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AUGUST, 1894

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(ENGLISH AND SPANISH.)

CHAPTER II.

THE MODEL COW.

Imagine her standing before you. General style a wedge-shape, nearly the opposite of the beef type, or as the triangle to the parallelogram. Her quiet disposition is deceiving, in a measure. For, let a stranger, a stray dog, an unusual noise, or anything startling appear, and her meekness is laid aside; her quiet eye flashes, her head is thrown up from its normal position of a slight decline, her back seems to become rigid, tail slightly elevated, and nostrils extended. She stands on the defensive, or is ready to take the aggressive if any danger threatens her calf. Now, her appearance is that which is often called the nervous disposition. Every good dairy cow seems to be made up this way. But this nervous temperament of the cow should not be excited, or she will be short at the pail, and short in cream of what she does give: for the quiet meditative way should be hers when she is making milk.

But to her points: We note a rather long, dishing head, large, prominent eyes, set well apart and down her face; large muzzle and month, small, feminine ear, with rich, oily secretories inside; small tapering horn, if she is not of a polled

breed, though it may be good sized at butt; wide jaws, throat well cut up, and free from dew-lap until close to the brisket, a long ewe-neck, sloping shoulders, thin at the top but opening wide down at the forelegs, so that they stand well apart, showing wide chest and plenty of room for heart action. Let us step to the rear and note the "business end" of the cow. The first point that receives attention is the immense udder, extending from away up in front to away up her back parts, the further the better, with plenty of loose skin in her twist. I place great importance on the udder being extended well to the front, with four well-placed, medium sized teats, with two or four rudimentary teats; the skin should be loose and hairless; large, extended milk veins; crooked and large holes, for more depends on the size and numbers of these than on size of veins, for certainly the veins will carry off all the blood the hole will let back through to the heart. The famous cow "Jewel" has four on each side. "Alma," holding the diploma for best dairy cow of the Northwest, has veins away up to her front legs, and four holes on each side. These veins are called by different names, but are not so essential as to have the above characteristics. The so-called butter cord lies in the flank; it is a rounded cord, about the size of one's little finger to three times that size. I have noted that all good butter cows have it largely developed. But I find upon investigation that it is simply a cord to assist holding up the abdomen, and has no connection with the udder. The escutcheon—that is, the hair in the twist and on rear bottom of udder which goes the wrong way—is usually on good cows, but not always; it should be continuous, for if broken, it indicates the stopping of the flow of milk, or that it is not kept up through the year.

The back should be straight, but when age begins to tell, the spine will sink somewhat by reason of the weight of the stomach, and the incessant and large demands on the nerve force which runs through the spinal cord. Open back—that is, open large vertebræ, indicates large nervous force. This is of greatest importance, for on a good back hang all the

profits. It not only has to hold up the large abdomen, but is the insulator through which flies the nervous force.

Note the wide hips and pelvic bones; tail large at its juncture, but tapering down to a fine point below the hocks, with small bulb of oily matter at point, and with a good brush. These may seem of small importance, but each one has its special bearing on the making of a good dairy cow. Large barrel, with ribs well sprung, flat, and space between them, open twist, thin, bony thighs, small legs. Throw over all a loose hide, golden color, covered with thin hair, the more to the square inch the better, and you have a type of a dairy cow of which, if bred and fed aright, you will have no trouble in getting a good specimen.

Always breed to a dairy type of a bull, and from the time the heifer is born, always feed for a butter cow. She should be bred so as to come in from twenty to twenty-four months old, for nature sets at work those qualities that provide for the forthcoming young early in its life, thereby giving an impetus to the points toward milk instead of beef.

MANAGEMENT OF A CALVING COW.

The birth of any young animal is a time of great physical disturbance to the mother. The whole system undergoes a violent change. The circulation of the blood, which previously nourished the fetus, often making 10 per cent of the weight of the dam, is suddenly confined to the latter, and this is a serious matter for her. The flow of blood through the system is thus stimulated, and for a few days there must always be danger that any mistake in the management may lead to trouble of various kinds, unless means are taken to avoid this by judicious treatment. One who well understands the physiology of an animal may easily adapt the treatment to the necessities of the case; but this is a subject that is too much neglected in the education of the farmer or a dairyman. It is better that the whole subject should be considered from this point of view than that distinct rules should be laid down that can never cover every case that may happen, for there are so many differences in cows and in their general treatment

that no set of rules can cover all of them. Thus the right treatment of a cow or any other farm animal about to bring its young into the world must be based on some knowledge of what the animal needs in this trying part of its life, and this includes not only the management at the precise time of birth and immediately after it, but for some time previously, that preparations may be made for it.

There must, therefore, be some suitable training of the dam for this exigency as there is for all others in the life of any animal. The condition must be healthful, and every function, as of digestion, the action of the bowels and other organs, and even of what may well be termed the mental condition, should be in a state of quiet operation and wholly free from excitement. The feeding for a few weeks previous to the event expected should be light, but most nutritious. All undue stimulus by means of grain feeding is to be prevented, and if dry fodder, which is apt to be constipating, is used, this should be modified by such laxative food as roots or bran mashes. The action of the bowels is a most important thing to be attended to, as any interference with this is sure to affect the system injuriously, either to produce a feverish state of the system or to induce weakness by want of sufficient nutrition. In general, it may be said that in this respect the animal should be treated as if recovering from some sickness, and good nursing is to be given. The importance of this preparation may be realized by the fact that at the present time one of the most valuable cows in the world, one of the attractions of the World's Fair, and which has made more than a thousand pounds of butter in one year, is placed under the care of the first expert in this line, Mr. Fuller, the well-known Canadian breeder of Jerseys, who is paid the reasonable sum, under the circumstances, of \$400 a month to give his undivided attention to the feeding of this one cow during the test to be made at the Fair. This shows the idea of the owner of this cow as regards the importance of proper feeding. And, while this cow is thought to be a phenomenon, she is only a cow, after all, and is made after the same pattern as any other animal, only more highly developed by training.

The condition of the milk organs is then to be watched, and as they may be more or less active, they are to be treated accordingly. If the udder is unduly stimulated by rich food, given in excess of the actual needs of the dormant state of the animal, harm is sure to be done. The feeding must be such as will merely keep the animal in good health, without increasing the stored-up supply in the udder, which will be liberated on the birth of the young animal. It may be necessary to milk the cow if the udder is hard and inflamed by the excess of food. It may even be wise to reduce the condition of the animal by simple laxatives, as a pint of raw linseed oil or a pound of epsom salts, for the system is at once relieved by this extra action of the bowels. But it is always best to do this by the food if possible, and to do it in good time.

Then the mental condition of the animal is to be taken into account. Everyone knows that this is excited by the birth of a young animal, and in a state of nature the mother retires to a secluded spot where she is free from fear of danger to her offspring. This instinctive apprehension is allayed by keeping the mother secluded in a quiet place, and in a darkened pen, which should be a part of every stable, either for cows or mares, or even the smaller animals. Here a watch may be kept by the usual and trusted attendant until the young animal is dropped. Then, if all is well, for the time there should be no interruption or disturbance. A few hours may be given for the mother's excitement to disappear, which it will do very soon. The way of nature is for the mother to attend to the first needs of the young, and it is best generally to leave her to do this in the natural way. But if the previous method has been different, and the animal has been reared that way, and has been used to it, a calf may be picked up as soon as it is born, and before the cow has touched it, and taken to a distant pen provided for it, and there attended to and made comfortable. It will rest quietly until it becomes hungry, in a few hours, when the cow—also resting comfortably, and helped to this by a warm drink of oatmeal gruel, which is laxative and nutritious and quickly relieves exhaustion—may be milked, and the milk given at once to the calf,

which is thus taught to drink. If the cow and calf remain together the latter may feed in his own way.

Under such circumstances, there may be nothing wrong in a large stock for years, and many careful farmers have never in a long life had any trouble in this direction. And, indeed, if any security of this safety is expected it will be in this way. This has been the custom of the writer, and in more than twenty years' experience, he has never had anything happen to disturb the safety of all the farm animals, and never lost a young animal, or had a sick old one. This is due simply to the system of precaution which was taught in his young days and practiced since.

This quiet isolation is to be kept up for three or four days, and with cows four days should be the rule, for then the milk has become normal, and all risks of danger are quite over. Milk fever, the most to be dreaded of all diseases of animals at this time, is no longer possible, and the ordinary good treatment of the dam will bring her to the full condition of milking in the course of two weeks, which is time enough, and this is not to be hastened by too free feeding, or the first effect will be that common result, an attack of garget, or inflamed udder. This need never happen to any well-managed animal. Too much food is the prevalent cause of this trouble, after which comes exposure to cold or rain, which is the same in effect, before the animal has fully recovered from the strain on the system above mentioned.

There is a way of making haste slowly, or of losing all by being too hasty. And these are both true in feeding cows or any other animals in this condition. To go slow and sure should be the rule in feeding. Very gradual increase of food, and only as it is really needed by the gradually recovering animal, whose milk naturally increases as the young animal grows, is of paramount necessity. And at the first indication of excessive feeding the increase should be stopped. The milker of the cow mentioned is thought to be worth \$150 a month, and, after the feeding, this milking comes next, for it is this which will indicate the first result of mistaken feeding. One animal, of course, will vary in this respect from

others, and everyone is to be studied for itself. Some too eager persons will make the mistake of thinking that the food will all go to milk, but this really depends on the kind of cow it is, and as much harm may be done in over-excitement of the milk organs as that of the digestive functions.

CALVES, FOOD AND MANAGEMENT.

The growing period in the life of all animals subject to domestication is relatively an important one, and, therefore, during that period, they should receive every reasonable attention that can be given them. In rearing calves for the dairy, we require to bear in mind (1) that the development should be steady and continuous; (2) that while we should aim at vigorous muscular development, we do not want to encourage the fat-producing functions in any marked degree; and (3) that the development of nervous force should be encouraged by giving the animals large liberty in exercising. It will follow, then, that new milk, pea meal, corn meal, and oil cake will not occupy so prominent a place in the diet of a calf for the dairy as of one intended for beef. But they may be used to some extent, more especially new milk and oil cake.

The calves should, of course, have new milk for, say, two or three weeks from birth, and then new and skim milk for, say, two weeks, after which they will usually do very well on skim milk and certain adjuncts, more especially if the adjuncts are suitable. But it is impossible to lay rules that will be equally applicable to every case, owing to the great difference in the individuality of the animals. For instance, one calf with vigorous development may get along without any new milk after the age of two weeks, while another might require it for four weeks, or even for a longer period. While the aim should be to curtail the new milk ration as soon as this can be done without injury to the calf, care must be taken not to impede seriously the growth of the young animal, lest it sustain permanent harm. The last mistake would be the greater of the two. The change from new milk to skim milk should always be gradual, so much so that no

indication of it will be perceptible in the appearance of the animal. During this period of transition, oil cake is introduced, or ground linseed or flaxseed gruel, as may be deemed preferable. If the latter is used, it must of course be fed in connection with the milk, but if the former, it may be given with the meal to be mentioned below. The flaxseed gruel is made by soaking a small quantity of flaxseed in a large quantity of water and then boiling for one hour. When the gruel is added to the milk while hot it helps to bring the milk to a normal temperature. Otherwise, it may be heated on the stove or by pouring hot water into it. The former process is somewhat laborious, and the latter tends to undue distension of the stomach. However, the milk should not be fed when cold. When obtained from a separator it is in fine form for being fed.

The following are some of the most suitable adjuncts that may be used during the milk period: 1. Oats ground at first, and later, ground or whole. 2. Equal parts of ground oats and bran, or of ground barley and bran, or of ground oats, ground barley and bran, with linseed meal or oil cake or flaxseed gruel added as already described. No single grain ration will compare with oats in rearing calves, and so perfectly are they adapted to the requirements of the dairy calf that they may be used with much freedom, as an article of diet. The additional adjuncts in winter may consist of hay and ensilage, or sliced or pulped roots in lieu of the ensilage. In summer, a supplement of some nutritious soiling crop of fine growth will prove helpful; in fact, it is a necessity unless the calves are plentifully supplied with good pasture.

The conditions as to management generally require careful attention. The young animals should be kept in a loose box stall, which, in winter, must be warm. Several may be kept in one enclosure when there are proper facilities for giving each calf its due portion of milk. In summer this place should be darkened to afford them a refuge from flies, even though they may have the run of a grass paddock in addition.

It is more imperative with dairy calves than with those of the best breeds that they have abundant exercise to develop

nerve power in a high degree. This must continually be borne in mind on farms where a complete system of soiling is adopted, and where, in consequence, the same necessity for exertion on the part of the animals in securing their food is not felt.

The weaning period will vary with the abundance or scarcity of the milk supplies and the constitution of the calf. Where a calf is a good feeder, the weaning may, in case of absolute necessity, take place at the age of three months, but where there is the slightest tendency to delicacy or daintiness in taking food, it should be deferred until the calf is five or even six months old. Where skim milk is plentiful, it is put to a very good use when given to calves that have reached that age which would enable them to get along very well without it.

Whatever may be said in favor of rearing steer calves of the dairy breeds for veal, or for "baby" meat, I am convinced that there is no profit in trying to rear them for beef making when matured or nearing maturity, for the reasons (1) that they do not attain sufficiently heavy weights in a given time or when matured. (2) that they do not mature so quickly as animals of the beef breeds; (3) that the expenditure of food is too much in proportion to the increase in weight, and (4) that the meat does not possess qualities of the first order.

That there is a difference in the dairy breeds as to their capacity for beef making I will readily admit, but of none of them can it be said that they will produce steers of equal average weights with the Hereford or Shorthorn, when, say, two and a-half to three years old. There may occasionally be found some specimens that grow to a good size and weight in proportion, but they form the exception.

That the steers of the dairy breeds will not mature so quickly as those of the beef breeds is highly probable, for the reason that the cows and also the bulls do not mature so quickly. The beef breeds have been put under so high a pressure in reference to early maturity that it has to some extent impaired their milking properties, a pressure which

the dairy breeds would not stand without being injured likewise.

THE ART OF MILKING.

No doubt the product of a cow is changed for better or worse by improper milking, and it is quite as true that the art of milking must depend for its effectiveness upon a knowledge of the peculiar characteristics of the cow, especially of the cow's udder, and also of the method of production and the character of the milk. There is a reason for all things, and certainly there are reasons why milking should be performed in certain ways. These may be stated as follows:

First. Milking should be done gently and with ease to the cow, and with a certain manipulation of the udder to imitate, as much as possible, the action of a sucking calf.

Second. It should be done rather deliberately than otherwise.

Third. The udder should be drained to the last drop.

Fourth. The more frequently milking is done, the greater is the yield of milk, and the more butter there is in it.

These points all depend upon the fact that the cow's udder is not a reservoir of milk which is slowly accumulated drop by drop, as it is found during the period between two milkings, but it is a secreting gland which acts most copiously during a period of excitement. In this it resembles the salivary glands of the mouth, the pancreas, and other digestive glandular organs, and the lachrymal glands of the eye, which are equally secreting organs, and not reservoirs. These glands are constantly secreting their special fluids, to a small extent, but under excitement the secretions are greatly increased and flow copiously. The milk glands have the same peculiarity, and soon after the act of milking is begun, and not before, the udder fills and the milk flows until the supply of glandular tissue ready for conversion into milk is exhausted. Then a new growth of tissue begins and goes on in the interval, and it will stop under certain conditions if the milk is not drawn, when the small quantity of milk formed

in the udder will be absorbed, and the udder will dry up, as it is termed.

The milking should be done quietly and easily so as to bring the cow into a calm condition that will permit the secretion of milk to go on without any interference. The udder should be manipulated in such a manner as to excite the necessary nervous action required for the conversion of tissue into milk. This is done by squeezing the teats, and drawing them down and pressing them upward alternately. It should be done deliberately to give time for the conversion of the last lobule of glandular substance into milk, and not completed until this is effected.

