

that dark colour is a guarantee of purity, that the brilliant amber or pure white colour is indicative of bad flavor, abundance of acid, and possibly that the fruit was immature or otherwise faulty before it was dried and sulphured to hide its defects.

STOCK FARMING.

Precocity in a Calf.

I notice that my statement made in the previous number of this *Journal*, "that heifers have been known to calve at the age of fifteen months" is called in question in a very emphatic manner by a writer to the "*Wynberg Times*" who signs himself "Vaccus"; who characterises such a statement as "Nonsense! Impossible!" and adds:—"I personally don't, nor won't believe it."

Well, I do not wish to overtax this gentleman's receptive faculty, but for the information of others who may not be so careful to exclude every fact which they have not verified for themselves, I quote the following cases in support of my previous statement. "About three years ago, a calf, about three months old, was sucking by its mother's side, when its owner, Mr. James Lowe, saw a young bull, owned by Mr. White, his neighbour, jump over a hedge and run towards the calf. Mr. Lowe hastened with all speed to stop his progress, but before he could arrive on the scene of action, the bull had jumped the calf, and *coitus* took place as usual. Fearing the consequences Mr. Lowe took what care of the calf that he could, but at the end of the natural term of gestation it brought forth a good bull calf—healthy, sizable, and strong—and which at the end of a year was sold for £9. The mother and calf are now both living." (Communicated to the *Veterinary Journal* by J. Adams, M.R.C.V.S., Warminster, England, May, 1889).

The following particulars have just been forwarded to me by Mr. Henry Nicholson of Richmond, Natal. He says:—"I notice an article about early birth in the *Cape Agricultural Journal*. You are behind the times. Mr. R. W. Cockerell, Fondeling, Polela, had a heifer calve down at 13 months, 24 days, and to be very exact four hours old. This is a fact, and at 18 months it is nothing unusual." I could produce other evidence in support of my previous statement, but I consider the above sufficient.

D. HUTCHISON, C.V.S.

Castration.—Advocating the Method of Torsion.

Castration, or emasculation of the normal horse is an operation performed in a variety of ways, each country having its own *pet* method. In portions of India, climatic influences prevent the making of an incision into the scrotum, so that the operation has to be performed, either by ligaturing the artery of the cord from the outside, or destruction of the artery by the use of two round sticks, an assistant holding the testicles, whilst the operator rolls the two sticks in such a fashion as to bruise the artery; also the barbarous method of crushing the testicles with a stone until reduced to pulp, then leaving what remains of these sensitive organs to the tender mercies of nature. Barbarous as this may seem, it does away with the dreaded sequelæ, *lockjaw* and *septicaemia*. These methods, fortunately, have not come within the pale of Colonial aborigines. We frequently hear of practitioners advocating castration, whilst the animal is standing, such a method in South Africa cannot be advocated, unless the would-be operator is desirous of having half a dozen broken ribs. Witness the operation for once, and that will be sufficient to deter you.

A favourite method of castration is that by the *ecraseur*, in which you have a chain on a wooden or iron frame. After having freed the testicle from the scrotum, the chain is passed over it to about three inches above the testicle; then by gradually twisting the handle of the instrument, or it may be ratchet fashion, the chain gradually diminishes in space, eventually tearing through the artery and integuments. There is certainly very little bleeding; but there is often extensive swelling from the lacerated ends of the vascular and non-vascular cords.

Actual Cautery.—This method is performed by securing the cord three inches above the testicle with an iron clamp, then burning the testicle off with a red-hot iron. In this operation there is no bleeding, unless it be that the artery has been severed too quickly. Actual cautery is certainly inconvenient, necessitating fires, &c.

The aboriginal method of releasing the testicle from the scrotum, then gradually tearing the cord until the testicle is withdrawn about half a foot, then severing the artery, is certainly not scientific, neither is it humane, because we do not in any way prevent bleeding, but rather in the *horse* enhance it (in young ruminants the artery occludes more rapidly than in horses), and all kinds of devices are resorted to, in trying to arrest bleeding, such as knee-haltering, driving into a stream or vlei, covering the loins with wet bags, &c. Why all this trouble? The simplest method, perhaps, *second* to applying a clamp to both testicles, including the scrotum, and allowing them to *drop off*, is *Torsion*, or castration by the ordinary iron or wooden clamp.

