Stable economy : showing how to keep a horse at the cost of £ 10 to £ 12 a-year, in fine condition to ride and drive. Concluding with an essay on the general management of the milch goat, for the domestic use of amateurs and cottagers

STABLE ECONOMY.

SHOWING

HOW TO KEEP A

HORSE,

AT A COST OF £10 TO £12 A-YEAR,

IN FINE CONDITION TO RIDE AND DRIVE.

CONCLUDING

WITH AN ESSAY ON THE

GENERAL MANAGEMENT

OF THE

MILCH GOAT,

FOR THE DOMESTIC USE OF

AMATEURS AND COTTAGERS.

BY

KINARD B. EDWARDS.

The whole of the Sixpenny publications advertised on back of cover are complete in *one part*, although in some cases there is a Second, and in others a Third Part following. For example: Part I. Rabbit Book, treats upon the breeding and profitable management of rabbits in every detail, and is so far complete in itself; whilst Part II. is devoted to illustrations, designs, plans, &c., for rabbit hutches, courts, pits, inclosed warrens, and other erections, with descriptive letterpress.

CONTENTS.

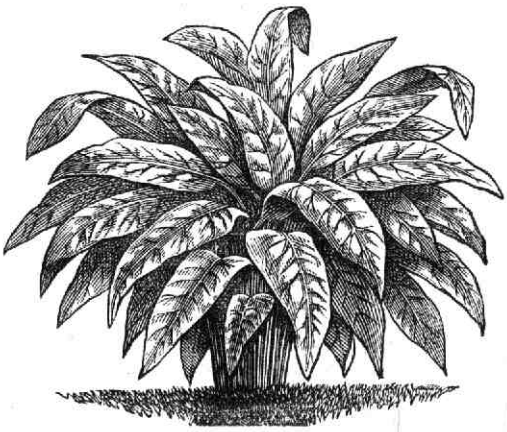
PART I.

THE HORSE.

PART II.

THE GOAT.

APPENDIX, OR PART III.



PRICKLY COMFREY.

(*Symphytum Asperrimum.*)

A NEW FODDER PLANT, PRODUCING ANNUALLY, IN FOUR OR FIVE CUTTINGS, UPWARDS OF 80 TO 100 TONS WEIGHT TO THE ACRE.

No plant ever before introduced into this country so rapidly gained public recognition, and, by common consent, established itself upon our soil as an agricultural forage crop. It is much relished by all kinds of stock, and especially Horses, and when once planted it will last for ever.

For full particulars respecting the culture of this plant, see "Garden Ground," price 6d., advertised on back of cover.

THE HORSE;

AND HOW TO KEEP ONE AT A COST OF £10 TO £12 A-YEAR.

THAT Horse-keeping is an expensive luxury, few, I think, will deny; and especially those who know what it costs to keep them in town. There is no domestic animal so commonly kept that returns so little in proportion to the cost of its keep; and there is certainly no animal kept with more unnecessary extravagance, or with less regard to economy, than the Horse. Corn and hay generally form his staple, if not entire, food throughout the year; while the prices these articles command, especially in towns, make the Horse one of the most expensive luxuries that can be indulged in. Feeding wholly upon corn and hay may be a necessity to those who keep Horses in large towns, where cheaper food is not to be had; and it may also be indulged in by those who can afford it, whether they live in town or country, cost being of little object. But such people form a *very* small proportion of the whole community, and there are thousands upon thousands who are obliged to keep Horses from necessity—for trade and professional purposes, as well as the many who would keep them, were it not for the very great expense incurred by so doing.

It is very generally believed, and broadly stated by those who keep Horses in large towns, that the cost per head in corn, hay, and litter for the twelve months is not less than 3s. per day, or £54 a-year, and I believe this sum is often exceeded in gentlemen's stables. If this costly expenditure in the feeding of Horses were confined to the rich, and to those who keep them in towns

and cannot help themselves, I should have little or nothing to say on the subject; and to such my remarks do not pretend to apply. But is it not a fact, that this expensive system of feeding is not at all confined to those to whom I make exception, but is, to a great extent, very generally adopted by all Horse-keepers, rich and poor alike, whether they reside in town or country?