The udder should be drained to the last drop, and the milking performed at such intervals as will produce the most copious secretion of milk, for the special reason now to be given. If a cow's udder is carefully separated from the carcass killed while in milking condition, it will be found to consist of a mass of spongy tissue, with a great number of separating ducts, like the various branches and sources of a stream, all beginning in dense glandular and fatty tissue at the upper part of the udder; and these may be traced, like the various diverging twigs of a bush until the finest branches end in masses of very minute globules of glandular substance of the form of clusters of grapes. Each of these minute lobules contains a single globule of fat. The whole udder, all along the milk ducts, has three secreting glands to some extent; but they are greatly more numerous at the upper part of the udder where this organ spreads broadly upon the surface of the abdomen, and receives an enormous number of exceedingly fine blood vessels, ramifying among the glandular tissue, and ending in branches which connect with these grape-like lobules.

FOODS FOR MAKING MILK.

There are persons, and some who claim to be professors of science, who insist that the food of a cow has no special effect on the milk; that the milk, being a product of the animal, is the same in all cases as long as the cow remains in

good health and all her functions are going on healthfully. This, however, is not in accordance with the belief or experience of those who feed the cows and whose business it is to procure the best quality of milk. Nor is the claim supported by the most intelligent and independent scientific students, who are more apt to depend upon their own investigations, carefully made and verified, than to take without question the conclusions of others whose reputation is based chiefly on the fact that they are foreign, and who are quite unacquainted with actual dairy practice, even in their own countries, being chemists and not practical men. Fortunately, this slavish dependence upon French and German chemists as guides for American dairymen and farmers is rapidly disappearing, and the leaders in American agricultural science are now investigating these matters for themselves, and as each is able to reach a certain conclusion, he is falling into line with the common experience of practical men who know that the food has everything to do with the quantity and quality of the milk of cows.

But something more than this is required for success in practice, and more especially just now when the value of all the foods offered for sale is higher than ever before, and the constant tendency of the prices of farm products is downward. The milk producer must now study more closely than ever the nature of those foods which are indispensable for profitable production of milk for all purposes, so that he may guide himself in accordance with his special needs.

The butter maker wants fat mostly and must feed for this; the cheese maker wants a large quantity of milk not excessively rich in fats, but with a sufficient proportion in it to give the required quality to the product; while the milk seller must have, according to the law, at least 13 per cent of solids, of which one-third nearly must be fat, and the caseine must be in excess of this proportion. The butter maker is not under the same stringent exigency in regard to the quality of the milk he produces, so far as the protection of the public by means of laws is concerned, but yet the necessity for profit is inexorable and even stronger than laws, while the cheese

maker and the milk seller are bound by penalties to produce milk up to a certain standard, which is 12 to 13 per cent of solid matter, of which the caseine is in excess of the sugar and the fats. But the butter maker must have a large excess of fat, and 5 and 6 per cent is as little as he can make profitable.

All this goes to show that a knowledge of the character of the foods used is indispensable for success to every one who is feeding cows for profit, and that each class of dairyman has a different point of view and end to reach from the others, and, to gain his end, each must vary his practice somewhat.

It is now all but universally accepted as a guiding principle of feeding animals that the fats of the food go directly into the blood from the digestive organs unchanged and make fat in the animal, and that the individual disposition of the animal determines whether the fat shall be deposited in the muscular tissue, as in the best mellow skinned beeves, or on the internal organs as tallow, as in the poor, hard-skinned, feeders, the udder of the cows, as in the special butter makers—the Jerseys and Guernseys—as breeds, and individual animals of all other breeds.

This leading principle being well understood it follows that the feeder of cows must necessarily choose the foods that are best adapted for his special needs. The butter maker will use those in which the fats are known to be well flavored and highly colored and in the largest proportion. The mere milk producers may ignore the fat elements of the food and take those substances which contain the flesh elements (the proteine) with a moderate proportion of fats only. For those foods which go to make flesh are those which will make the caseine of the milk, a substance which is almost precisely of the same composition as the solid matter of flesh.

The list here given shows the composition of the various foods in common use, as given in the last annual report of the Massachusetts State Experiment Station:

Per cent of air-dry matter.	Proteine.	Fat.	Starch, sugar, &c.
Cornmeal.....	9 to 16	3 to 5	73 to 83
Hominy meal.....	7 to 12	5 to 12	68 to 78
Peameal.....	21	2	55
Linseed-oil meal.....	30 to 39	6 to 9	32 to 44
Cottonseed meal.....	36 to 51	9 to 14	20 to 33
Wheat bran.....	15 to 20	3 to 6	51 to 62
Brewers grain.....	16 to 33	2 to 6	43 to 67
Cocoa dust.....	15	25	45

The most conspicuous point in these figures is the wide difference in the composition of several samples. This shows how necessary it is that these should be purchased on analysis, as the value of any one for a special use may vary 50 per cent, or more, even, from the average, and, further, this difference will explain how it is that the results from their use may vary so much as to cast doubt on the reports made of the feeding of them. And thus, in the use of them, the market value can only be justly based on the quality, or the feeder, to be safe, must estimate them on the basis of the least value for the elements of nutriment contained.

HOW TO MAKE BUTTER.

The management of the cream is the most particular of all the special points in butter making, both as regards the quantity and the quality of the butter. Sweet cream makes less butter, and that of a less pleasant flavor, than soured cream. But if the souring is carried too far the flavor of the butter is deteriorated, as the acidity hastens the production of those volatile acids which, when in excess, produce that condition which is known as rancidity. It is to the very moderate quantity of these acids in the butter that the pleasant, nutty flavor and peculiarly agreeable odor of good butter are due. The proper condition of the cream is called ripeness. The ripening of cream consists in the production of a certain quantity of lactic acid in the milk, of which the larger part—from 60 to 75 per cent—of the cream consists. The quantity of acid in the cream should be no more than is sufficient to give it

a mild, pleasant-sour taste, and this may be produced precisely by the following methods, with shallow or deep cold setting, respectively: With the former, the milk is set in shallow pans, at a temperature of sixty to sixty-two degrees, in pure air, for thirty-six hours, when it is skimmed, the milk being still sweet or slightly soured. The cream, skimmed at intervals of twelve hours, is kept in a covered jar at the same temperature, and fresh cream is added to the first skimmings. The whole is gently stirred to mix all together. At the expiration of thirty-six hours from the first skimming the cream will be in the best condition for churning and "ripeness," as it is now termed, and for making excellent butter. With the cold air and deep-pail setting, the cream is skimmed twenty-four hours after the milk has been set, and is kept in a pail set in the tank at the usual temperature of forty-five degrees until there is enough for the churning, or the cream of each skimming may be churned each day. But the cream must then be ripened before it is churned. This may be done by exposing the cream to a temperature of sixty to sixty-five degrees for twenty-four hours to produce the requisite acidity or ripeness; but this delay may be avoided and the ripening hastened by adding a sufficient quantity of sour milk or buttermilk of the previous day's churning to produce this sourness. Generally one quart of the sour milk to twenty quarts of the sweet cream will be enough for this purpose, the cream being gently stirred so as to mix the sour milk evenly through it. The precision with which this ripening is effected is the main point in making the best quality of butter, and to be sure about it, the thermometer should be used to regulate the temperature and the time should be noted; for temperature and time act together, and one element being in excess, the other needs to be reduced to reach the desirable effect. Before putting the cream in the churn the cream jar should be brought into a warm room for twelve hours and stirred always gently until it is as warm as sixty-two or sixty-five degrees if in cold weather. If in warm weather, the average temperature should be fifty-five degrees, ranging one or two degrees higher or lower according to circumstances. The churn is

scalded out and then rinsed with fresh, cold water, when it is ready for the cream. Seated on a chair by the churn, the operator turns the churn at eight revolutions to the minute, a little faster than a second to each turn. At first, gas will be evolved from the cream, and this will need to be let out two or three times by opening the vent hole, during ten minutes, when it will cease. Soon the cream will thicken, when a few quicker turns will be made now and then to break it down. When it begins to make a splashy noise the butter is coming. Then a view should be taken to see that the butter is not overchurned. When it is in grains as large as wheat grains and peas the churning is done. The buttermilk should be drawn off through the opening at the bottom and cold water poured into the churn, which should be moved back and forth a few times to wash off the milk.

It is a common thing in dairies to add a handful of salt to the buttermilk in the churn before drawing it off from the butter. It is believed that this facilitates the separation of the butter from the buttermilk. It is also recommended to wash the butter in brine as it comes from the churn. Both these practices are justified by good reasons. Butter is lighter than milk, and even than water; but not so much lighter than water as to cause an easy separation of it from the liquid. Milk is viscous and adherent to the butter, and it is not easy to separate the butter from it quickly, on this account. Then, when salt is added to the buttermilk the density of it is increased, and, necessarily, the butter floats from it more easily. So when brine is poured into the churn when the buttermilk is drawn off, its density causes the butter to rise in it more freely, and at the same time it dilutes the milk adhering to the butter, and this, too, hastens the separation. The importance of this simple practice is thus perceived.

The complete removal of all the milk from butter intended for long keeping is indispensable. The caseine of the milk is really a ferment, an active chemical agent in the decomposition of the butter, and the change of the fat, in part, to volatile acids which confer a very undesirable odor and flavor to the butter. But when the butter is intended for immediate

use, it does not require such complete separation from the milk, and a little of it may be left in the butter with advantage, as it develops that fine flavor which is known as the nutty taste and the aromatic odor which give the sweetness to butter. Without these butter is quite insipid and has a very indistinct odor of mere fat. Thus the butter maker may spoil his product by too much carefulness in washing it, and do what is often thought to be a fault, and the effect of over-washing.

This should be well understood. Water can not take anything from fats of any kind. They can not dissolve any part of it, and thus butter is not itself hurt in any way by any amount of washing in pure water. But the washing takes from the butter the small remnant of milk remaining in it and leaves it pure and necessarily flavorless. In course of time, a few days or longer, the butter begins to change by an inherent chemical process, and the flavoring acids are slowly developed in it. And then it is ripe, much as a fruit becomes ripe, and acquires its finest flavor by the production of the first elements of decomposition in it. If butter is to be packed for future use, this change in it will go on sufficiently without any help from a starter in the form of a remnant of the buttermilk, but if it is for immediate use, a minute quantity of milk is desirable in it.

[To be continued.]

GANADO AMERICANO.

CAPÍTULO II.

LA VACA MODELO.

Imaginaos que está la vaca á vuestra vista! Su aspecto general es el de una cuña, casi la antítesis del tipo del toro y guardando con él una relación análoga á la que existe entre el triángulo y el paralelógramo. En apariencia es mansa, pero en realidad no siempre lo es. Si alguna persona desconocida

ó un perro extraviado se acerca á ella, ó si oye algún ruido extraño, ó acontece algo sorprendente, vereis que su mansedumbre se desvanece, que su mirada tranquila se vuelve airada, que su cabeza se levanta separándose de su posición normal que es inclinada hacia la tierra, que su lomo se vuelve rígido, que su cola se levanta lijeramente, y que las ventanas de su nariz se ensanchan en gran manera. Es que entonces se ha colocado en la defensiva, y está lista para el ataque si es que algún peligro amenaza á su ternero. A este estado de la vaca se le llama generalmente su temperamento nervioso. Todo buena vaca de leche parece estar constituida de esta manera. Mas no debe excitarse esta condición nerviosa, porque el resultado de ella será que la vaca tenga poca leche, y que la que dé no abunde en crema. Para que la vaca dé buena leche es necesario que se mantenga en su actitud sosegada y meditativa.

En cuanto á sus caracteres debe decirse que los principales son los siguientes: Una cabeza mas bien larga y aplanada, ojos grandes y prominentes bien separados uno de otro y colocados bastante abajo en la cara, boca y nariz grandes, orejas pequeñas y femeninas provistas en su interior de glándulas secretorias de abundante líquido oleoso, cuernos pequeños y puntiagudos, si no es de la raza que carece de ellos (estos cuernos, cuando los hay, pueden ser de buen tamaño en la base); quijadas anchas, garganta bien cortada y libre de papadas hasta llegar á la panza, cuello arqueado hacia dentro, y cuartos delanteros inclinados, delgados en la parte alta y ensanchados cada vez más hasta alcanzar las patas, de manera que se mantienen bien separados uno de otro, mostrando un ancho pecho y dejando capacidad bastante amplia para la acción del corazón. Si se mira á la vaca por la parte de atrás se encontrará que lo primero que presenta es su inmensa ubre, que ocupa un grande espacio y está cubierta por piel floja y elástica que permite fácilmente el ensanchamiento y contracción del organo. A mi juicio es de gran importancia que la ubre se extienda bien hacia la parte delantera y que tenga cuatro pezones bien situados y de tamaño mediano además de otros rudimentarios que pueden

ser dos ó cuatro. La piel de la ubre debe estar desprovista de pelos. Los vasos ó canales por donde se excreta la leche deben ser grandes y bien ramificados. Los orificios para la excreción deben ser numerosos y de grande diámetro, porque la cantidad de la leche obtenida depende más del tamaño y cantidad de estos orificios que del tamaño de los canales mismos. La famosa vaca "Jewel" tenía cuatro orificios en cada lado del pezón. La vaca "Alma," que obtuvo un diploma por ser la mejor vaca lechera del Noroeste, tiene las venas ó canales secretorios extendidos hasta las patas delanteras y cuatro orificios en cada lado del pezón. Estas venas tienen varios nombres, pero no es tan esencial ocuparse de ellas como de los otros caracteres que se han mencionado.

La llamada "cuerda de la mantequilla" está en los costados, y es una cuerda ó vena redonda cuyo grueso ó tamaño varía desde el del dedo meñique hasta tres veces el mismo diámetro. He notado que todas las vacas que son buenas mantequilleras tienen esta cuerda sumamente desarrollada: pero también he encontrado después de la oportuna investigación que no es más que una cuerda que ayuda al sostenimiento del abdomen, sin tener conexión alguna con la ubre. El "escudo" (escutcheon), es decir el pelo que se nota en el cuello y parte posterior de la ubre y que crece en sentido inverso, es cosa que se encuentra con frecuencia, aunque no siempre, en las buenas vacas. Caso de encontrarse debe ser continuo, porque si está interrumpido es señal de que puede interrumpirse la secreción de la leche, ó de que esta no puede conseguirse durante todo el año.

El lomo debe ser recto, pero cuando la vaca empieza á ponerse vieja el espinazo se hunde un poco, por razón del peso de la panza, y por la incesante y gran demanda ejercida sobre la fuerza nerviosa que corre á la largo de la médula espinal. Anchas y grandes vértebras indican una gran fuerza nerviosa. Esta es de la mayor importancia, por lo cual suele decirse que de un buen lomo penden todas las ganancias. El hecho es que el lomo no solamente es el sostén de donde cuelga el grande abdomen, sino que es también el aislador por el cual corre la fuerza nerviosa.

La pelvis de las vacas debe ser ancha. La cola debe ser gruesa en el punto de inserción, pero debe ir disminuyendo en diámetro hasta llegar á una punta fina, en que debe tener un bulbo para segregar una sustancia oleosa, terminando todo con una buena cantidad de pelo. Esto puede parecer de poca importancia, pero la verdad es que cada uno de estos caracteres tiene su especial significado en el conjunto de los que deben reunirse en una buena vaca lechera. La caja del cuerpo debe ser grande, las costillas bien abiertas, chatas y dejando suficiente espacio entre una y otra, las ancas delgadas y huesosas, las patas chicas y femeninas. El cuero suave, de color de oro, cubierto de pelo, y cuanto mas espeso tanto mejor, completará el tipo de una vaca de leche, que bien tratada y alimentada satisfará todas las exigencias. Si se trata de crianza debe buscarse siempre para estas vacas un toro de la misma clase. En cuanto á la ternera debe alimentársela desde que nace con el objeto de hacer de ella una vaca mantequera. Este procedimiento debe continuarse de manera que á los veinte ó veinticuatro meses de edad pueda dejársela ser madre, pues que la naturaleza provee desde los primeros años de la vida á lo que se necesita para fijar las cualidades que quieren obtenerse más tarde. De esta manera se puede dar desde el principio mayor impulso á la producción de la leche que á la de la carne misma del animal.

