in publishing the subjoined cases, is not to employ them as a groundwork for the defence of a name; but,

as there are only a very few cases recorded in detail, it is thought that, by adding these to others already published, further data are furnished for drawing general conclusions upon points of importance connected with this abnormality. If, for instance, it be found from a large number of cases that ichthyosis linguae is always followed by epithelioma, it will become a question whether, when the ichthyosis is localised and of the more severe kind, the portion of the tongue so affected should not be removed—in fact, whether we should not regard this condition as seriously as we do epithelioma itself, and treat it as radically as we do cancer.

There is one striking feature brought out by microscopic examination of the abnormal tissues, which it is impossible to overlook when speaking of the sequence of ichthyosis and epithelioma: this is the occurrence side by side of epithelium merely hypertrophied—the ichthyotic structure—with the cancer-structure, without the one passing into the other. From this fact, the inference follows that, however great the tendency of epithelioma to occur in a tongue the seat of ichthyosis, and however frequent the sequence of the two conditions may be, still ichthyosis is itself a substantive change, and not simply a preliminary warty stage of epithelioma.

From a perusal of the following cases, it will be seen that—1. In each the ichthyosis existed from nine to eleven years before the epithelioma appeared; 2. All the patients were males, over or close upon fifty years of age; 3. Two of the patients positively denied ever having had syphilis, and in each the specific remedies had for some time been tried without producing any effect upon the disease; in one case, although the patient had had syphilis seventeen years before, he had never had any secondary affection of the tongue or throat; 4. In two of the cases, the cancerous disease is known to have commenced upon an ichthyotic surface, and in the third case it probably did so—a most important feature in the clinical history of the cases, because the origin of epithelioma in such a patch gives colour to the view that there is some causal relationship between ichthyosis and epithelioma; but this does not oppose the view that the one is not a mere preliminary of the other.

CASE I. *Ichthyosis Glossæ, followed by Epithelioma of the Tongue; Removal of a Portion of the Tongue by the Galvanic Ecraseur.*—Edwin T., aged 50, applied to me at the cancer out-patient department on December 27th, 1872. He stated that he had been married fifteen years, and had always enjoyed good health, with the exception of having had syphilis seventeen years ago. He was quite sure he never had any ulcer or fissure on the tongue or throat, but had a rash on the skin shortly after the chancre on his penis. For the last nine or ten years, the greater part of the dorsal surface of his tongue had been white and leathery from a "thick fur that had covered it". At the time of application at the hospital, the epithelium coating the tip and the lateral portions of the anterior half of the dorsum of the tongue was much thickened, of a pearly white colour, and horny to the touch. To the naked eye, the appearance was something like that of the cuticle after prolonged immersion in warm water, but to the finger much rougher. The portion of the dorsum intermediate between the two lateral patches, as well as the base, was covered with a whitish yellow but soft fur. Upon the dorsum to the left side near the tip of the tongue was a raised and irregular mass about the size of a small almond, quite hard, and fissured upon its surface. The tongue was freely movable, and could be protruded with ease. There was no difficulty in speaking or swallowing; but pain was felt sometimes when eating and smoking. There was no enlargement of the glands of the neck.

With the history of syphilis, and without actual ulceration, and knowing, too, that ichthyosis is sometimes a sequela of syphilis, I thought it right to employ antisiphilitic remedies. This was done for four or five weeks, but without any improvement occurring. Still the treatment was continued, in deference to the doubts expressed by others as to the epitheliomatous character of the disease.

On March 6th, my case-book contains the following note. "Tongue in about the same condition as when first seen, except that there is now a small superficial hard nodule on the right side of the tip of the tongue, about the size of a split pea. There is an enlarged gland below the angle of the left side of the jaw. A good deal of pain is now, and has been for some week or two, experienced in the front of the left ear and in the ear-hole; this is aggravated by pressing upon the elevated and fissured patch on the tongue."

April 3rd. A small slough had formed in the centre of the mass on the left side.

April 20th. The anterior half of the tongue was removed to-day by the galvanic *écraseur*. A microscopical examination of the diseased parts showed the existence of epithelioma and hypertrophy of the epithelium.

June 9th. He was discharged. He made an uninterrupted recovery;

but there was a little spot in the centre of the divided surface which had not quite healed, though it was fast doing so.

On October 16th, he returned to the cancer out-patient department to show himself. The tongue was then quite sound; but the cicatrix had become coated with thick white flakes or scales, similar in appearance to others seen on the anterior lateral margins of the dorsum of the existing portion of tongue. The centre of the dorsal surface was marked by some elongated papillæ, covered with thick white epithelium. There was still some enlargement of the gland below the angle of the jaw.