People of moderate means will readily admit that £54 a-year, or even £30, is a considerable slice to take out of a limited income, especially if it be for the pleasure of riding or driving alone—and this exclusive of the consequent and additional expenses of attendance, stabling, shoeing, taxes, &c. The consequence is, that few keep Horses except the rich, and those who are obliged to keep them for trade purposes; and but few indeed, in a small way of business—however much they may require one,—can afford any such heavy outgoings.

My object in the present treatise is to show that a Horse *may* be kept—*at least* by those living in the country or town suburbs—at about one-fourth the cost before mentioned, by following a different treatment—rational and economical, and such as shall be within the command of all who may possess a small area of garden-ground, upon which to grow a certain quantity of fodder. If it can be satisfactorily shown that an average-sized Horse can be kept in good working condition at a cost of from £10 to £12 a-year, such information cannot fail to benefit a large section of our working community, many of whom are obliged to keep Horses, but who are at the same time obliged to study economy to the utmost.

Although, as I have said, Horse-keeping is an expensive luxury as commonly practised, it is equally true that a Horse may, under certain circumstances, be so economically fed as to be within the reach of people of the most moderate means; and this has been proved by many who have been obliged to practise economy in this particular, and who have successfully carried out what may be called the stall-feeding and soiling system—the advantages and economy of which I am about to call your attention to.

The theory upon which I base the system I am about to recommend is this: Firstly—If we take nature as our guide, it is clearly unnatural, and therefore unnecessary, that the food of a Horse should be confined to such high stimulating food as hay and corn to ensure its keeping in health and working condition.

Secondly—The same area of ground that will be required to provide hay, to fodder a Horse for twelve months, will, under arable or garden culture, raise such a quantity of *esculents* as will suffice to feed six or eight Horses for that period of time; or, in other words, forty square yards of cultivated ground, properly cropped, will provide keep for a Horse during the twelve months, whereas one and a-half to two acres are required to provide sufficient hay for the same length of time. Both hay and corn are undoubtedly necessary in the feeding of a Horse, but not to the extent generally used; they are both costly, and should be made the auxiliary, rather than the staple food. It is well known that no Horses are more liable to ailments of all kinds than those kept in gentlemen's stables, where hay, corn, beans, &c., form the sole diet. A periodical dosing or cleaning out is often necessary to work off the effects of such high feeding.

In considering the question in its pecuniary aspect, it is perfectly clear that keeping land in pasture, either for the purpose of grazing or for making hay, is not an economical way of providing food for a Horse. Grass loses five-sixths of its weight when converted into hay; an acre of land that produces seven tons of grass, will only give one ton of hay, and whether this be grazed or converted into hay, it will be wholly insufficient to keep a Horse for twelve months. Although it is true that pasture land will only raise on an average about one ton of hay, it is equally true (to quote the words of Mr. Milman) "that the capabilities of *arable* land to grow green crops are almost unlimited; it is scarcely possible to overrate the productiveness of a small area of land;" and it is by cropping and soiling from a small plot of arable or garden land with certain esculents and artificial grasses, that sufficient forage may be raised to enable you to provide the necessary fodder at a really trifling cost. Certain plants have been introduced into this country from abroad, which yield an immense weight of forage throughout the summer, suited to and much relished by horses. Comfrey, introduced from the Caucasus, and Lucerne, from Switzerland, are found to be the two best for this purpose; the former will yield eighty tons of forage to the acre, and the latter upwards of forty. Now, when we consider that a Horse can only consume about ten tons of dry and green food in the twelve months, it is readily seen that a *very* small area of garden land will suffice to provide the necessary supply, and that something over one quarter of an acre of til-

lage ground laid down with these esculents, will produce as much forage, dry and green, as is obtained from six or eight times the area of pasture land.*

The first question to be considered in dealing with this subject is, to what extent can green food be given without injuring the condition of your Horse, and reducing his working power and power of endurance? The quantity that may be given with advantage must, of course, depend in a measure on the amount and description of work to be done. I know that very considerable prejudice exists amongst most horse-keepers, and especially by coachmen, grooms, and ostlers, against the use of green food for Horses; it is given occasionally, generally medicinally, but seldom or ever continued for any length of time, as permanent fodder throughout the summer. It is said to make them washy, soft, pot-bellied, &c.; and no doubt it has this effect upon a Horse fed exclusively upon green food, and especially if it had not been used to such feeding; but I maintain beyond question that a certain quantity of green food judiciously given, forming a part, even the chief part, of the daily food of a Horse throughout the greater part of the year, is the best feeding that can be given, and will have none of the bad effects complained of.