TRATAMIENTO DE LAS VACAS PREÑADAS.

El momento del parto en todos los animales está siempre acompañado de perturbaciones físicas de gran tamaño. Todo el sistema del organismo experimenta un violento cambio. La circulación de la sangre con que previamente se alimentaba al feto, cuyo peso constituye á menudo la décima parte del de la madre, se concreta súbitamente á la de esta última, originándose de ello una situación seria. El curso de la sangre por todo el sistema se encuentra estimulado, y por espacio de algunos días hay siempre peligro de que un error en el tratamiento pueda causar graves males. Uno que entienda bien la fisiología de un animal puede comprender fácilmente el tratamiento adecuado

para las necesidades de cada caso, pero este es punto por desgracia demasiado desatendido en la educación de los hombres de campo. Es mejor que todo el asunto sea considerado desde este punto de vista, pues que no es posible dar reglas fijas aplicables á todos los casos, siendo tan grandes las diferencias que existen en las vacas. En realidad el tratamiento adecuado á que debe someterse una vaca ó cualquiera otro animal de los que se dedican á la agricultura, cuando está próxima á parir, debe descansar sobre el conocimiento de lo que el animal necesita, no solo en este momento crítico de su vida, sino durante cierto tiempo antes y después, de donde resulta que deben hacerse con tiempo los debidos preparativos. Debe haber un tratamiento adecuado para la madre en esta circunstancia, como debe haberlo igualmente en todas las otras emergencias de la vida del animal. La vaca debe encontrarse en buen estado de salud, y con todas sus funciones, como la digestión, la acción de los intestinos, y la de todos los demás órganos del cuerpo, en el orden normal. Debe tener también tranquilidad, en todos los sentidos, debiéndose procurar mantenerla alejada de toda causa de irritación ó sobresalto. Por el espacio de algunas semanas antes de que ocurra el parto debe darse á la vaca un alimento ligero pero del carácter más nutritivo. Debe evitarse estimularla demasiado dándole mucho grano; y si se la alimenta con forraje seco, que generalmente produce estreñimiento, debe corregirse este mal resultado con el uso de alimentos laxantes como raíces, ó atoles de salvado. Es de grande importancia conservar los intestinos en buena condición, puesto que toda perturbación en ellos causará ciertamente un daño serio al sistema, bien produciendo un estado febril, bien causando el debilitamiento del animal por falta de la nutrición necesaria. En general puede decirse que en este respecto debe tratarse á las vacas en semejante estado, como se haría si estuvieran convalesciendo de alguna enfermedad en que es indispensable cuidarlas con esmero.

Puede formarse una idea de la importancia que se da por los que entienden de esto á los preparativos de que se trata recordando lo que pasó con una de las vacas de más valor en

el mundo exhibida en la Exposición Universal Colombina de Chicago. Esta vaca que en ocasiones ha producido más de mil libras de mantequilla en un año estaba allí puesta al cuidado del primer experto en estas materias, que es el bien conocido Mr. Fuller, criador canadiense de vacas de la raza denominada "Jersey." A este señor se le pagaban \$400 al mes para que atendiese debidamente á la alimentación de la vaca antedicha durante la prueba á que se sometió al animal en aquel certamen. Esto demuestra bien claro cuales son las ideas del amo de la vaca con respecto á la importancia de alimentar á esta del modo debido. Verdad es que á esta vaca se la puede considerar como una cosa fenomenal, pero aunque así sea, siempre es una vaca con las mismas cualidades fundamentales que todas las otras, aunque desenvueltas y perfeccionadas hasta el grado más alto por los tratamientos adecuados.

Otra cosa á que debe atenderse con cuidado es la de procurar que se mantengan en buen estado de actividad los órganos secretorios de la leche. Si se estimula indebidamente la ubre por medio de alimentos ricos, dados en exceso de las necesidades del animal, es cosa cierta que resultará daño. El alimento debe ser tal que conserve al animal en buen estado de salud sin aumentar demasiado la carga de la ubre, que no tendrá salida sino después del nacimiento del ternero. Puede hasta ser necesario ordeñar la vaca si es que la ubre se encuentra endurecida é inflamada por exceso de alimento. Puede suceder también que sea prudente reducir la constitución del animal usando purgantes sencillos, tales por ejemplo como una pinta de aceite de linaza cruda, ó una libra de sal de Epsom, puesto que el sistema quedará inmediatamente aliviado por virtud de este movimiento intestinal. Es siempre mucho mejor no recurrir á las medicinas y hacerlo todo y en debido tiempo por medio del alimento, si es posible.

Además de esto debe también tenerse siempre cuidado con que nada moleste á la vaca, ni perturbe el reposo en que debe estar. Todo el mundo sabe que apenas nace el ternero la vaca se retira, cuando puede hacerlo, á algún lugar separado donde esté libre de temores con respecto á este último. A

este instinto materno hay que dar satisfacción poniendo la vaca en algún lugar tranquilo y de poca luz, en el interior del establo. Estos lugares deben siempre encontrarse, tanto para el uso de las vacas como de las yeguas y hasta de los otros animales menores, en todo establo bien construido. El individuo que está á cargo del establo ó en especial de la vaca preñada debe vigilar con cuidado mientras se encuentre en aquel lugar de retiro hasta que llegue el momento del parto. Cuando este ocurra, si no se presenta novedad alguna, no debe hacerse nada que queda interrumpir, suspender ó perturbar el acto. Deben darse por lo menos algunas cuantas horas á la vaca parida para que desaparezca la perturbación causada por el parto. La naturaleza misma hace que la madre atienda desde luego á las primeras necesidades del ternero, y es mejor dejarla sola y que ella misma haga las cosas en el orden natural. Pero si en épocas anteriores la vaca se ha encontrado sometida á un tratamiento diferente á que el animal esté acostumbrado, deberá entonces cogerse el ternero desde el momento mismo en que nace y antes que la vaca lo haya tocado, llevándolo á otro lugar debidamente preparado para recibirlo y donde será atendido como se requiere. Hay que dejarlo quieto hasta que al cabo de algunas horas se sienta con hambre. Entonces la vaca, que también ha estado descansando con toda la comodidad posible, y á quien debe haberse dado para conseguirlo una bebida caliente de atol de harina de avena, que es purgante y nutritiva al mismo tiempo, puede ser ordeñada, para darle en el acto esta leche al ternero, á quien de esta manera se enseñará también á beber desde el primer día. Si la vaca y el ternero permanecen juntos hay que dejar á aquella que alimente á este á su manera.

Teniéndose este cuidado puede suceder que nunca ocurra novedad alguna por espacio de muchos años, aún en fincas donde haya un gran número de vacas. Hay muchos hacendados cuidadosos que jamás han tenido en toda su vida ningún contratiempo á este respecto. En realidad no puede contarse con ninguna esperanza de seguridad sino procediendo de esta manera. Esa ha sido la costumbre del autor de este artículo, y en más de veinte años de experiencia ni le ha acontecido

nunca cosa alguna que afectase la seguridad de los animales dedicados á la agricultura, ni ha perdido nunca ninguna cría, sea potro ó ternero, ni tenido tampoco ningún enfermo. Esto se ha debido simplemente al sistema de precaución que se le enseñó desde joven y que después ha practicado constantemente. El aislamiento de la vaca en un lugar tranquilo debe continuarse por tres ó cuatro días (cuatro es la regla general), porque entonces la leche se encuentra ya en su estado normal y casi todo el peligro ha pasado completamente. Ya no es posible que se presente la fiebre de la leche que es la enfermedad más terrible de todas las que puede tener un animal en aquel estado. El buen tratamiento ordinario irá trayendo poco á poco á la vaca al estado de salud necesaria para poder ser ordeñada sin riesgo alguno. Esto se conseguirá al cabo de dos semanas, y será bueno no acortar este tiempo dando demasiado alimento á la vaca, porque de lo contrario puede sobrevenir una enfermedad, ó por lo menos una inflamación de la ubre, que jamás se presenta en ningún animal bien tratado. El demasiado alimento es la principal causa de estas afecciones, pero la exposición al frío ó á la lluvia, antes de que el animal haya recuperado sus fuerzas extenuadas por virtud del parto, es también causante de graves males.

En estas cosas debe procederse pronto andando despacio, porque puede perderse todo por andar con demasiada precipitación. Y esto es esencialmente verdadero cuando se trata de la alimentación de las vacas ó de cualesquiera otros animales que se encuentran en este estado. La regla que debe seguirse entonces invariablemente es andar despacio pero con paso seguro. Un aumento gradual en el alimento, y solo el que se necesite en realidad para la recuperación paulatina de las fuerzas perdidas, y para la producción de la leche que naturalmente se aumenta á medida que crece el ternero es de la más imperiosa necesidad; y en el momento en que se vea la menor indicación de una alimentación excesiva debe ponerse término á aquel aumento.

Al ordeñador de la vaca antes mencionada se le pagaban, según se ha dicho, \$150 al mes, lo que demuestra que después del cuidado y responsabilidad de alimentar la vaca, que ocupa

el primer puesto, viene en segundo lugar la cuestión de ordeñarla, en la que se verá claro el mal resultado de cualquier sistema erróneo de alimentación, caso de haber existido. Cada animal por supuesto tiene que diferir y diferir en este respecto como en otros, de todos los demás de su especie, así es que á cada uno se le tiene que estudiar individualmente. Hay personas demasiado precipitadas que padecen el error de creer que todo lo que come el animal se vuelve leche; pero esto depende en gran manera de la clase especial á que la vaca pertenece, y tanto daño puede hacerse excitando demasiado los órganos secretorios de la leche como perturbando las funciones digestivas.

ALIMENTACIÓN Y TRATAMIENTO DE LOS TERNEROS.

La época del crecimiento de los animales sujetos á domesticación es relativamente importante, y en consecuencia de ello resulta necesario que se le preste la debida atención. En la crianza de los terneros, en una lechería, se necesita tener presente: 1° que el desarrollo del animal sea regular y constante; 2° que si bien es cierto que debe aspirarse á un desarrollo muscular vigoroso, también lo es que debe evitarse el aumento de la gordura en ningún grado notable; y 3° que el desarrollo de la fuerza nerviosa debe ser fomentado, dando á los animales la mayor libertad para hacer ejercicio. De aquí se sigue que la leche nueva, la harina de chícharos, la de maíz, y el bagazo de las semillas aceitosas, no ocupan un lugar tan prominente en la alimentación de los terneros dedicados á la lechería, como en la de los dedicados al matadero después de que crezcan. Estos alimentos sin embargo deben usarse en cierta cantidad, especialmente la leche nueva y el bagazo antes nombrado. Los terneros deben alimentarse con leche nueva por las dos ó tres primeras semanas subsiguientes á su nacimiento. Después hay que darles una mezcla de leche nueva y de leche descremada por espacio de otras dos semanas; y después de transcurridas estas se les podrá mantener muy bien con leche descremada y con otras cosas á propósito. Es imposible dictar reglas aplicables á todos los casos, lo cual

depende, como se ha dicho, de la gran diferencia que existe individualmente entre los animales de la misma especie. Un ternero de vigorosa constitución puede por ejemplo pasarlo muy bien sin ninguna leche nueva á las dos semanas de haber nacido, mientras que puede haber otro que necesite la misma alimentación por cuatro semanas y hasta tal vez por más largo tiempo. El fin á que debe aspirarse consiste en acortar la ración de leche nueva tan pronto como pueda hacerse sin perjuicio para el ternero, teniéndose cuidado de no impedir seriamente el crecimiento del animal, no sea que le sobrevenga daño permanente, lo cual después de todo sería la mayor equivocación que pudiera cometerse.

El cambio de la leche nueva por la leche descremada debe ser gradual hasta tal punto que no debe ser perceptible en la apariencia del animal ninguna indicación de que aquel se ha efectuado. Durante este período de transición se puede usar el bagazo antes mencionado, ó bien harina de linaza cruda ó cocinada en forma de atol, según se estime preferible. Si se usa este último alimento, debe emplearse también la leche, pero si se usa el bagazo habrá que dárselo á la vaca en unión de la harina que se mencionará más tarde. El atol de linaza se prepara hirviendo por el espacio de una hora en una grande cantidad de agua una pequeña porción de semillas de linaza; si entonces, y mientras esté caliente, se le mezcla con leche, la temperatura de esta se pondrá á la altura normal, lo cual es de importancia, pues que de otro modo sería necesario calentar la leche en una estufa, ó mezclarla con agua caliente. El primero de estos dos medios implica algún trabajo y el segundo tiende á producir una expansión indebida del estómago. El hecho es que la leche no debe darse como alimento estando fría.

Los alimentos enumerados en la siguiente lista pueden considerarse como los mejores entre la clase de adjuntos que habrán de usarse durante el período de la leche, á saber: 1. Avena: para los primeros días molida, para más tarde molida ó entera. 2. Una mezcla en iguales partes de avena molida y de salvado, ó de cebada molida y salvado, ó de las tres cosas juntas, agregándole harina de linaza ó bagazo

de semillas oleosas, ó atol de linaza, procediendo para hacer la mezcla en el orden que se ha explicado. No hay ninguna cosa que pueda compararse con la avena para alimentar á los terneros y se la debe usar con tanta frecuencia y abundancia como sea posible.

Los alimentos que deben usarse como acesorios ó adjuntos en la época del invierno son el heno, el forraje ensilado y las raíces ó tubérculos preparados en forma de pulpa ó cortados en rebanadas. En el verano puede usarse con provecho alguna yerba tierna y nutritiva, la que á decir verdad es siempre necesaria á no ser que se tengan abundantes pastos.

El tratamiento en general debe ser cuidadoso. Los terneros deben tenerse en departamentos amplios, pero cerrados, que en el invierno deben calentarse. Si hay las propias facilidades para darle á cada uno de ellos su debida ración de leche podrán ponerse varios en un mismo compartimiento. En el verano debe este conservarse oscuro con el objeto de que las moscas no vengán á molestar á los terneros. Junto con estos compartimientos puede haber un pequeño corral sembrado de yerba de pasto donde el animal pueda correr.

El ejercicio abundante es una de las cosas que deben buscarse con más cuidado para la debida crianza de los terneros, por cuanto constituye el mejor medio de desenvolver su poder nervioso. Esto es más esencial todavía cuando se trata de terneras destinadas para ser en su día vacas de leche. Éste es asunto que deben tener siempre á la mira los agricultores en cuyas fincas se acostumbra abonar todo el terreno, y donde por consecuencia no se necesita que el animal haga muchos esfuerzos ni ejercicio notable para obtener su alimento.

El período de destetar los terneros varía en proporción á la abundancia ó escasez de la leche y á la constitución del animal. Cuando un ternero se alimenta bien podrá ser destetado en caso de absoluta necesidad á la edad de tres meses; pero cuando exista en él la tendencia más lijera á hacerse delicado en el alimento, debe posponerse el destetamiento hasta que llegue el animal á la edad de cinco ó seis meses. Podrá usarse la leche descremada con mucho provecho dándola de

beber á los terneros aún después de haber llegado á aquella época en que realmente no la necesitan.

Por más que se diga en favor del sistema de criar novillos de la raza lechera para envialos al matadero, tengo la convicción de que no hay ventaja en darles este destino, cuando han llegado á la edad de su completo desarrollo, ó están próximos á alcanzarlo. Las razones que tengo para ello son: 1^a, que no tienen todavía el suficiente peso; 2^a, que los novillos de estas razas no se desarrollan tan pronto como los de las razas propias para el matadero; 3^a, que el gasto de la alimentación es demasiado grande comparado con el aumento del peso; 4^a, que la carne de los terneros de esta clase no es de primera calidad.