Before going into the method, let us glance at the ordinary naked eye appearances of the testicle, when outside of the scrotum. The organ is somewhat oval, having a somewhat soft, round prominence at its posterior aspect, the same on its anterior, but smaller and more adherent to the *testicle substance*. In the middle, somewhat anteriorly are the blood-vessels, being afferent and efferent. On close examination, we find that from each of these prominences there is a continuance of a cord resembling them in structure, proceeding upward. Between the posterior prominence, to *attach it to the testicle proper*, is a medium of rigid tissue, white and non-vascular, (and it seems to me that nature has placed this tissue here for the particular convenience of castration).

Having then secured the horse properly on his near or left side, wash the scrotum with a solution of permanganate of potash, ten grains to the gallon, in pure cold water, seize the lower or near testicle with the left hand *firmly*, make the incision well forward "in direct line with the raphe, or medium of the testicles," sufficient to allow the testicle to protrude; catch it with the right forefinger and thumb; bring yourself in direct line with it, seizing it with the forefinger and thumb of the left hand. With your knife, sever the connection between the posterior prominence and the testicle proper. Should the animal struggle, use gentle traction, when you can well up on the animal's relaxing traction, sever the anterior non-vascular cord; apply the clamp three inches above the testicle, firmly compress it, holding it with the left hand. With the right, take the testicle between the forefinger and thumb, and gradually twist it off; the same with the right testicle.

In old horses, ligature the cord nearest the clamp with *chromic carbolised catgut*. In young animals this is unnecessary. Carbolic oil is to be applied only when the operation is finished, and used freely to the scrotum and wounds. In using permanganate of potash there is no slipping of the testicles in the hands, as would be the case if carbolic oil were used; rather the reverse, we have an astringency which helps us in holding the scrotum and integuments.

When operating, I always immerse my instruments in permanganate, and have never seen any ill effects from the operation; it is, undoubtedly, the simplest antiseptic, and within the grasp of the poorest. Many a valuable horse has

been lost through bleeding, which is quite unnecessary. One important point not to be forgotten is, that on the third day the opening in the scrotum *must be re-opened*, to allow the exit of deleterious matter, if any.

J. F. SOGA, M.R.C.V.S., Vet. Surgeon.

Peculiar Cases in Castration.

During a professional visit to Griqualand East, the owner of a plater valued at eighty guineas, approached me with a view to castrating his entire, *Mike* by name. On examining the entire I could find nothing wrong with him, and asked the owner why he wanted to emasculate, to my mind, such a good animal. With the usual adjective he stated that when running alone the beast was excellent in time; but when in company he ran for a quarter of a mile splendidly, then all of a sudden clapped up like a concertina. On thorough examination of his heart, lungs, eye, penis, &c., he was in perfect health. Acting on his owner's wish I consented to castrate. Carrying my instruments, we made for the farm. Having cast *Mike*, I operated on the near testicle first. Imagine my astonishment when I found that the testicle had been turned, the artery being behind instead of in front. No. 2 testicle, the off one, was then seized and the same phenomenon presented itself.

Twice (only) before has this abnormality come to my notice; once in Somerset East, and once in Bomvanaland.

On ruminating, I came to the conclusion that it must have been during the second descent of the testicles that the twist occurred, and during the intense excitement of the race (the animals themselves being at high pressure nerve point), sudden traction was placed by the *cremaster muscle* on the very sensitive tissue of the testicle, hence the sudden collapse.

We all know that at birth the foal's testicles are in the scrotum after the fourth month they retreat into the abdomen, and do not return into the scrotum till nine months, a year, or, perhaps, not at all. It is during this return that the twist must occur.

Have any of our Colonial farmers come across this reversed condition of the testicles?

J. F. SOGA, M.R.C.V.S.

THE DAIRY.

Milk.

A *Bulletin* published by the New Hampshire Agricultural Experiment Station in America gives some interesting information on milk and matters relating to dairying.

In this *Bulletin* is given important results obtained in the course of a series of experiments carried out with cows Jersey, Ayrshire, Holstein, and Shorthorn breeds, with the purpose of determining the relative importance of certain influences known to affect the quality and quantity of milk.