Let us for a moment look to nature—which is admitted to be a safe guide in most things—in considering the proper treatment of the Horse. Green food (grass) is clearly the food provided by nature for his sustenance;—the formation of his hoof, and swiftness in a state of nature, being proof that upon that food he will be able to work, and combine speed with endurance. In my travels through South America, I had every opportunity of testing this question in a practical manner, and I quite satisfied myself as to the effect of green food upon Horses living almost in a state of nature. In that country—as in Australia—where horses are bred in herds, in much the same way that horned cattle are bred here, any feeding except grass is unknown; and I speak from experience when I say that no Horses in this country, however they may be fed, are capable of

* Mr. Mechi, in proof of the expense of providing pasture for Horses, says: "My Horses require two to two and a-half acres per Horse, and some of my neighbours' Horses consume five acres, some more, during the twelve months. On some farms that I know of, ten acres would hardly keep a Horse. This brings us to consider the imperious necessity and advantage of forcing from the land its utmost possible development. Those who watch the discrepant productions of *three tons* and fifty tons can at once apply my observations."—*Mechi: "How to Farm Profitably."*

enduring the fatigue of a long journey better than they are. I have myself, on more than one occasion, ridden in the saddle from sixty to seventy miles in one day, the "guacho," or attendant, driving a herd of thirty or forty Horses in front for the entire journey, these being driven for the purpose of change. The whole journey is performed at a hand gallop; and I was informed that 100 and 120 miles at a stretch is not of uncommon occurrence. The journey is, of course, across the grass plains, and not over roads; the Horses are unshod, and know the taste of no other food except grass. I just mention this fact to show that there is nothing in green food to make a Horse useless for work, as is commonly supposed; but, on the other hand, I am far from saying that a Horse fed solely on grass can compete with one, in the long or short run, that is either fed wholly upon hay and corn, or upon what I maintain to be the best of all feeding—a proper proportion of hard and soft food. As I, however, said before, it is not my intention to advocate grass (pasture) in any shape as fodder, inasmuch as it is far from being economical, and comparatively few people have the command of an acre or two of pasture to devote to this purpose, and still less can they afford to purchase hay and corn at retail prices. A Horse, if he is to be constantly used, and expected to work with any spirit, will undoubtedly require something more than green food, and that of a stronger and more binding character; green food must form part of the whole, and the whole, and each part, must be varied, to obtain the best results.

Although but few people, as I say, may be able to command an acre or two of pasture for the use of their Horses, even supposing it were desirable, there are comparatively few, I think, living in the country or town suburbs, who cannot command a small plot of garden ground, say thirty to forty yards square, and it is to those who can command such a patch that I say, "You can keep a Horse at a cost of £10 to £12 a-year in good condition to ride and drive."

We now come to the all-important point of how to cultivate this plot to the best advantage, as well as generally to consider the necessary quantity of corn and hay that will be required, and the estimated cost of £10 to £12 a-year.

I will now take it for granted that the proposed Horse-keeper is possessed of, say, one-third of an acre of ground (about forty yards square) upon which to grow his crops, and point out how it may be most advantageously cropped for the purpose to which

it is intended to devote it. Of the many crops that may be cultivated for this purpose, Comfrey and Lucerne, as I have said, are, perhaps, the two best; both plants are of most luxuriant growth, and afford an abundance of forage throughout nine months of the year, much relished by Horses, and upon which they are found to thrive and do well.* The former (Comfrey) is only used in a green state; it is fattening, and less flatulent and softening than tares or clover, and Horses are found to work better on it than on any other green food. It is very hardy, will grow on any soil, comes in earlier, and lasts longer than any other green crop, and affords a greater weight of forage per acre, and when once planted it will last for ever.† Lucerne is better known in this country, having been in use and established with us for many years; it is also very largely used and highly prized on the Continent as food for Horses. It may either be used green, or it may be converted into excellent hay. It will continue in the ground unimpaired for from seven to ten years. Of the root crops, either carrots, parsnips, or mangolds may be grown, all of which are excellent winter keep for the Horse. One-third of the area to be set apart may be laid down with Comfrey, and one-third with Lucerne, one-third being retained for either carrots or mangolds, or for a few of each of them. This will allow thirty-six perches for the soiling crops, and seventeen

* Mr. Mechi says: "I object *in toto* to permanent pasture, as a positive individual and national loss. Lucerne and sainfoin are my favourites, and you can grow them anywhere if kept clean, supplied amply with lime drain (where necessary) very deep, and protected from frost in winter by a strong coating of manure, with a dust of guano in summer. Tares (vetches) and rye are also profitable. All these will grow on *any* land, however boggy, sandy, or gravelly, if thoroughly drained, properly manured, and deeply cultivated."