Admito sin dificultad que hay muchas diferencias en este respecto dentro de las mismas razas de vacas lecheras, pero también sé que en ninguna de ellas se pueden ver novillos de tanto peso como los que se encuentran en la raza de "Hereford" ó de "Shorthorn," cuando tienen de dos y medio á tres años de edad. Podrá haber de vez en cuando algún novillo de raza lechera que tenga buen tamaño y peso en proporción, pero eso será seguramente una excepción de la regla.

Es cosa que también puede probarse sin gran dificultad que los novillos de las razas lecheras no alcanzan su desarrollo completo tan pronto como los de las otras razas destinadas para el matadero. A las vacas y á los toros le sucede lo mismo. Los animales que se destinan tan solo para la producción de carne han sido sometidos á tratamientos tan enérgicos para obtener prontamente su desarrollo, que este se ha efectuado hasta cierto punto á expensas de las otras cualidades que se cultivan para obtener una vaca lechera. Los terneros de la última raza no resistirían aquellos procedimientos sin perjuicio de su salud.

EL ARTE DE ORDEÑAR.

No queda duda alguna de que el producto de una vaca se cambia para bien ó para mal por virtud de la manera especial con que se haga el ordeñamiento. Este en realidad es un verdadero arte, que para ser bueno y productivo de buenos

efectos, ha de fundarse en un conocimiento perfecto de los caracteres distintivos que presenta la vaca, y especialmente de la organización de su ubre, y de los métodos estudiados par la mejor producción de la leche. Todas las cosas tienen una razón de ser, y ciertamente son varias las que exigen que el ordeñamiento se ejecute de cierta manera. Estas razones pueden recapitularse como sigue :

1^a. El ordeñamiento debe hacerse suavemente y sin dar molestia á la vaca, manipulando con la ubre de tal manera que se imite en cuanto sea posible la acción del ternero cuando está mamando.

2^a. Debe hacerse más bien con calma que de prisa.

3^a. Debe sacarse de la ubre hasta la última gota de leche.

4^a. Mientras más frecuente sea el ordeñamiento, mayor será el rendimiento de la leche y mayor la cantidad de mantequilla que se encuentre en ella.

Estas reglas están fundadas en el hecho de que la ubre de la vaca no es un depósito de leche que se haya ido acumulando allí gota por gota, sino una glándula secretoria que ejerce su acción más copiosamente durante un período de excitación. En esto se parece á las glándulas salivares, al pancreas, á las glándulas del sistema digestivo, á las lacrimales, y á otras que son órganos secretorios y no depósitos. Estas glándulas están constantemente segregando sus fluidos especiales en pequeñas cantidades. Pero cuando se las excita la secreción aumenta considerablemente y las descargas son copiosas. Las glándulas que segregan la leche tienen la misma peculiaridad, y poco después de que empieza el acto del ordeñamiento, y no antes, la ubre se llena y la leche se descarga hasta que se agota por completo la cantidad segregada. Entonces principia el período de una nueva secreción que continúa hasta que se verifica un nuevo ordeñamiento. Podría suceder que no sacándose la leche fuese esta absorbida y que se secase la ubre como se dice generalmente. Ya se ha dicho que la vaca debe ser ordeñada de una manera sosegada y suave á fin de que el animal permanezca quieto y no haya nada que perturbe la secreción de la leche. La manipulación de la ubre debe hacerse como se ha dicho, á fin de no producir

más efecto que la acción nerviosa indispensable para el caso. Esto se consigue exprimiendo los pezones, tirando de ellos alternativamente hacia abajo y hacia arriba, procediendo en todo con calma y no interrumpiendo la operación hasta que se haya sacado toda la leche.

La necesidad de hacer esto y de que el ordeñamiento se efectue á tales intervalos como los que sean adecuados para obtener la más copiosa cantidad de leche se encuentra explicada por la razón siguiente. Si se mata una vaca cuando está en estado de ordeñarse y se amputa la ubre para examinar su constitución interior, se encontrará que está formada por una masa de tejido esponjoso en que hay multitud de vasos y canales distintos, á la manera de las diversas ramas de un río. Todos estos canales empiezan en un tejido glandular denso y mantecoso que se encuentra en la parte superior de la ubre, y desde allí puede seguirseles en su camino, viendo que se dividen y subdividen como el tronco de un árbol, hasta que al fin las ramas más delgadas penetran en ciertas masas de tejido glandular, y de forma globulosa, semejantes en su forma á racimos de uvas. Cada uno de estos pequeños glóbulos contiene una sustancia grasienta. A lo largo de estos canales para la leche hay tres glándulas secretorias; pero además de ellas y en la parte superior de la ubre hay otras varias, especialmente cuando este órgano se extiende sobre la superficie del abdomen, donde recibe un número enorme de vasos sanguíneos excesivamente delgados que se ramifican dentro del tejido glandular, y cuyos últimos extremos se reunen con los glóbulos congregados en forma de racimo, según se ha dicho anteriormente.

ALIMENTOS A PROPÓSITO PARA LA PRODUCCIÓN DE LA LECHE.

Hay personas, y entre ellas algunas que pretenden ser ver-sadas en la ciencia, que mantienen que el alimento de una vaca no produce efecto especial en la naturaleza ó calidad de la leche, puesto que esta no es más que un producto del animal y tiene que ser la misma en todos los casos mientras permanezca en buen estado de salud y se efectuen sin perturbación

todas sus funciones. Semejante doctrina no está sin embargo en consonancia con la experiencia y el convencimiento de los que se ocupan en alimentar vacas y cuyo negocio consiste en procurar la mejor cualidad de leche. Tampoco puede decirse que la opinión antedicha esté sostenida por hombres científicos de la clase más inteligente y observadora, los que por regla general se atienen sobre todo á lo que les demuestra su propia investigación de los hechos, cuidadosamente observados y comprobados, y gustan más de descansar en lo que les enseña la experiencia propia, que de aceptar conclusiones hechas por otros cuya reputación consiste principalmente en que son extranjeros, y que siendo químicos y no hombres prácticos no saben nada de lo que se vé diariamente en las haciendas y potreros, aún en sus propios países. Afortunadamente esta especie de esclavitud en que se ha querido tener á los hombres de campo de este país, sujetándolos á tener por guías á químicos franceses y alemanes, está rápidamente desapareciendo, y los hombres más adelantados en la ciencia agrícola americana, se ocupan ahora de investigar las cosas por sí mismos, á efecto de poder llegar á conclusiones positivas á la vez que propias. El resultado que se va obteniendo concuerda con la experiencia común de las hombres prácticos que saben que el alimento lo hace todo en cuanto á la cantidad y calidad de la leche de las vacas.

Algo más que esto se necesita para tener éxito en la práctica, especialmente en estos tiempos en que el valor de los alimentos vendidos en el mercado es más alto que nunca, y en que se observa además una tendencia constante á disminuir los precios de los productos agrícolas. El traficante en leche debe estudiar ahora con más cuidado que nunca la naturaleza de los alimentos que son indispensables para hacer que la producción de aquel artículo sea beneficiosa en todos sentidos, y satistaga las especiales necesidades de su comercio.

El fabricante de mantequilla necesita esencialmente que la leche contenga grasa, y debe alimentar á la vaca de la manera más conveniente para conseguir aquel resultado. El fabricante de queso por su parte necesita una gran cantidad de leche no

demasiado rica en grasa, pero que tenga de ella la cantidad suficiente para que el queso salga de la cualidad requerida. El simple vendedor de leche ha de cuidar á su turno de que, como lo requiere la ley, tenga su artículo, por lo menos, un trece por ciento de sustancias sólidas, de las cuales una tercera parte sea de grasa, mientras que la caseína se encuentre en proporción todavía más grande. El fabricante de mantequilla no tiene que tener tanto cuidado con respecto á la calidad de la leche que produce, por lo menos en cuanto hace á la protección del público por medio de las leyes; pero como la necesidad de obtener ganancias es inexorable y más fuerte que las leyes, resulta que mientras el fabricante de quesos y el vendedor de leche están obligados bajo las penas de la ley á producir un artículo que contenga doce ó trece por ciento de materia sólida y en que la caseína esté en exceso del azúcar y de la grasa, el fabricante de mantequilla tiene necesariamente que buscar un artículo en que la grasa esté en exceso, á lo menos en un cinco ó seis por ciento, puesto que todo lo que baje de este límite haría improductiva su ocupación.

Todo lo que va dicho tiende á demostrar que el conocimiento del carácter de los alimentos usados es indispensable para el éxito de cuantos se dedican á la alimentación de las vacas para objetos de lucro, y que cada clase de traficante en leche tiene un punto de vista ó un fin distinto, conforme al cual han de variar necesariamente los procedimientos que ponga en práctica.

Es cosa ahora casi universalmente aceptada como principio y guía en el asunto de alimentar los animales, que las grasas que se encuentran en el alimento van á la sangre directamente y sin cambiarse desde los órganos digestivos, para formar la grasa del animal, y que la disposición individual de este último es la que determina si la gordura debe depositarse en el tejido muscular, como sucede en el mejor ganado de piel suave y lustrosa, ó en los órganos interiores y en la forma de sebo, como en los animales mal alimentados de cuero áspero, ó en las ubres de las vacas, como sucede en las de la raza de "Jersey" y de "Guernsey" que son especialmente productoras de mantequilla, no menos que en otras pertenecientes á otras razas.

Bién entendido el principio se sigue de él que el criador de vacas debe necesariamente elegir los alimentos más adecuados para el objeto especial de su industria. El fabricante de mantequilla usará aquellos alimentos en que se sabe que predominan en gran proporción las sustancias grasas, de olor y de color acentuados. Los meros productores de leche se cuidarán poco de aquellos elementos grasos y preferirán las sustancias en que predominen los elementos productores de carne (la proteína) y tengan solo una moderada proporción de grasa. Esta última es la que produce la caseína cuya composición química es casi la misma exactamente que la de la materia sólida de la carne. La lista que se dá á continuación muestra la composición de los varios alimentos que están en uso común, según el último informe anual de la estación experimental del Estado de Massachusetts:

Tanto por ciento de materia alimenticia secada en el aire.	Proteína.	Grasa.	Almidón, azúcar, etc.
Harina de maíz.....	9 á 16	3 á 5	73 á 83
Harina de "hominy".....	7 á 12	5 á 12	68 á 78
Harina de chícharos.....	21	2	55
Harina de linaza.....	30 á 39	6 á 9	32 á 44
Harina de semilla de algodón.....	36 á 51	9 á 14	20 á 33
Salvado de trigo.....	15 á 20	3 á 6	51 á 62
Residuos de cervecería.....	16 á 33	2 á 6	33 á 67
Polvo de cacao.....	15	25	45

Lo que aparece más culminantemente en estas cifras es la vasta diferencia en la composición de las varias sustancias. Esto muestra cuán necesario es que no se compren dichos alimentos sino después de analizados, puesto que el valor de cualquiera de ellos para un uso especial puede exceder en un 50 por ciento ó más al ordinario. Esta diferencia enseñará que los resultados que se obtengan de su uso puedan variar también considerablemente. Así es que en el uso de dichas sustancias el valor de ellas debe basarse solo en su cualidad, y que el criador para estar seguro debe estimarlos sobre la base del que sea más barato y contenga los elementos nutritivos que se desean.

MODO DE HACER LA MANTEQUILLA.

El tratamiento de la crema es una de las cosas más importantes en todo lo relativo á la fabricación de la mantequilla, así en lo que respecta á la cantidad, como á la calidad del artículo. La crema dulce dá menos mantequilla, y la que produce es de olor menos agradable que la de la crema un poco agria ó cortada. Pero si el cortamiento ha ido demasiado lejos se echará á perder el sabor de la mantequilla, puesto que la acidez precipitará la producción de las sustancias volátiles, que cuando se encuentran en exceso producen el peculiar estado que le dá el nombre de rancia. Una cantidad muy moderada de estos ácidos le dá un gusto agradable y cierto olor muy bueno. Cuando la crema está en la condición adecuada se dice que está "madura." La "madurez" consiste en que se ha producido en ella cierta cantidad de ácido láctico, que generalmente representa de sesenta á setenta y cinco por ciento del total de la leche en que está la crema. Esta cantidad de ácido láctico no debe ser mayor que la necesaria para producir un gusto lijeramente ácido y agradable, lo que puede conseguirse de un modo fijo usando cualquiera de los dos métodos siguientes:

El primero consiste en poner la leche en vasijas de poca profundidad á una temperatura de 60° á 62°, en aire puro, por espacio de treinta y seis horas, descremándola entonces. La leche estará en ese momento todavía fresca, ó cuando no, lijeramente agriada. En cuanto, á la crema después de recogida con cuidado á intervalos de doce horas, se la deja en una orza ó tinaja á la temperatura indicada. Las mievas cantidades de crema que se recojan se echarán en las mismas vasijas y se tendrá cuidado de revolver el todo suavemente á fin de que se mezcle bien. Al terminar treinta y seis horas después del primer descremamiento, la crema estará en las mejores condiciones posibles de "madurez" para hacer una excelente mantequilla.

En el segundo método se descrema la leche á las veinticuatro horas después de haberla dejado en reposo en una vasija profunda y al aire frío. Después de separada la crema

se la pone en un cubo que se coloca en el tanque á la temperatura usual de 45° , hasta que se reune la cantidad suficiente para empezar á hacer la mantequilla. Esto no puede ser sin embargo antes de que la crema esté "madura," lo cual puede conseguirse exponiéndola á acción del aire á la temperatura de 60° á 65° , por el espacio de veinticuatro horas, en cuyo tiempo se obtendrá toda la acidez necesaria. Esta demora puede sin embargo evitarse y apresurarse la "madurez" de la crema, mezclándola con una cantidad de leche cortada, ó de suero del día anterior. Por regla general una botella de leche cortada para veinte de crema fresca es proporción suficiente, teniendo cuidado de remover la mezcla suavemente aunque de tal manera que queden bien incorporadas las dos sustancias.

La cualidad de la mantequilla depende precisamente del grado de "madurez" de la crema; y para estar seguro de ello debe usarse siempre un termómetro, á fin de regular la temperatura, llevando nota del tiempo empleado, porque si la temperatura y el tiempo ejercen su acción combinada y si una está en exceso del otro, es preciso que los dos se nivelen para obtener el deseado efecto.

Antes de colocar la crema en la máquina de hacer mantequilla debe llevarse la orza ó tinaja en que se encuentre á un cuarto caliente, donde se la debe conservar por espacio de doce horas, agitándola con suavidad hasta que todo la masa se ponga á una temperatura de 62° ó de 65° en tiempo de invierno. En el tiempo de verano la temperatura debe ser de 55° , subiendo ó bajando uno ó dos grados según las circunstancias.

La máquina de hacer mantequilla ha de estar bien lavada con agua caliente y luego enjuagada con agua fresca, después de lo cual se pone en ella la crema. Sentado en una silla junto á ella, el operador empieza á moverla á razón de ocho revoluciones por minuto, procurando que cada sucesivo movimiento sea aproximadamente un segundo más veloz que el anterior. Al principio se desarrollarán algunos gases á que se dará salida abriendo el agujero que les permite escaparse. Esto no tendrá que hacerse sino durante unos diez minutos, al cabo de los cuales cesará la formación de gases. Pronto se verá

que la crema se pone espesa, y entonces unas cuantas vueltas más rápidas harán precipitar la operación. En el momento en que empieza á sentirse un ruido como el que producen los golpes dados en el agua se tiene la señal de que empieza á formarse la mantequilla; y entonces es necesario tener cuidado de no dar á la máquina demasiadas revoluciones. Cuando la mantequilla está en granos tan grandes como los del trigo ó como los chícharos la operación está concluida. El suero debe sacarse por medio de la abertura que está en el fondo de la máquina, dentro de la cual debe entonces derramarse agua fría, agitándola bien diversas ocasiones á fin de que quede bien lavada. Es costumbre general en las fincas de lechería agregar al suero un puñado de sal antes de sacarlo de la máquina de hacer mantequilla; y se cree que con esto se facilita la operación de separar la mantequilla y el suero. También se ha recomendado lavar la mantequilla en salmuera en el momento en que salga de la máquina. Las dos prácticas están apoyadas en buenas razones. La mantequilla es más lijera que la leche y que el agua, aunque con respecto á esta última no lo es tanto que permita una fácil separación. La leche es viscosa y se pega á la mantequilla de tal manera que no es fácil separarla con prontitud; pero si se añade sal al suero se aumenta la densidad de este y necesariamente la mantequilla flota con mayor facilidad. Así es que cuando se derrama salmuera dentro del suero, la densidad de la mezcla hace que la mantequilla suba á la superficie, diluyéndose también la leche que le está adherida, con todo lo cual se precipita la separación. La importancia de esta simple práctica es por lo tanto fácil de percibir.