Two very excellent coloured drawings of the tongue of this patient before the operation, executed by Mr. Burgess, can be seen in the Middlesex Hospital Museum. The following is Dr. Goodhart's description, with drawing, of the microscopical appearances of the parts removed.

"The pieces submitted to examination, after being hardened in spirit and subsequently in chromic acid, showed to the naked eye—1, a local warty excrescence, surrounded by an elevated ridge a *millimètre* in height or rather more; 2, an epithelial surface of variable thickness around it. A vertical section through the growth showed it to be

made up of a number of vertically set papillæ of somewhat fusiform shape and ragged surface; the thickness of the whole amounting to two *millimètres*, set in the surrounding mucous membrane. This also was thick, though less so than the part from which the papillæ sprang; it was pretty uniform in its appearance, and, on comparing with the mucous membrane from healthy tongue, stood, as regards thickness, in the relation of 2 to 1. The muscular structure was very unequally

attacked; in some places, it was replaced by a whitish growth; in others, the muscle and fibre, though a little pale, were nearly of normal appearance. On microscopical examination, attention was directed to the papilliform growth, to the mucous coat around, and to the deeper seated structures. The mucous coat of all parts examined appeared to me thickened in two directions—first and chiefly in its epithelial layers, and secondly in the subepithelial fibrous tissue. The superficial epithelial coat further was not at all places alike; in some, it existed as a layer of even, though increased thickness, merely varied by the rete mucosum, which had slight undulations; in others, it dipped deeply into the subepithelial fibrous tissue, and was even surrounded by cancer-growth, though, as far as could be seen, unaffected by the contiguity. The papillæ (c) appeared to be no more than rearrangements of the epithelial cells proper to the part, with definite fusiform shapes, which then became welded or fused together (a, b), and so came to have somewhat of a horny texture; in truth, they would appear to have a similar relationship to the tongue as have horny growths to the skin. I could not see that they had any vascular supply. They were deeply set in the surrounding scaly epithelium; and, while their superficial layers were shed, they were replenished from below by the mucous layer. The deeper fibrous structures were very thick, and densely crowded with small rounded nuclei about one three-thousandth of an inch in diameter. In some places, even at some considerable depth in its substance, came tracts of scaly epithelium, which, though surrounded on all sides by the small cancer-nuclei, yet retained their normal appearance. Deeper still came the muscular fibres; they were in most cases quite healthy, though at places surrounded by tracts of nuclei (f, f)."

CASE II. *Ichthyosis Glossæ followed by Epithelioma of the Tongue; Removal of Disease; Recurrence; Ligation of Lingual Artery and Removal of Diseased Portion of Tongue.*—William C., aged 49, a married man, was admitted into Forbes ward, under Mr. De Morgan, in April 1873. He denied ever having had syphilis, and was not a great smoker. He stated that for ten or eleven years there had been a white horny patch upon the left side of the median line of the dorsum of the tongue. This was of an irregularly four-sided shape, and somewhat larger than the ulcer which now occupied its place. The horny plaque sometimes varied in its size, and occasionally soreness or pain was felt in it; these changes, however, always ceased after taking some aperient medicine, so that the patient considered them due to "heat of the body." No other inconvenience was ever suffered until nine months previously to his admission, when a raised red and moist granular-looking ulcer was noticed at the anterior and outer corner of the plaque. This gradually spread until it nearly covered the whole of the horny patch. It caused him no pain, but was in the way while moving his tongue. There were no enlarged glands in the neck. The mucous membrane of each cheek was white and scaly over a small irregular area; that on the left cheek was larger than that on the right.

On April 23rd, Mr. De Morgan removed the diseased patch, with some of the surrounding healthy tissue, by means of a pair of sharp-cutting scissors curved somewhat upon the flat of the blades. Only a small portion of the depth of the tongue was thus removed; there was some smart bleeding, which had to be checked with liquor ferri. The patient made a good recovery, and left the hospital on May 27th. During the months of June and July, he came once or twice to the out-patient department to show himself. He thought the disease was recurring, as there was a little hard nodule just behind the cicatrix, in which he sometimes suffered pain. On August 27th, he was admitted under my care, as this nodule was increasing in size and the pain in severity. A memorandum, made at the time of his admission, states that "on the right side of the tongue, behind the scar of the previous operation, there is a hard nodule, in size rather smaller than a French bean. He has a pricking pain in the part and a pain along the right jaw and in front of, and in, the meatus of the right ear." The presence of this hard nodule near the seat of the old scar pointed to a recurrence of the disease; and its increase in size and the persistence of pain in it indicated the propriety of removing it. The patient, too, was anxious to get rid of the cause of his pain. The question then arose as to what was best to be done. On the one hand, as the anterior extremity of the tongue was free of disease, the removal of the entire right half was not justifiable. Moreover, to safely and thoroughly do this, it would have been necessary to divide the jaw at the symphysis, or the cheek from the angle of the mouth; the same step would have been required for the excision of the diseased parts through the whole thickness of the tongue. On the other hand, to cut away with knife or scissors the hardened tissues would have exposed the patient to great risk of hæmorrhage, which with difficulty only could have been checked. I therefore, on September 3rd, first tied the lingual artery on the diseased side, and then freely removed with a knife all the diseased structures. In