† I have lately received a letter from a neighbour who grows Comfrey largely, and in it he says: "I have fed three cows and two horses during the past summer on the produce of three-quarters of an acre of Comfrey." My own experience of this valuable plant is that it will produce double the quantity of fodder that can be raised from any other plant known, not excepting Lucerne, which probably comes next. 2,000 plants or small cuttings, that I planted three feet apart early this spring, produced during the following nine months upwards of 50 tons of forage to the acre, and I am confident that next year I shall obtain up to 80 tons. The Bishop of Kildare, who grew it largely at Glasnevin, when asked what produce it would give, replied, "Sir, it will produce 300 tons to the acre." The Rev. Henry M———, who grew it, obtained from three cuttings upwards of 82 tons. (*Hollier.*) Martin Doyle speaks of it highly, and states that its weight per acre is fabulous.

perches for the root crops. Allowing from the soiling crops an average yield of fifty tons to the acre, thirty-six perches will give close upon twelve tons of forage, and allow thirty tons to the acre for the root crop, and we have four tons from the seventeen perches, or a total of sixteen tons, raised on a plot of ground forty yards square.* Now suppose a Horse to consume eight tons of such food in the twelve months, we have a large margin to allow for the loss of weight in converting a certain quantity of the Lucerne or rye grass into hay. Carrots are well known to be excellent for horses, but mangolds are little known and seldom used for this purpose; nevertheless, they are excellent and very economical, used in moderation, and not much inferior to the highly-prized carrot.† Mangolds can usually be purchased for about one-half the price of carrots, and can be obtained in places where carrots are not to be had at any price. The quantity of green food, such as Comfrey and Lucerne, that an average-sized Horse will consume in the twenty-four hours, supposing no other food be given, may be set down at sixty pounds, and the same Horse would probably consume twenty-five pounds to thirty pounds of dry food, such as corn, hay, and straw chaff. The total quantity of food, therefore, that should be given to a Horse daily will be in proportion to the description given, and will vary according to his size and the work he has to do. It must be remembered that a Horse has a very small stomach; the digestion, however, is very rapid, and to make up for this smallness in size, the food should be administered in small quantities at a time, and frequently given.

We now come to the question of corn. Although, as I have said before, corn and hay in any great quantity are not essential in the feeding of a horse; a certain quantity however, is necessary, and must be given daily, partly to counteract the laxative tendencies of the green food, as well as to keep up the spirit and enduring

* Mr. Mechi, who had considerable experience in the use of mangolds for Horses, speaks most highly of them, and found that they, in a great measure, dispensed with the necessity of hay, and kept his animals in first-rate health and condition. The analysis of the mangold shows that it possesses the elements necessary for the formation of bone and muscle to an unusual degree, and more than in other root or green crops.

† Stephens, in his "Book of the Farm," writes as follows: "The quick progress of Lucerne, when it has room, is remarkable; the first year only two tons—the second, eight tons—the third, thirty-two tons at four cuttings." Lucerne is fit for cutting a fortnight to three weeks earlier than rye-grass or clover.

power of the animal, and this especially when a Horse is required to work hard and go at any speed.

Other grain except oats is seldom given to a Horse. Indian corn, however, is excellent, and more economical; and buckwheat may also be substituted, for a change.* As variety has been found to be an important element in the feeding of all stock, so is it with the Horse. Taking one season against another throughout the year, it will be found that an average allowance of five pounds weight of grain per day (over one bushel per week) is sufficient for any ordinary-sized horse. If we take the average price of oats and maize at a trifle less than 1d. per pound, this will entail a cost of 4d. per day, or £6 2s. a-year, leaving, say, £5 for rent and labour of cultivating the plot of ground, and £1 for any oaten straw that may be required to chaff up and consume with the hay roots and green forage during the twelve months. It will, therefore, be seen that £10 to £12 is sufficient to cover all cost, so far as food is concerned, and this without stint in any way. There is another article that may be used with very great advantage where it is to be procured, and that is furze or gorse. This is a most valuable and economical food for Horses during the winter months, when all kinds of keep are short, and expensive to purchase. Horses are found to do remarkably well on furze, and are said to look better in the coat and more sleek than when fed on any other food. In very many places furze can be cut in any quantity from commons and wastes, at no expense whatever beyond that of cutting, and ten minutes will suffice to bruise sufficient to supply an animal for twenty-four hours.†