Cuando se intenta guardar la mantequilla por algún tiempo es indispensable dejarla enteramente libre de toda la leche que pudiera estarle adherida. La razón de esto se encuentra en el hecho de que la caseína es un fermento, y un agente químico bastante activo, que produciría la descomposición de la mantequilla, convirtiendo la sustancia grasa, á lo menos en parte, en aquellos ácidos volátiles que le dan el mal olor y el mal sabor que la caracterizan cuando está rancia. Pero cuando la mantequilla debe usarse inmediatamente, la ante-

dicha separación no necesita ser completa. Antes por el contrario es mejor que le quede un poco de leche, porque con ella se desenvuelve un cierto aroma junto con una especie de sabor de nueces, que la hacen sumamente agradable. De otra manera la mantequilla sería muy insípida y con un olor bastante indiferente de mera grasa. Así es que el fabricante de mantequilla puede echar á perder su artículo si se esfuerza demasiado en lavarlo mucho.

Este es punto que debe entenderse bien. El agua no puede remover ninguna especie de grasa. No la disuelve absolutamente, y así es que la mantequilla en sí misma no sufre perjuicio alguno por mucha que sea la cantidad de agua que se le eche encima. Pero los lavados le quitan á la mantequilla el pequeño resto de leche que había en ella, dejándola pura, y necesariamente sin olor alguno.

A su debido tiempo, unos días más tarde ó más temprano, la mantequilla empieza á sufrir la acción de un procedimiento químico especial, que se verifica en su interior, y entonces empiezan á desenvolverse poco á poco los ácidos que le dan sabor. Puede decirse que entonces está "madura," como se dice de las frutas, siendo entonces cuando adquiere su mejor gusto, debido solamente á la producción de los primeros elementos de descomposición. Si la mantequilla ha de envasarse para uso futuro este cambio espontáneo se irá verificando sin ningún auxilio exterior; pero si ha de usarse el artículo inmediatamente será bueno que se le agregue una pequeña cantidad de leche.

[Se continuará.]

THE BRUSSELS COMMERCIAL MUSEUM.

ITS ORGANIZATION AND FUNCTIONS.

The Brussels Commercial Museum has been in existence for about eight years. It occupies a large building, belonging to the Government, and prominently situated in the city. It is a branch or dependency of the Department of Foreign Affairs, which has control in Belgium of all the commercial business of the nation; but it has a special division relating to "transportation," belonging to the Department of Railroads, which is an independent branch of the Government.

EXHIBITION ROOMS.

The Museum was started originally for the sole, or at least the main, purpose of collecting samples of all those articles of merchandise which were sold by other countries in all the markets of the world, in competition with Belgium. These samples, placed in this way at the disposal of the Belgian manufacturers, might enable them to rearrange their methods of fabrication to conform themselves with the requirements of any desired market. A statement was attached to each sample, setting forth the place from which it came, the cost price of the article, the cost of transportation, insurance, custom-house duties, and all other additional expenses necessary, the manner of packing the article, its retail market price, the average amounts sold in the market, etc. The statement contained occasionally, in addition to the above information, the names and addresses of the leading merchants engaged in importing or exporting the article.

The Museum also receives all the samples of raw material, imported from abroad, whose purchase by the Belgian manufacturers might be more advantageous, when made directly in the place of origin, than indirectly through some intermediate European market, whether in England, Germany, or

France. The latter idea was carried on so far as to cause collections to be made of samples of cereals from the Balkans region, supposed to be liable in the future to enter into competition with similar articles from other European countries or from the United States. This particular effort seems, however, not to have produced any practical result; as a Museum, no matter of what kind, is certainly not the place where speculators or purchasers will apply to inform themselves on the qualities of the cereals.

The samples above named, whether of raw materials or of manufactured articles, were furnished the Museum by the Belgian Consuls or their agents, in the respective localities, who were reimbursed for all such expenditures.

Several rooms of the Museum are now set apart for the preservation of the said samples, although, as stated hereafter, the latter have lost much of their importance. Their exhibition which originally constituted the paramount purpose of the institution, has become little by little, under the teachings of experience, a matter of secondary consideration. On the other hand, some branches or dependencies, which were originally established merely as a complement, or have been created of late, have grown in importance and tend at present to occupy the first place.

BUREAU OF INFORMATION.

The Museum—that is, the collection of samples—has been completed by the establishment of a bureau of information attached to it, which deals with a large variety of subjects and includes all countries. It is intended to give prompt answer to all inquiries made to it on statistics of imports and exports into or from any country outside of Belgium, the financial and commercial condition of the same, its peculiar necessities, its commercial habits, its methods of payment, the systems of credit which prevail in it, its usual rates of exchange, its facilities of transportation, its tariff laws, etc. Applicants may be informed also of the names of the principal commercial houses of each country, such as furnished by the respective consuls, or as given in the respective Year

Books or other official publications. This branch of the Museum has developed into a very important department, which attracts already one-half, more or less, of the whole number of visitors.

BUREAU OF PROPOSALS AND CONCESSIONS.

Industrial enterprise is unable, as a rule, to get all the information which it may need on the public works of importance undertaken by the Government, whether at home or abroad. People may need to be acquainted with the nature of those works and with the terms and conditions on which the concessions therefor are to be made by the Governments. To meet this necessity a bureau has been attached to the Museum, under the name of "Bureau d'adjudications" (Bureau of Proposals and Concessions), in which accurate information can be obtained concerning all the works to be undertaken by either the Belgian or any foreign Government, such as railroads, wagon roads, bridges, telegraphs, prisons, hospitals, etc., and on contracts for the transportation of mails and for other services. The Bureau can show to the interested parties the text of the specifications, maps, plans, etc., and acquaint them with the terms and conditions set forth in the published invitations for proposals, thus enabling them to compete if desired. The information furnished by this Bureau emanates from the Belgian consuls in the respective countries, who have been given special and strict instructions to that effect. This branch of the service of the Museum is highly valued by the public. The visitors of the Bureau of Proposals and Concessions form about one-fourth of the total number.

BUREAU OF TRANSPORTATION.

Another important Bureau, not less highly valued, is the one called "Transportation." It deals especially with maritime transportation, and, although in reality it does not belong to the Museum, it has been attached to it for the sake of convenience, and to better accommodate the public. By concentrating in only one office everything relating to this matter much useless labor is saved.

This Bureau can furnish, either at once, or with a delay of two or three days, all information desired on the facilities of transportation, freights, lines of steamers or sailing vessels, etc., etc., from any Belgian port to any port in the world. When the Bureau has not at hand the means to answer the inquiries made, it applies to the navigation companies of Antwerp, which answer by return mail. The inquiries are numerous, and are received not only from the people of the country, but also from people of foreign countries, even from France. They are always answered. The visitors of the Bureau of Transportation form also a fourth of the total number of the daily visitors of the Museum.

INFORMATION GIVEN GRATUITOUSLY.

It must be stated also that the information furnished by all the bureaus of the Museum is furnished gratuitously, and that the personnel of the institution makes, always, an effort to respond satisfactorily to all the inquiries.

SECONDARY BUREAUX OR DIVISIONS.

For the rendition of the different services which fall under the jurisdiction and scope of the Museum, it has, in addition to the Exhibition Rooms already referred to—access to which is free to all—a certain number of special divisions, respectively intrusted with the said services. Visitors desiring information on some special subject can be referred at once, the moment they enter the Museum, to the proper division or office. Each division is in charge of an officer or officers, whose duty it is to give the visitors the proper answers and furnish the information desired.

LIBRARY AND READING ROOM.

As a complement of the institution, there is in the Museum a Library and Reading room, free to all, open daily from 9.30 a. m. to 12 m., and from 2 to 5 p. m. All the Belgian papers, most of the statistical publications of different countries outside of Belgium, and a great many Directories can be con-

sulted there. The usefulness of this Library is seriously impaired by the lack of funds, as the appropriations thus far made by the Government have been insufficient for the purchase of certain publications, the prices of which are comparatively high.

NUMBER OF VISITORS.

The following statement, appearing from an official report on the subject, submitted to the Department of Foreign Affairs of the Kingdom, shows the number of daily visitors to the different departments of the Museum during the month of October, 1893:

In search of general information	48
To the Bureau of Proposals and Concessions.....	26
To the Bureau of Transportation	25
Total.....	99

PERSONNEL OF THE MUSEUM.

The personnel of the Museum—without counting the Transportation Department—consists of one director, a chief clerk, two first-class clerks, three second-class clerks and four messengers and watchmen. All these persons are paid out of funds of the Department of Foreign Affairs.

The Chief of the Bureau of Transportation and the two clerks who work under him are paid by the Department of Railroads.

EXPENSES.

The total amount required to run the Museum, exclusive of salaries, does not exceed 20,000 francs, or \$4,000 per year, furnished by the Government. This sum includes all general expenses, as fuel, small repairs, stationery, postage stamps, purchase of documents, subscriptions to newspapers, purchase and renewal of samples, and publication of the Catalogue. It is manifestly insufficient, and the library alone absorbs already a large portion of the appropriated sum.

The purchase of samples does not make a large figure in the ordinary expenses, as the managers of the Museum do not

consider this service one of paramount importance. It is very difficult for them to obtain in due time, at each season, such new samples as are desired, especially of woven articles. It is very often the case that when samples reach the Museum the article represented by them is already out of fashion. On the other hand it would be asking too much of the consuls to require them to furnish such minute information as might be necessary to make the sample department a complete success. The expense incurred, should this plan be adopted, would also be considerable. Many commercial firms expend in this respect every year larger sums than the whole amount appropriated for the Museum.

The managers of the institution confine themselves to the collection of samples of typical and general character, which admit of little or no change, and leave to each one individually the task of getting himself any desired specific information. They willingly accept all that the consuls or accredited correspondents send to them, but they give more importance to frequent and accurate reports than to samples, the value of which is liable to decrease.

THE BULLETIN.

There is a source of revenue for the Museum, consisting in the publication of the Bulletin which completes the program of its services. This weekly paper, issued under the title of *Bulletin du Musée Commercial* (Bulletin of the Commercial Museum) does not pretend to be, in some respects, anything else than the Prospectus of the Museum, and is edited by the personnel of the establishment. The amounts yielded by the subscriptions and advertisements, added to the appropriation made by the Government, are applied to meet the expenses.

CONCLUSION.

It may be said, in recapitulation, that the Brussels Commercial Museum lives and thrives rather on account of the service done by the Bureaux created and attached to it after its establishment than by its collection of samples. The

term *Museum* is therefore improperly given to it. It is in reality a Bureau of information, sufficiently well equipped, and the information on various subjects which it furnishes seems to be highly appreciated by the Belgian commercial and industrial world.

EL MUSEO COMERCIAL DE BRUSELAS.

El Museo Comercial de Bruselas, establecido hace cosa de ocho años en un vasto edificio de la propiedad del Estado, que ocupa totalmente, constituye un ramo ó dependencia directa del Ministerio de Negocios Extranjeros, á quien incumbe en Bélgica todo lo relativo al comercio. Hay en él sin embargo, una sección importante, llamada de "transportes," que está regida y sostenida por el Ministerio de Ferrocarriles, Correos y Telégrafos, porque á este, con arreglo al sistema belga de organización administrativa, le corresponde por derecho todo lo relativo á aquel servicio.

EL MUSEO PROPIAMENTE DICHO.

El Museo Comercial, tal como fue concebido en su origen consiste simplemente en una colección de muestras, tan completa como ha podido obtenerse, de cuanta mercancía puede venderse, ó se vende, en los mercados extranjeros, en competencia con las dela misma clase producidas, ó fabricadas, en Bélgica. Estas muestras están á la disposición de los productores y fabricantes del Reino, á fin de que después de examinarlas y estudiarlas con la atención que les parezca propia puedan determinar si conviene ó no á sus intereses introducir algún cambio en sus sistemas de producción, ó de fabricación que haga mas vendibles sus mercancías, ó las acomode mejor á las exigencias de los mercados.

Cada una de las muestras va acompañada con una noticia por escrito, en que se da cuenta de la procedencia del artículo, su precio en el país de origen, el gasto adicional que imponen los transportes, seguros, derechos de aduanas, etc., etc., el

método ó manera de empaquetarlo ó envasarlo, la cantidad del mismo artículo que por término medio se vende en cada país, el precio que por él se paga al menudco—y en algunos casos el nombre y la dirección de los principales comerciantes del país de origen dedicados á su venta.

Se ha formado igualmente en este Museo una colección de muestras de las materias primas, procedentes del extranjero, que los fabricantes belgas suelen, ó solían, adquirir, no directamente en el país de origen, sino en algún mercado europeo, bien en Inglaterra, Alemania ó Francia. Con esto se procuró llamar la atención de los expresados fabricantes hacia el hecho de que tal vez podría serles más ventajoso comprar el artículo en el mismo lugar donde se produce. Y en el desenvolvimiento de estas ideas se llegó hasta el extremo de traer muestras de los cereales de la región de los Balkans, creyendo que podrían en su día hacer competencia á los de otros países de Europa, ó los de los Estados Unidos. Isto no parece, sin embargo, que condujese á ningún resultado práctico, pues un Museo, no es por cierto el lugar á donde acudirán los compradores de cereales, sean ó no especuladores, para informarse de las cualidades del artículo de su comercio.

Todas las muestras exhibidas, tanto de materias primas, como de artículos manufacturados, se recibieron en el Museo por conducto de los Cónsules y agentes consulares de Bélgica, en los diferentes países. El Gobierno les había ordenado que las reuniesen, y les satisfizo oportunamente lo que gastaron en comprarlas.

Son muchos los salones del Museo, que están consagrados á la exhibición de estas muestras. La colección es importante; pero como se verá mas adelante, su valor ha tenido que ceder en mucho al de otros departamentos del instituto. Andando el tiempo, y en virtud de la experiencia adquirida, se llegó al convencimiento de que esta colección, considerada en el principio como la cosa mas esencial del Museo, si no tal vez como su único objeto, es mucho menos útil que otros departamentos ó servicios establecidos recientemente, ó que no fueron creados sino como cosa accesoria ó complementaria.

OFICINA DE INFORMACIÓN.

Unida al Museo propiamente dicho se estableció casi desde el principio una Oficina denominada de información, y destinada á contestar preguntas y suministrar noticias sobre multitud de materias, no simplemente circunscritas al Reino de Bélgica sino extensivas á todas los demás países. Entre los asuntos acerca de los cuales este Oficina ilustra al público se encuentran los siguientes; estadísticas de importación y exportación en todos los países, situación en que se encuentran estos bajo el punto de vista comercial y rentístico, necesidades comerciales, y hábitos y costumbres del mismo género que en cada cual prevalecen, métodos de pagos y sistemas de crédito que sean peculiares á cada uno, movimientos que en ellos se hayan efectuado respecto á cambios, modos de hacer los transportes, derechos que tienen que pagarse con arreglo á los respectivos Aranceles de aduanas, y gastos de otro género en que se tenga que incurrir necesariamente, nombres y direcciones de los principales comerciantes, conforme á listas suministradas por los Cónsules, ó á lo constante en los Anuarios oficiales de cada país, etc. Este servicio ha adquirido una vasta importancia, y hoy por hoy puede decirse que en general es el que mas llama la atención del público. El número de las personas que acuden á esta Oficina, forma poco menos de la mitad de los visitantes del Museo.