The points covered by this investigation are the influences of—(1) breed, (2) individual characteristics, (3) period of lactation—*i. e.*, the time since calving, (4) time of milking—morning and night, (5) frequency of milking, (6) changes due to changed food.

Character of Milk.—Viewed under the microscope milk appears as a fluid in which countless millions of little spherical fat globules float. These droplets are pure butter fat. These vary greatly in size, both in individuals and in breeds. Globules are found that are only one forty-thousandth of an inch in diameter, and others one-twenty-five hundredth of an inch. The fat of the Jersey milk averaged from 4.34 to 6.06 per cent.; Ayrshire from 3.81 to 4.55; Holstein 2.84 to 3.54; Shorthorn from 3.50 to 4.15. These results were obtained from the same feed. The facts of this experiment show that

one of the Jerseys tested would give a pound of butter from fifteen lbs. of milk, while another's milk would give only one pound of butter for twenty-one lbs. of milk. The truth here is made apparent—namely, that "breed and individual characteristics are the two great factors that determine the richness of milk.

Period of Lactation.—The same cow on the same kind of food will yield richer milk after ten months of milking than at the end of one month. A cow that gave milk containing 3.5 per cent. of fat in November and December, on the same kind of food, the May following, gave milk with 3.9 per cent.; in August on pasture feed 4.16 per cent.; and in September 4.23 per cent.

Morning's vs. Night's Milk.—In the case of three cows whose milk was analyzed night and morning daily for a full year the *morning's* milk was richer than the *night's* milk during the time that the cows were on pasture feed, but when the same cows were put into the barn the reverse was true—that is, the *night's* milk was the richer.

The difference between morning and night's milk is quite marked; thus, during June, July, and August a Jersey cow gave milk which averaged as follows:—

Morning's milk,	6.26 per cent.	} Average 6.01 per cent.
Night's milk,	5.75 per cent.	

Difference	0.51 per cent.	in favour of morning's milk.
The same cow during January, February, and March gave:		
Morning's milk,	5.81 per cent.	} Average, 6.05 per cent.
Night's milk,	6.30 per cent.	

Difference	0.49 per cent.	in favour of night's milk.
Other cows gave like results not so marked.		

Frequency of Milking.—This experiment was made with two cows, a Shorthorn and Jersey. At the time of the commencement of the experiment the Shorthorn cow was giving 14.25 pounds of milk daily, in which there was 3.89 per cent. of fat, or 0.554 pounds of actual fat daily. In twenty-four hours of hourly milking she produced 16.25 pounds of milk in which was 5.27 per cent. of fat, or of total fat 0.856 pounds an increase of 5.45 per cent. in the total fat in twenty-four hours.

The Jersey produced, previous to the experiment, 10.07 pounds, in which was 6.02 per cent. of fat, or 0.606 pounds. The test was for seventy-two hours: during the first day she gained 22½ per cent. of fat, during the second 4 per cent., and during the third 3½ per cent., a total gain for the period of ten per cent. of fat. The gain in the amount of milk during this time was practically nothing. Here we have another important variation in milk *not due to food*.

First and last (Strippings).—It is a familiar fact that the last milk drawn from the udder at a given milking is much richer than the first. In the case of the Shorthorn cow that was milked hourly, the first four ounces of milk, and the last four ounces of the next full milking after the experiment, were analysed for fat. The first milk held 1.36 per cent. of fat, and the last 8.04 per cent.

How Milk is Formed.—It is sufficient for us to know that blood goes to the udder, carrying those portions of the food which have been digested and absorbed. From this blood supply milk results.

Starting at the teat there is the opening through which the milk is drawn; following this upwards it leads to a more or less well-marked 'milk reservoir': this is not always found. Innumerable branches or milk ducts lead out from this, dividing and subdividing, until the whole gland substance is traversed by small tubes. Opening into these tubes are the true secreting parts: these are little sacks lined on the inside with cells, which are the true points where milk is formed. The fat globules, says Foster, can be seen to form in these lining cells, and are forced out into the cavity of the little sacks. It is believed that the constituents of the