this way I hoped (1) to prevent loss of blood and (2) to retard the return of the cancer by diminishing the blood-supply of the part. The first end was completely obtained. The man was discharged well on September 23rd. In November, he came to show himself at the cancer out-patient department; there was then no sign of recurrence; he could protrude the tip of the tongue beyond the line of the teeth for half an inch. The tip, when thrust forward, was curved considerably to the right side, owing to the contraction following on the previous removal of parts. The buccal mucous membrane was in the same state as when first seen.

CASE III. *Ichthyosis Glossæ followed by Epithelioma of the Tongue.*—Samuel B., of Berwick Street, aged 56, a tailor, in bad health and poor circumstances, applied to the cancer out-patient department on May 1st, 1873. He positively denied ever having had syphilis. For ten years at least he knew he had had white tough patches, irregular in shape, on the dorsal surface of the tongue. These had varied in intensity and area at different times, but had never disappeared to any great extent. Eight months ago, a small elevated ulcer commenced on the left free margin a little way from the tip of the tongue; this had been cauterised several times, but continued to increase.

At the time of his application at the hospital, there was a ragged ulcer extending from the tip nearly to the base, and which involved nearly the whole left half of the tongue. The inner margin of the ulcer was thick, raised, and indurated; while the outer margin was irregular, and even deeply notched, from the pressure of the teeth upon the swollen organ. In the ulcer were two or three excavations, from which sloughs had separated or were separating. On the right half of the tongue, near the fore part of the dorsum, there was a patch covered by thick and leathery white scales of epithelium, rough and harsh to the touch. A similar, but less well marked condition, extended to the under surface of the tongue. The dorsum elsewhere was coated by a thick yellow adherent fur, except immediately behind the leathery patch, where there was an oval-shaped space free from epithelium. There was one enlarged gland beneath the angle of the left jaw. The tongue was freely movable, and speech and deglutition were fairly easy.

From the presence of some bronchitis and the general low state of his health, no operation was advisable at that time. The extensiveness of the ulcer rendered an operation at any time unfavourable; but, as the tongue was swollen, and was becoming still more so, the removal of the whole or a part of it seemed called for, if his general health improved, to prevent the long train of misery attendant upon the great enlargement of the tongue, which not unfrequently occurs when epithelioma of that organ is allowed to take its course uninterfered with. For some weeks, both while an out-patient under me, and an in-patient for bronchitis under Dr. Living, antisyphilitic remedies were tried, for the sake of testing the diagnosis as to which all who saw him were subsequently agreed. The patient convalesced from his bronchitis, but refused to undergo any operation, and left the hospital without permission. No improvement had occurred in the state of his tongue.

AMPUTATION AFTER RAILWAY ACCIDENTS.

By THOMAS INMAN, M.D.Lond., Clifton.

WHEN I was House-Surgeon to the Liverpool Infirmary, about thirty years ago, a man was brought in at ten o'clock at night. He had been brought in a car a distance of about eight miles, and had been lying on the ground four hours after the injury, on a cold night. On examining him, it was found that a railway-engine had taken off both his legs, one just below the knee, and the other just above it.

He was under the care of the late Mr. Bickersteth, who, without loss of time, removed all the smashed part of the leg whose knee was not injured, and secured the arteries. The popliteal artery was seen to be beating strongly, but not bleeding. The knee of the other limb was too much smashed to be saved, and amputation was resorted to in the lower third of the thigh. During the operation, the man was in a curiously somnolent condition, and only waked up when an artery was ligatured. He slept soundly on being put to bed, and recovered without a bad symptom, except that a few days revealed that more of the soft parts below the knee were injured than was at first supposed. These sloughed away. On my going to see the man on the morning after the accident, he told me that the engine had produced "a stun-like feeling," and that he had no sensation whatever in either limb from the time of the accident until he awoke next morning.

During my residence, we had another severe railway smash, this time of the elbow-joint. Every injured fragment which could be found was removed, and the man recovered perfectly and with a flexible joint.

One may therefore demur to Mr. Erichsen's sweeping assertion as to the hopelessness of operating in railway smashes.