OFICINA DE CONCESIONES ADMINISTRATIVAS Ó DE CONTRATACIÓN DE OBRAS PÚBLICAS.

No es posible que la industria pueda informarse directamente y por si misma acerca de las obras públicas importantes que se ejecutan ó tratan de ejecutarse en el extranjero. Pero como le interesa mantenerse al corriente de lo que pasa en este concepto, y saber cual es la clase de trabajo que se ha emprendido, ó trata de emprenderse, los pliegos de condiciones formulados por el Gobierno, los planos y dibujos, y todo lo demás conducente á formar cabal juicio, se ha tratado de satisfacer á todo esto con el establecimiento en el Museo

de una Sección especial denominada en francés "Section d'adjudications," lo que en castellano pudiera traducirse como "Oficina de concesiones administrativas," ó "de contratación de obras públicas." Allí se dan informes oficiales y auténticos sobre toda obra pública (caminos de hierro, puentes, calzadas, telégrafos, trabajos cualesquiera de otras clases, construcción de hospicios, prisiones, etc.), que se emprenda en Bélgica, ó en cualquier país extranjero. En esta Oficina se encontrarán, y pondrán á disposición de los interesados para el debido examen, los pliegos de condiciones y demas documentas necesarios, impartiendoles la instrucción necesaria para que puedan tomar parte en la licitación. Todos estos datos se reciben por conducto de los Cónsules, á quienes el Ministerio de Negocios Extranjeros tiene dadas órdenes terminantes con ese objeto. Esta parte del servicio del Museo ha encontrado gran favor en el público y el número de personas que acuden á él representa poco mas ó menos una cuarta parte de la totalidad de los visitantes del Museo.

OFICINA DE TRANSPORTES.

Otro departamento importante y no menos apreciado por el pueblo, es el denominado en general "de transportes," aunque realmente se dedica de una manera más fija á los transportes marítimos. Como se ha dicho, esta Oficina no es en realidad una dependencia del Museo, sino una sección anexa á él para comodidad del público. Reuniendo en un mismo edificio todo lo que se relaciona con los asuntos sobre que pueden solicitarse noticias se evitan muchos pasos fatigosos y se llenan mejor los propósitos del Gobierno. Todo depende en ella del Ministerio de ferrocarriles correos y telégrafos.

Aquí se dan informes, muchas veces en el acto, y cuando no con solo una demora de dos ó tres días, sobre los medios de transporte, líneas de navegación, fletes, precios de pasaje, etc., desde un puerto cualquiera en el reino de Bélgica á un puerto cualquiera de cualquiera país del mundo. Cuando la Oficina no tiene ella misma el modo de dar respuesta, escribe á la Compañía de navegación de Amberes, que á vuelta de

correo suministra los informes pedidos. Las solicitudes que esta oficina recibe, así del interior del Reino, como del extranjero, incluyendo á Francia, son muy numerosas; y á todas se da respuesta.

Los visitantes de la Sección de transportes forman cada día la cuarta parte de los que concurren al Museo.

ORGANIZACIÓN.

Para el debido desempeño de estos diferentes servicios hay en el Museo, además de los Salones en que se exhiben las muestras, y que están siempre abiertos al público, el número adecuado de oficinas, ó dependencias, á las que son encaminados los visitantes, así que hacen conocer sus deseos. Cada una de ellas está provista con los empleados necesarios, á quienes corresponde contestar lo que se le pregunte.

Además de todo esto existe en el Museo una Biblioteca y sala de lectura, abierta al público, y donde el que quiera puede ir á trabajar todos los días desde las 9½ de la mañana hasta las 12, y desde las 2 hasta las 5 de la tarde.

Allí se encuentran todos los periódicos belgas, y las publicaciones estadísticas y los Directorios de Bélgica y de todos los demás países. Es de sentir que por falta de fondos no tenga esta Biblioteca la posibilidad de engrandecerse todo lo que es deseable, pues hay muchas obras que no puede proporcionarse por virtud de su elevado precio.

VISITANTES.

Los visitantes diarios del Museo, según consta de informes oficiales transmitidos al Ministerio de Negocios Extranjeros, durante el mes de Octubre de 1893, se distribuyeron como sigue:

En busca de noticias diversas.....	48
Oficina de concesiones	26
Oficina de transportes.....	25
Total.....	99

PERSONAL, Y GASTOS.

El personal del Museo (sin contar con el de la sección de transportes) consiste de un Director, un oficial mayor, dos oficiales tres empleados subalternos, y cuatro mozos de servicio, ó encargados y vigilantes del Museo.

Este personal está pagado de los fondos del Ministerio de Negocios Extranjeros.

El de la Sección de transportes, que consta de tres empleados, está pagado por el de Ferrocarriles, Correos y Telégrafos.

El crédito concedido en el presupuesto del Estado para el sostenimiento del Museo asciende solo á veinte mil francos. Con esta suma hay que atender á todo, incluyendo sueldos, calentamiento, gastos de escritorio, compra de libros, suscripción á periódicos, compra de nuevas muestras y renovación de las antiguas, y publicación del Catálogo. Es evidente que esta cantidad es muy exigua. En solo la Biblioteca se consume una buena parte de ella.

La compra de muestras no entra por mucho en los gastos ordinarios del establecimiento, pues que la Dirección del Museo no considera que esta parte especial del servicio sea la mas importante. Es por otra parte un hecho cierto que aunque cuesta mucho obtener en cada una de las diversas épocas del año las propias muestras de los nuevos artículos que vienen al mercado, especialmente en tejidos y géneros de vestir, sucede comunmente que cuando se reciben en el Museo han dejado de estar de moda, y perdido por consiguiente su valor práctico. Además de esto, para hacer un muestrario completo, con todas las indicaciones y noticias que se necesitan, tendría que exigirse de los Cónsules una competencia que no hay derecho de esperar, aparte de que sería indispensable hacer grandes erogaciones. Hay casa de comercio que gasta en este particular, en cada año, para su propio uso, mas de la cantidad total que cuesta el Museo.

Así es que con respecto á muestras de mercancías lo que se procura en el Museo es reunir las correspondientes á aquellas que pueden considerarse típicas en sus respectivas clases, y que son poco susceptibles de modificación, dejando á cada

cual el trabajo de buscarse por si mismo las noticias especiales que necesite.

Por otra parte, el Museo acepta con gratitud todo lo que en esta línea le envíen los Cónsules, ó los amigos y corresponsales benévolos que quieran favorecerlo; pero siempre da mas valor á informes frecuentes y precisos que á las muestras de artículos, cuya importancia como se ha dicho puede desaparecer en poco tiempo.

EL BOLETÍN DEL MUSEO.

Existe para el Museo otra fuente de renta que es al mismo tiempo un complemento adecuado de sus varios servicios, y consiste en la publicación de un periódico semanal titulado "Boletín del Museo Comercial." Este periódico no tiene más pretensiones que la de ser en alguna manera una especie de prospecto del Museo, y está redactado por los empleados del mismo.

El producido de la subscripción y los anuncios se une á las sumas concedidas por el Presupuesto, y ayuda á cubrir los gastos.

CONCLUSIÓN.

En resumen, el Museo Comercial de Bruselas vive y prospera más por los servicios anexos que se crearon con posterioridad á su establecimiento, que por lo relativo á la exhibición de muestras. La denominación de "Museo" es por lo tanto impropia. Debía mas bien llamársele Oficina de información, para cuyo objeto está útilmente organizada; y al hecho de que suministra en efecto los datos y noticias que se le piden se debe indudablemente la popularidad de que disfruta en el mundo industrial y comercial de Bélgica.

COFFEE IN PERU.

The following statement of progress being made in the cultivation of coffee in Peru has been furnished the Bureau by a gentleman well informed upon the subject:

Peru has been known for many years as a coffee-producing country, but the coffee grown on the coast has been absorbed by the domestic consumption, and Peru's appearance as an exporter of coffee is of recent date, although she is likely to be a considerable competitor with other countries. Coffee was formerly raised on the coast, and is still cultivated at Pacasmayo with success. But although the cultivation on the coast could be somewhat extended, it must always remain restricted, as there are only certain favored localities in which the planter can hope for a good return.

The region which Peru offers to the coffee planter, unsurpassed in fertility and almost unlimited in extent, is situated on the eastern slopes of the Andes, at a height of from 6,000 to 2,000 feet above the sea, among the network of streams and rivulets that find their way into the great affluents of the Amazon. This region has hitherto been shut off from the world by lack of communications, and, above all, by the difficulty of crossing the high ridge of the Cordillera in order to descend to the coast. In spite of these difficulties coffee has been cultivated both in the South in the gold-bearing district of Sandia and Carabaya, and in the center of Peru, in the valleys of Chanchamayo, Vitoc and Huanuco. It is the Chanchamayo district in particular, for most of the coffee that passes under the names of Vitoc or Huanuco comes from Chanchamayo, that is now assuming importance. This is due to the completion of the Central or Oroya Railway to its present terminus at Oroya, giving railway carriage over the crest of the Cordillera, and also to the opening up of the Perené and adjacent valleys. Oroya is about sixty miles from the Chanchamayo valley, and there is a fair road

all the way passing through the town of Tarma, the capital of a department, with good hotels and some 8,000 inhabitants. The Chanchamayo Valley, itself about ten miles long, is now in the hands of private owners, but the rich and extensive valleys beyond it of the Perené, Paucartambo and Rio Colorado have now been linked on to La Merced, the last town in Chanchamayo, by the extension of the Tarma-Chanchamayo road. The present output of coffee from the whole region is about 1,500 tons per annum, but extensive planting has lately taken place and production will shortly be trebled.

It is considered that coffee can be raised at the expense of five Peruvian soles per quintal, or 100 pounds, the yield of a tree after the third year being about three pounds. Clearing ground is inexpensive, the hillsides being covered with dense but light timber, easily felled and burned.

Coffee is usually bought at the planter's door by Italian houses in Tarma at prices varying from 18 to 30 shillings, and the cost of transport of a quintal from Chanchamayo or from Perené, to the port of Callao by mule and railway is about 4 shillings per quintal. Recent lots have been sold in New York at 22 cents, gold, per pound, a price which is equal to that of the best Mexican or Central American, with the exception of one or two favored qualities, and will improve when the coffee is better cleaned for the market. Freight to New York from Callao by the Merchants' Line is £3 per ton, while the British Royal Mail Company have recently put down their rates from £5 to £4 in the expectation of increased production.

The principal difficulty of cultivation in the Peruvian Montana lies in the broken character of the ground. This in itself is favorable to coffee cultivation, as the hillsides afford slopes where the young plants can be raised without being exposed to the sun all day long, and the expense of protecting the young plants by artificial shade is avoided. But the broken ground and frequent streams, the necessity of bridges and cuttings, etc., render the question of communications the most important of all. It is this reason that makes the opening up of the Perené so significant. Planters are unwilling

to settle aloof from the main roads, and to face the cost of keeping open trails through the forest, and of bridging rivers, where these primary necessities are not undertaken by large capital or by associated effort. There is, therefore, considerable reluctance in taking up free grants from the Government away from the main communications, the settlers discovering that a very material part of the product of their activity is absorbed by persons holding titles to adjacent lands. A tendency is, therefore, to move into lands, where solid bridges and roads have been made and are maintained.

The climate of the whole Chanchamayo and Perené district is excellent, and malarial fever may be said to hardly be known. Labor is supplied by the Indians from the Cordillera, the ordinary wage being from 50 to 60 cents Peruvian silver per day.

URUGUAY.

THE FOREIGN COMMERCE OF THE REPUBLIC OF URUGUAY IN 1893, AND FACTS CONCERNING THE TRADE, THE POPULATION AND THE POSTAL SERVICE IN THE SAME NATION.

IMPORTS INTO THE REPUBLIC OF URUGUAY IN 1893.

Countries.	Dutiable merchandise.	Free.	Total.
England.....	\$5,773,311	\$632,469	\$6,405,780
Germany.....	1,685,457	460,458	2,145,915
Italy.....	1,937,028	58,014	1,995,042
France.....	1,917,900	35,197	1,953,097
Spain.....	1,728,506	115,969	1,844,475
Brazil.....	1,282,852	316,208	1,599,060
Argentine Republic.....	777,795	417,539	1,195,334
United States.....	862,120	245,569	1,107,689
Belgium.....	910,693	173,376	1,084,069
Cuba.....	197,465	243	197,708
Chile.....	78,669	.....	78,669
Paraguay.....	44,062	4,386	48,448
Portugal.....	11,090	.....	11,090
Holland (Netherlands).....	3,880	.....	3,880
Canary Islands.....	100	492	592
Switzerland.....	458	.....	458
India, China and Japan.....	334	.....	334
Venezuela.....	.....	.....	.....
West Indies.....	.....	.....	.....
Mauritius Islands.....	.....	.....	.....
Austria-Hungary.....	.....	.....	.....
Malvina Islands.....	.....	.....	.....
Barbados.....	.....	.....	.....
Australia.....	.....	.....	.....
Sweden.....	.....	.....	.....
Other countries.....	.....	.....	.....
Total.....	17,211,720	2,459,920	19,671,640

EXPORTS FROM THE REPUBLIC OF URUGUAY IN 1893.

Countries.	Dutiable Merchandise.	Free.	Total.
England.....	\$3,231,988	\$23,965	\$3,255,953
Germany.....	1,555,149	8,810	1,563,959
Italy.....	455,633	70,715	526,348
France.....	5,570,522	56,114	5,626,636
Spain.....	330,453	47,953	378,406
Brazil.....	4,900,846	595,027	5,495,873
Argentine Republic.....	4,672,591	106,976	4,779,567
United States of America.....	1,410,110	21,508	1,431,618
Belgium.....	3,520,507	9,090	3,529,597
Cuba.....	432,433	1,500	433,933
Chile.....	142,679	657	143,336
Paraguay.....			
Portugal.....	350,041		350,041
Holland (Netherlands).....			
Canary Islands.....		4,766	4,766
Switzerland.....			
India, China and Japan.....	\$10	7,000	7,810
Venezuela.....	20,416	12,219	32,635
West Indies.....		13,716	13,716
Mauritius Islands.....		6,183	6,183
Austria-Hungary.....	4,079		4,079
Malvin Islands.....		4,032	4,032
Barbados.....	1,979		1,979
Australia.....	150		150
Sweden.....	40		40
Other countries.....		90,716	90,716
Total.....	26,600,426	1,080,947	27,681,373

COMPARISON BETWEEN THE IMPORTS INTO THE REPUBLIC OF URUGUAY IN 1893 AND 1892.

Countries.	Years.	
	1893.	1892.
England.....	\$6,405,780	\$5,647,479
Germany.....	2,145,915	2,091,625
Italy.....	1,995,042	2,020,052
France.....	1,953,097	2,259,361
Spain.....	1,844,475	1,774,601
Brazil.....	1,599,060	1,313,195
Argentine Republic.....	1,195,334	1,073,476
United States of America.....	1,107,689	1,104,772
Belgium.....	1,084,069	835,508
Cuba.....	197,708	136,960

Comparison between the imports into Uruguay, etc.—Continued.

Countries.	Years.	
	1893.	1892.
Chile.....	78,669	64,467
Paraguay	48,448	61,196
Portugal	11,090	14,111
Holland (Netherlands).....	3,880	5,884
Canary Islands.....	592	1,049
Switzerland.....	458	.....
India, China and Japan	334	346
Austria-Hungary.....	.....	1,114
Total	19,671,640	18,404,296
Increase in 1893.....	.....	1,267,344

COMPARISON BETWEEN THE EXPORTS FROM THE REPUBLIC OF URUGUAY IN 1893 AND 1892.

Countries.	Years.	
	1893.	1892.
France	\$5,626,636	\$4,410,379
Brazil	5,495,873	4,514,075
Argentine Republic	4,779,597	2,985,304
Belgium.....	3,529,597	3,164,933
England	3,255,953	4,479,241
Germany	1,563,959	2,006,656
United States of America.....	1,431,618	2,244,398
Italy	526,348	367,955
Cuba	433,933	630,977
Spain	378,406	424,737
Portugal.....	350,041	144,054
Chile.....	143,336	426,577
Venezuela.....	32,635	.....
West Indies	13,716	8,266
India, China and Japan	7,810	1,350
Mauritius Islands	6,183	11,679
Canary Islands.....	4,766	.....
Austria-Hungary	4,079	4,202
Malvina Islands.....	4,032	872
Barbados	1,979	9,454
Australia	150	.....
Sweden	40	.....
Paraguay .....	.....	565
Norway .....	.....	200
Other countries.....	90,716	115,946
Total.....	27,681,373	25,951,819
Increase in 1893 .....	.....	1,729,554

It can be seen that while the imports from the United States into Uruguay, amounting in 1892 to \$1,104,772, and in 1893 to \$1,107,689, increased in the latter year to the extent of \$2,917, the exports from Uruguay to the United States, amounting in 1892 to \$2,244,398, and in 1893 to \$1,431,618, have sustained so large a decrease as \$812,780.

All the amounts given in the preceding statements are in Uruguayan gold dollars.

The Uruguayan gold dollar is equivalent to 5.36 Spanish *pesetas*; 5.40 French *francs*; 5.40 Italian *lire*; 51 English pence and \$1.02 in United States gold coin.

MOVEMENT OF IMPORTS AND EXPORTS FROM 1889 TO 1893.

Year.	Imports.	Exports.	Total.
1889.....	\$36,823,863	\$25,994,107	\$62,777,970
1890.....	32,364,627	29,085,519	61,450,146
1891.....	18,978,420	26,998,270	45,976,690
1892.....	18,404,296	25,951,819	44,356,115
1893.....	19,671,640	27,681,373	47,353,013

AMOUNT OF DUTIES COLLECTED IN THE CUSTOM HOUSES.

In 1892.....	\$8,598,360
In 1893.....	8,967,780

The population of the Republic on the 31st of December, 1893, was 748,130 inhabitants.

Postal movement in Uruguay in 1892 and 1893.

Postal matter.	1892.	1893.
Letters stamped.....	5,603,392	7,017,413
“ unstampd.....	122,577	97,432
Official correspondence.....	462,104	560,864
Postal cards.....	50,970	123,585
Printed matter.....	15,912,236	17,185,321
Samples.....	41,231	46,305
Circulars and business matter.....	522,105	766,544
Registered matter.....	247,609	253,741
	22,962,224	26,051,205

The following comparative statement of cattle slaughtered in Uruguay and the Argentine Republic for the season just ended is taken from the *Uruguay News* of June 3, 1894:

The slaughtering season at Liebig's saladero, at Fray Bentos, was brought to a close on May 20. A total of 205,590 head of cattle were slaughtered there since December 12.

The cattle killings in the River Plate and Rio Grande up to May 31, 1894, show how much this business has been developing here lately. In Montevideo 350,510 head of cattle were slaughtered, and up the coasts of the Uruguay 494,100, a total of 844,610 head of cattle. In Buenos Ayres 320,800 were killed, and up the river at the Argentine establishments 217,500, a total for the Republic of 538,300. In Rio Grande the total was 350,000. Thus Uruguay has done this year almost as much as the Argentine Republic and Rio Grande together

MEXICO.

Great interest is being taken in the development of the uses of the fibrous plants, which grow in greatest abundance in the Republic of Mexico.

Several of the leading newspapers and periodicals published in that country have within a very recent date discontinued the use of imported paper, substituting therefor paper manufactured at home, and from material grown at home. The experiments thus far made have proven most satisfactory, and it is anticipated that within a very short time Mexico will have developed within her borders another independent and profitable industry.

Recently Prof. Frances Jeffrey, of Montana, arrived in Monterey for the purpose of examining the fibrous plants of the country.

He visited many of the cities and villages along the line of the Mexican Gulf Railway and elsewhere in the State of Tamaulipas, and made many crucial tests of the pulp of the

cacti, maguey, banana, palm, pitas, wild pineapple, sugar cane, rice straw and fibrous timbers.

From the pulp of the maguey he found he could make a better quality of tinted paper, and from the fiber a better quality of cloth than is now made from flax. From the pulp of the pineapple his experiments showed that he could manufacture a quality of white paper superior to any now made from fibrous plants, and from the fiber of the pineapple he can make a cloth of finer quality, and more durable than silk.

The supply of all the above-named fibrous plants is inexhaustible and cheap; and the profits that may be made by converting them into the various useful commodities for which they seem so well adapted are incalculable.

Professor Jeffrey, who has had large experience in the manufacture of paper, is organizing a stock company of \$300,000 paid up capital in gold, and will at once establish a large mill in Monterey for the purpose of carrying into practical effect the result of his observations and experiments.

A commission composed of distinguished Chinese officials recently visited the City of Mexico for the purpose of making a careful study and investigation of the resources of that Republic, previous to signing a commercial, industrial and immigration Chinese-Mexican treaty. The commission is composed of men eminent in the diplomatic service of China. They propose spending at least three months in the Republic, and extend their investigation over the greater part of the country.

The President of the Republic of Mexico has issued a decree establishing an internal parcels-post service. Such parcels are not to exceed five kilograms in weight, nor one meter and twenty centimeters in girth. The postage for these parcels is to be 12 cents for every 500 grams or fraction thereof.

During the first half of the current year there were imported into Mexico from England galvanized iron sheets to the

amount of 1,077 tons, valued at £12,464, against 1,585 tons of the value of £19,629 for the corresponding period of 1893.

There were imported from England during the first half of the present year railway iron and steel to the amount of 7,846 tons, valued at £35,379, as against 3,613 tons, valued at £17,477 for the corresponding period of last year.

Regular train service has been inaugurated on the recently completed Tehuantepec Railway, and it is reported that the local traffic on the line is already very heavy.

The pier at Salina Cruz, the Pacific terminus, is about completed.

The operating headquarters of the company are at the port of Coatzacoalcos.

A journal commenting on the depreciated value of hemp in Yucatan advises the producers of that article to form a combine, and employ an agent with power vested in him to dispose of the fiber as the best opportunity offers. The present low price is due to the wholesale buying up by United States houses of the crops of individual farmers, to whom a lump sum is offered far below the real value, and the others have no resource left but to follow suit.

The attention of agriculturists is called to the fact that a planter of the State of Vera Cruz has forwarded to the United States a consignment of the flour of the plantain. The process of making the flour is not stated, but it would seem that the consideration of this new food is worth inquiring into.

An order for a fresh shipment has been received by the planter from the States.

The drainage of Mazatlan by the municipal authorities of that place is soon to be commenced.

The City of Mexico is at last free from the evils of bad

drainage. The Orozco project for the perfect sewerage of the capital has been completed after years of work and expenditure of millions.

The concession to Mr. Augusto Bertrand, for the construction of a railway from San Juan de Huertas to the Pacific Ocean, was promulgated on 22d ultimo.

This concession calls for the construction of a railway to start from San Juan de las Huertas, in the State of Mexico, to touch Texcaltitlan and Ixtapan in the same State, and Cocuyca and La Union, in the State of Guerrero, and to terminate at a suitable point on the Pacific Ocean. A branch may also be built from the main line to Pungarabato in the State of Michoacan. Construction must be commenced within twelve months, counted from June 22, 1894, and the line must be finished within eight years from the commencement of construction. The concession carries no subsidy.

It is the general impression that no coal is mined in Mexico. This is a mistake; the fact is that Mexico sends coal to the United States. It is not sent in large quantities, but a considerable portion of the output of the mines at Sabinas, San Felisse, Hondo, and Alamo is sent to the United States over the Mexican International Railroad, and enters through the port of Piedras Negras. Nevertheless, the railroads of Mexico get much of their coal supply from England. When the rate of exchange is too high they burn wood. Most of the coal mines so far found are near the northern boundary, and the cost of transportation to the interior is greater than the ocean and rail cost from England.

The Mexican Central Gold Mining Company has been organized in Chicago with a capital of \$3,000,000.

Eight hundred and sixty-nine thousand three hundred and eighty-six dollars' worth of Mexican products were shipped

from Tampico to foreign ports during the month of May passed. Over three-fourths of this amount were destined for the United States. In the same month Progreso exported 5,400 tons of hemp, consigned mostly to United States ports.

The total imports of Mexico for the first half of the fiscal year 1893-94 were \$16,694,311, showing a decrease of \$2,214,774, as compared with the corresponding period of the fiscal year 1892-93.

The total exports for the first half of the fiscal year 1893-94 were 37,458,010, a decrease of \$2,968,982 from the corresponding period of 1892-93.

In this calculation the Mexican dollar is estimated at par value—that is, \$5 to the pound sterling, 20 cents to the franc, etc.

Official announcement is made by the Government of Mexico that, commencing August 15, the charges made by consuls of that Republic for the certification of each set of consular invoices will be as below :

	Fee.
If the declared value of the invoice does not exceed \$100.....	\$2.00
If it exceeds \$100 but does not exceed \$1,000.....	4.00
For every \$500 or fraction thereof in excess.....	1.00

The first steamer, the Jessmore, of the whaleback line plying between New York, Baltimore, and Tampico, sailed recently from the latter port. As part of her cargo she carried a full carload of bullion shipped by the Guggenheim smelter, of Monterey. This line of steamers, known as the "Johnson Line," is now fully inaugurated and will make three trips per month. Three steel steamers of 3,000 tons each compose the line. Extensive docks and other facilities for handling the business have been completed at Tampico. The agents of the line in New York are Messrs. William Johnson & Co., and in Baltimore, Patterson, Ramsay & Co.

COSTA RICA.

GIFTS FOR AMERICAN INSTITUTIONS.

At the conclusion of the Fair most of the Costa Rican exhibits, those of archæology excepted, were presented to various American institutions. The Commission, not being able to comply with the numerous applications received from many places of the United States, and from abroad, and not wishing to break the collections, decided to make a distribution of them as follows:

To the Smithsonian Institution, Washington, D. C.:

A large collection of stuffed animals native of Costa Rica.

To the Department of Agriculture, Washington, D. C.:

A collection of fifty-four varieties of fibers.

To the University of Pennsylvania:

A valuable collection, embracing eighty-seven specimens of ancient pottery, Indian arrows, bow, staff, and pellet blow-gun; besides, two large show cases and four smaller ones.

To the city of Philadelphia for its museums:

All natural products, agricultural, forestal, mineral, as above described, seventy-eight skins, fishing implements, wines, liquors, oils, etc. A collection of national books, the entire educational exhibit—text-books, practical works, etc. A collection of silk and cotton fabrics; a collection of Panama hats; a collection of utensils made of wood, carved; castings from foundries, two models of pieces of statuary, a large collection of photographs, a shield and flags, and eight large show cases.

To the Northwestern University of Chicago:

A collection of plants, roots, barks and seeds.

To the Columbian Museum of Chicago:

Twenty large show cases and twelve fine stone urns with a relief inscription: "Costa Rica en Chicago," as a souvenir of its participation at the World's Columbian Exposition.

OFFICE OF THE MAYOR,

PHILADELPHIA, August 7, 1894.

Señor DON JOAQUIN B. CALVO,

Chargé d'Affaires of Costa Rica, Washington, D. C.

DEAR SIR: The City of Philadelphia has been greatly favored by your very valuable donations of natural products, books and educa-

tional materials. The Costa Rican Pavilion, with its contents, in Chicago, was a large and handsome museum in itself. We know that it attracted great attention from its intrinsic value. We are also aware of the fact that no other country, from the north or from the south, presented as finely prepared collections as your Government sent to the Chicago Exposition. This was the largest and best collection of its kind in Chicago.

The City of Philadelphia, therefore, wishes to express, through its representative, its full appreciation of this most magnificent gift.

The following objects and collections were among the most valuable parts of the donation :

1. A complete and beautifully prepared collection of the woods of Costa Rica.
2. A large and valuable collection of coloring and dye-stuff plants.
3. A valuable collection of textiles and fibers.
4. A large collection of gums and resins.
5. A collection of cereals.
6. A collection of legumes.
7. A collection of honeys and sugars.
8. A very fine collection of premium coffees and cocoas.
9. A handsome collection of gold-bearing rocks.
10. A collection of wines and liquors.
11. A large collection of wild animal skins.
12. A collection of tropical fruits in wax.
13. A collection of shells.
14. A collection of fishes and marine algae.
15. A collection of ants, wasps, and bees' nests of value.
16. A collection of fishing implements.
17. A general collection of minerals.
18. A large and very valuable collection of drugs and medicinal plants.
19. A collection of silks, native cloths and manufactured articles.
20. A collection of bows and arrows from the Indians.
21. A very valuable and beautiful set of national books, maps, etc.
22. A collection of photographs.
23. A valuable school exhibit, made up of text-books used in Costa Rica, of toys and other articles manufactured by the schools. Also, garments of various kinds, fine sewing and embroidery.

These various groups of articles, taken collectively, form an attractive and valuable museum, which the city of Philadelphia most highly appreciates and gratefully acknowledges through her representative, the Mayor of the city of Philadelphia.

I am, your obedient servant,

(Signed.)

EDWIN S. STUART, Mayor.

LEGACION DE COSTA RICA,
WASHINGTON, D. C., August 12, 1894.

HON. EDWIN S. STUART,
Mayor of the City of Philadelphia.

SIR: I have the honor to acknowledge the receipt of your note dated the 7th instant, in which you kindly convey the assurances of the appreciation with which the city of Philadelphia and yourself, as its representative, have accepted the donation of natural products, books and educational materials, etc., from Costa Rica, exhibited in Chicago, and presented to the city of Philadelphia through the Costa Rican Commission at the World's Columbian Exposition.

The entire contents of your note and of the one received from the Director of Museums of the city of Philadelphia, were transmitted to my Government, and it affords me pleasure to assure you that they will be received with great satisfaction and highly appreciated by the Government and the people of my country.

I am, sir, yours very respectfully,

(Signed)

J. B. CALVO,
Chargé d'Affaires,

By an act of Congress approved July 28, 1894, the Government of Costa Rica offers to pay a premium of 25 cents per tree to everyone who shall engage in the cultivation of the cacao, and who shall plant not less than 500 trees. The law takes effect from date of promulgation July 29.

The premium shall be paid on evidence that the tree is three years old and has been properly cultivated.

No premium shall be paid under this law to anyone commencing the cultivation of the cacao tree subsequent to 1900. Companies and individuals in whose favor other premiums may have been already allowed shall not be entitled to the benefits of the law.

The Government of Costa Rica has granted authority to the Costa Rica Railway Company to make a second issue of bonds to the amount of 100,000 pounds sterling. This money is to be expended in the construction of a long iron pier at Port Limon, and in making extensive repairs along the existing line of railway; also in meeting any existing obligations. The Government assumes no financial responsibility on account of the scheme.

ARGENTINE REPUBLIC.

[From Report of British Consul at Buenos Aires, April 6, 1894.]

The number of American agricultural machines imported during the last wheat harvest was enormous, and may be attributed not only to the cheapness of the machines, but to the enterprise of the manufacturers in sending trained machinists to look after them when at work. The average "chacrero" (small farmer) is by no means a highly trained agriculturist, and it is absolutely necessary that there should be some one capable of showing him how to use his "reapers and binders," etc., otherwise they soon become unserviceable from rough treatment. During a trip through the wheat districts in Entre Rios last December I constantly found American travelers superintending the working of their machines, and they seemed to have their hands full. I never met a single traveler for any British firm, and I can not help thinking that by a little more enterprise British manufacturers might obtain a larger share in the trade of cheap agricultural machinery which threatens to become a monopoly of the United States. The British manufacturers appear to hold their own as regards the heavier and more expensive machinery, such as threshing machines, etc.

ARGENTINE IMMIGRATION.

LETTER FROM MINISTER BUCHANAN.

No. 39.

LEGATION OF THE UNITED STATES,

BUENOS AIRES, *July 12, 1894.*

To the Hon. WALTER Q. GRESHAM,

Secretary of State.

SIR: The report of the Argentine Commissioner of Immigration for the year 1893 has just been published; it shows the following totals of immigrants and emigrants for the years 1890, 1891, 1892, and 1893, (first-class passengers not included):

Year.	Immigrants.	Emigrants.
1890.....	111,000.....	83,000
1891.....	52,000.....	82,000
1892.....	73,000.....	44,000
1893.....	84,300.....	48,000

A net gain by immigration during the four years, of 63,000 persons. Of the immigrants during 1893, 79 per cent were Italian, 13 per cent Spanish, 5 per cent French, 20 per cent Russian, $1\frac{1}{2}$ per cent German, $1\frac{1}{3}$ per cent Austrian, $1\frac{1}{8}$ per cent Swiss, the remainder British and Belgian.

The report claims that more families came into the country during 1893 than in any previous year.

Prominence is given to the subject of Russian immigration. In this, the Argentine government is doing everything it can to make the Jewish colonization successful.

I have the honor etc.,

WILLIAM I. BUCHANAN.

COLOMBIA.

[From Report of Acting British Consul at Panama, April 30, 1894.]

The "Colombian Quartz Mining Company, Limited," was recently formed in London to acquire a group of gold mines near Santiago de Veraguas, in the province of Veraguas. The capital of this company is 200,000 pounds sterling, only half of which has been issued. The property is a very extensive one, containing upwards of eight miles of gold veins, the main lode of which has been traced for several miles, showing an average width of twelve feet, and an average yield of thirteen hundredweight to the ton. During past years a great deal of work was done on these mines by the Indians as well as by the Spaniards. Already the company has constructed thirty-three miles of cart road, in addition to a large amount of prospecting. To show from the work already done, there are upwards of 400 tons of ore lying on the dump, and the mines are now sufficiently opened up to yield 2,000 tons per month if properly worked. There is in course of erection a plant to treat twenty tons daily, and if its results prove satisfactory, arrangements will be carried out for a plant to work 100 tons a day during next year. This whole district has been very little prospected, but so far as is known it holds out great prospects to enterprise and capital. Labor is

cheap, water power generally is easy to obtain, and heavy machinery can be transported from the coast on ox carts.

The Panama Railroad has chartered three ships from the Standard Oil Company to run between New York and Colon. The ships owned by the Pacific Mail Steamship Company will now be run by their owners, so that there will be two lines between those ports.

CHILE.

The Chilean Government has under consideration the project of requiring all import duties to be paid in the national money, the cost of exchange added. At present twenty-five per cent of the duty is payable in gold. It is also proposed that the export duty on nitrate, now payable partly in the national currency, shall be paid in gold, or by accepted letters of credit. The four millions of dollars surplus, which it is hoped will be gained by this operation, are to be applied to the fund for conversion of the national paper currency. This proposed financial scheme is to go into effect December 1st proximo.

The Chilean Government has just granted a concession to a syndicate, of which a Mr. Rawson is the head, for the construction of a railway to the nitrate beds in the province of Tarapacá, from either the port of Iquique or Pisagua.

The buildings of the Santiago Exposition are almost completed, and are said to be well filled with articles from the United States, Great Britain, France, Germany and other commercial countries. The exposition, which opens in September, give promise of great success.

From the recent sale of the first group of nitrate proper-

ties, the Chilean Government realized upward of three million dollars. This is considerably above the minimum price set by the Government. The sales were made to native Chileans, but it is presumed they acted for English capitalists.

The large dry-dock being constructed by the Chilean Government at Talcahuano will be completed and opened for use by the end of the present year. It will be capable of taking up the largest vessels, and will be of great service to foreign shipping on the Pacific Coast.

GUATEMALA.

The following is the text of a decree recently issued by the Government of Guatemala :

“ From and after the 1st of August, 1894, holders of Chilean, Peruvian, and other silver coin will apply to the National Mint to have the same changed into national money.

“ Foreign money which may still be unchanged on the 15th of September proximo shall be stamped as national coin, and only in this way shall it be legal tender in the Republic until it is recoined.

“ From said date the importation of foreign silver money is prohibited.

“ Persons visiting the Republic may import sums not to exceed \$300 per capita.

“ The Government will provide the country with the national gold and silver money which may be necessary for business affairs.”

VENEZUELA.

[From Report of British vice-consul at Barcelona, April, 1898.]

Hopes are entertained that the coal mines at Naricual belonging to an English company (Guanta Company, Limited) will contribute to increase commerce. The quality of the coals is said to be splendid, but the supply is not yet sufficient to meet requirements. It is expected that it will increase considerably with the use of adequate machinery which is expected. The cheap price the company will be able to sell at will surely encourage many steamship companies to buy it; taking also into account the facilities and safety of the Guanto harbor, where an excellent wharf has been constructed by the same company.

Large deposits of crude petroleum have been recently discovered in the State of Zulia in the Republic of Venezuela. Samples of the crude substance have been analyzed at Caracas and are found to contain 50 per cent of crude petroleum. The principal deposit yet discovered is in the immediate vicinity of the River Tara, and is capable of producing 4,000 gallons daily. Señor Christobal Dacavitch, a Russian engineer, is now soliciting a concession with the view to exploiting the discovery.

The Government of Venezuela is taking steps looking to the establishment of schools of agriculture throughout the Republic for the purpose of teaching the youth of the country the principles of farming. It appears that the young men of that country are sadly in need of such training. The soil of Venezuela is immensely rich, yet with the present primitive methods employed the results obtained are meager. The raising of wheat will be strongly advocated; also that of horned cattle and other animals.

The contract for the construction of the railway between

Caracas and Carenero has been approved by Congress. The contract is given to Count Carlos Leon.

By order of the President of the Republic, the introduction of dynamite and other explosive substances into the country is prohibited.

The Congress of Venezuela has granted to an American syndicate a concession to construct a tunnel through the Avilli Mountain and operate an electric railway between La Guayra and the capital. It is expected to begin work in September next.

CUBA.

Latest official information from Cuba is to the effect that the production of sugar in 1893 was 5,461,691 bags, or 755,860 tons. The crop in 1894 is 7,486,295 bags, or 1,056,050 tons.

ECUADOR.

A meeting of the Guyaquil Chamber of Commerce was held on the 26th of June, when it was resolved to petition Congress that a gold standard be adopted. The new Vice-President is in favor of the measure, as also is Sr. Caamaño, the Governor of Guayas, the man of the day, and many other influential government officials and private individuals, and it can, with a certain amount of safety, be predicted that a gold standard will be adopted, and that the basis of the sucre will be fixed at either 30*l* or 32*l* sterling—presumably the latter.

BRAZIL.

The various States of Brazil are adopting vigorous measures to secure laborers from Europe and elsewhere. The Legislature of Para has authorized the governor to enter into a contract for the introduction of 30,000 immigrants, and the State of San Paulo has just signed a contract for the introduction of 50,000 immigrants. The States of Bahia, Pernambuco, Alagoas, Rio de Janeiro and Minas Geraes are all moving in the same direction.

SALVADOR.

The committee representing the holders of the bonds of Salvador has resumed the payment of the bonds, both exterior and interior, which was interrupted by the recent revolution.

A committee of prominent citizens of San Salvador has been named to revise the contracts made by the late Ezeta Government.

UNITED STATES CONSULATES.

Frequent application is made to the Bureau for the address of United States Consuls in the South and Central American Republics. Those desiring to correspond with any consul can do so by addressing "The United States Consulate" at the point named. Letters thus addressed will be delivered to the proper person. It must be understood, however, that it is not the duty of consuls to devote their time to private business, and that all such letters may properly be treated as personal and any labor involved may be subject to charge therefor.

The following is a list of United States Consulates in the different Republics :

ARGENTINE REPUBLIC—

Buenos Aires.
Cordoba.
Rosario.

BOLIVIA—

La Paz.

BRAZIL—

Bahia.
Para.
Pernambuco.
Rio Grande do Sul.
Rio de Janeiro.
Santos.

CHILE—

Antofagasta.
Arica.
Coquimbo.
Iquique.
Talcahuano.
Valparaiso.

COLOMBIA—

Barranquilla.
Bogota.
Cartagena.
Colon (Aspinwall).
Medillin.
Panama.

COSTA RICA—

San José.

DOMINICAN REPUBLIC—

Puerto Plata.
Samana.
Santo Domingo.

ECUADOR—

Guayaquil.

GUATEMALA—

Guatemala.

HAITI—

Cape Haitien.
Port au Prince.

UNITED STATES CONSULATES.

HONDURAS—

Ruatan.
Tegucigalpa.

MEXICO—

Acapulco.
Chihuahua.
Durango.
Ensenada.
Guaymas.
La Paz.
Matamoras.
Mazatlan.
Merida.
Mexico.
Nogales.
Nuevo Laredo.
Paso del Norte.
Piedras Negras.
Saltillo.
Tampico.

MEXICO—*Continued.*

Tuxpan.
Vera Cruz.

NICARAGUA—

Managua.
San Juan del Norte.

PARAGUAY—

Asuncion.

PERU—

Callao.

SALVADOR—

San Salvador.

URUGUAY—

Colonia.
Montevideo.
Paysandu.

VENEZUELA—

La Guayra.
Maracaibo.
Puerto Cabello.

BUREAU OF THE AMERICAN REPUBLICS.

DEPARTMENT OF STATE,
WASHINGTON, U. S. A., 1894.

It is impossible to comply with requests for the free distribution of the publications of this Bureau. The demand for Handbooks and Bulletins has increased so rapidly as to make compliance impossible, because of the limited editions published. The lists of applicants desiring to be supplied with every Handbook and Bulletin issued by the Bureau largely exceed any edition published, and these lists would be constantly increased if the requests received daily at the Bureau were acceded to. Yet, it is well understood that many requests are received from persons having good reasons for desiring the information asked for, and both willing and able to pay the slight cost of these documents.

Recognizing these facts, the Bureau some months ago issued a circular announcing that thereafter the publications of the Bureau would be sold to all applicants at a small price. This was done with a view of extending rather than limiting the circulation of the information published by the Bureau, and at the same time securing the utmost impartiality in such distribution. It was believed that this course would result in a more general circulation of the information secured in saving the unnecessary labor of replying to requests from persons who apparently had no special interest in the publications applied for, and that all who had a well-grounded intention of embarking in business in foreign countries, or extending business already established, would be able to afford the slight expense involved in the payment of the cost price of the Bureau documents.

The result of this experiment has more than justified the hopes with which it was undertaken. With exceptions too rare to be noted, the plan embraced in the circular has met with the cordial approbation of the business men of the

PRICE LIST OF PUBLICATIONS.

country, and if the progress made thus far in extending the circulation of these publications shall be continued it will be possible to largely increase the numbers of each edition of future publications.

Many of the earlier Bulletins have been included in more recent publications. This applies especially to the tariffs, commercial directories and newspaper directories of the different Republics.

Suggestions from manufacturers and dealers as to their special needs of information will receive prompt attention by the Bureau.

The following list embraces a catalogue of the Bulletins and Handbooks published since the organization of the Bureau, of which copies may be secured by remitting to the undersigned the price named in inclosed list.

PRICE LIST OF PUBLICATIONS OF THE BUREAU
OF THE AMERICAN REPUBLICS.

	Cents.
3. Patent and Trade-mark Laws of America.....	5
4. Money, Weights and Measures of the American Republics	5
6. Foreign Commerce of the American Republics.....	20
8. Import Duties of Brazil	10
10. Import Duties of Cuba and Puerto Rico.....	15
11. Import Duties of Costa Rica.....	10
13. Commercial Directory of Brazil	5
14. Commercial Directory of Venezuela.....	5
15. Commercial Directory of Colombia.....	5
16. Commercial Directory of Peru.....	5
17. Commercial Directory of Chile.....	5
18. Commercial Directory of Mexico	15
19. Commercial Directory of Bolivia, Ecuador, Paraguay and Uruguay	5
20. Import Duties of Nicaragua	10
21. Import Duties of Mexico (revised).....	15
22. Import Duties of Bolivia.....	20
23. Import Duties of Salvador.....	5
24. Import Duties of Honduras.....	10
25. Import Duties of Ecuador.....	5
26. Commercial Directory of the Argentine Republic.....	5
27. Import Duties of Colombia.....	5
28. Commercial Directory of Central America	10

PRICE LIST OF PUBLICATION

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29. Commercial Directory of Haiti and Santo Domingo.....	5
30. First Annual Report of the Bureau, 1891	10
32. Handbook of Guatemala	35
33. Handbook of Colombia.....	30
34. Handbook of Venezuela	35
36. Import Duties of Venezuela.....	5
38. Commercial Directory of Cuba and Puerto Rico.....	10
39. Commercial Directory of British, Danish, Dutch and French colonies.....	10
42. Newspaper Directory of Latin America	5
43. Import Duties of Guatemala	25
44. Import Duties of the United States	5
45. Import Duties of Peru	25
46. Import Duties of Chile	25
47. Import Duties of Uruguay.....	25
48. Import duties of the Argentine Republic.....	25
49. Import Duties of Haiti.....	10
50. Handbook of the American Republics, No. 3	50
51. Handbook of Nicaragua.....	50
52. Handbook of Santo Domingo	50
53. Immigration and Land Laws of Latin America.....	40
55. Handbook of Bolivia	40
61. Handbook of Uruguay	50
62. Handbook of Haiti	50
63. How the Markets of Latin America May Be Reached.....	40
64. Handbook of Ecuador.....	50
67. Handbook of the Argentine Republic	50
68. April Special Bulletin, Costa Rica.....	25
New United States Tariff Law.....	05

PUBLICATIONS NOT NUMBERED.

Commercial Directory of Latin America.....	40
Second Annual Report of the Bureau, 1892.....	5
Third Annual Report of the Bureau, 1893.....	15
Manual de las Republicas Americanas, 1891 (Spanish edition of Handbook No. 1)	50
International American Conference Reports and Recommendations, including Reports upon the Plan of Arbitration, Reciprocity Treaties, Inter-Continental Railway, Steamship Communication, Sanitary Regulations, Customs Regulations, Common Silver Coin, Patents and Trade-Marks, Weights and Measures, Port Dues, International Law, Extradition Treaties, International Bank, Memorial Tablet, Columbian Exposition—	
Octavo, bound in paper	\$0 50
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Monthly Bulletins, \$1 per annum; single copies.....	10
Code of Commercial Nomenclature, first volume, 852 pages, bound in cloth, contains upwards of 24,000 commercial terms in English, Spanish and Portuguese.....	3 00

Money may be sent by postoffice money order, payable to the Director of the Bureau of the American Republics. All other remittances are at the risk of the sender. *Postage stamps will not be received.*

CLINTON FURBISH,
Director.

The second volume of the Code of Commercial Nomenclature is now in press and will be ready for delivery about the 1st of October. This is the final edition of the English, Spanish, and Portuguese edition, containing about 24,000 terms, including about 830 pages. Price, bound in cloth, \$3.

El segundo tomo del Código de Nomenclatura Comercial se encuentra en prensa y estará listo para distribuirse para el primero de Octubre próximo. Este tomo es el último de la serie inglesa, castellana, y portuguesa, consta de 830 páginas y contiene cerca de 24,000 vocablos. Su precio, encuadernado en tela, \$3.

These publications may be purchased from Rand, McNally & Co., Chicago and New York.