Comfrey and Lucerne will both be ready to soil from early in

* Buckwheat is a very profitable crop to grow, and the grain is much used abroad to feed Horses and poultry. I have on two successive years obtained (without manure) over forty bushels to the acre, on poor sandy soil that would not have produced eighteen bushels of oats. It is planted the same time as swedes, and comes to harvest shortly after wheat harvest. The straw is excellent to chaff up for horses; it may also be cut green to soil from, as Comfrey and Lucerne.

† Although I have only mentioned Comfrey and Lucerne, there are many other esculents and artificial grasses that may be cultivated with advantage for the purpose of soiling from. Sainfoin, which makes *the best of all hay*, Italian rye-grass, clover, tares, rape, &c.,—all these are valuable in their way, yield very heavy crops, and afford an endless variety as change of food for all stock. Full particulars of the cultivation of these several plants will be found in the Second Part of this treatise.

April (indeed, my Comfrey is at this moment, 25th March, in full leaf and ready to cut), at which time the roots should be gradually discontinued, and replaced by either one or the other of these crops. The soiling from these green crops may be continued until late in November, at which time all growth is suspended, and it will then be necessary during the next four (winter) months to depend wholly upon hay, straw, corn, and roots. Where several Horses are kept, it will undoubtedly pay well to resort to that which has been found to be by far the best and most economical way to administer all food to Horses, and that is feeding upon chaffed food. A certain quantity of hay and straw should be chaffed up and mixed through the chaffed green food, and the bruised oats, or Indian corn meal, may be also added, the whole being mixed together. It is found that a Horse will consume chaffed food in a much shorter space of time than when unchaffed, and there is consequently more time for rest—a very important consideration with Horses that are much out of the stable at work. There is also the advantage of being able to consume a certain quantity of straw, and which the Horse would refuse to eat in any other way. Administering chaffed food undoubtedly entails extra labour, and, as I have before said, it cannot be so advantageously practised as where more than one Horse is kept.*

In winter, when roots have to take the place of green food, chaffing becomes all the more essential. After the mangolds or swedes are passed through a pulping-machine, they must be mixed with chaffed hay and straw; otherwise they would prove washy, and too cold to the stomach, unless given in very small quantities. There is, however, no root so good for the Horse as the carrot—in fact, it is found, when given in sufficient quantity, quite equal to corn.†

* A chaff-cutter and pulping machine may be very economically worked by a small turbine wheel, by which much labour may be economized, if not dispensed with altogether. There is no house having anything of a supply of running water that should be without one of these wonderful little wheels. They can be put up at a very trifling cost in the corner of any shed or out-house, and can be used to turn a lathe, circular saw for cutting wood, pulping or slicing roots, chaffing hay, straw, cleaning and grinding knives, scythes, &c. A small 3-inch pipe of water, with a good fall, will give the requisite power. They only require to be better known, I think, to be more generally used.

† Neither carrots nor mangolds should be given in too cold a state. They should be stored in the stable or some confined place, for a few hours, to reduce their temperature before use; otherwise there may be

Although chaffing should be carried out when practicable, it is not a *sine quâ non* in the soiling system, and where only one Horse is kept it will be seldom found practicable, as the chaffing involves cost and labour, two hands being necessary. I do not myself chaff my green crops, but give them as cut and carried from the field, a small quantity of hay being given twice or three times a-day after the green food, regulating the quantity of the latter by the state of the excrements and general appearance of the Horse, and more particularly regulating the quantity of hay and corn by the work the animal is doing at the time. There is really no practical difficulty whatever in carrying out the system here advocated, and it will undoubtedly prove the most economical that can be practised, and adapt itself to the circumstances of those who really desire to study economy. After you have once laid down your crops, and they become established in the ground (being perennial), there is little or no labour or expense afterwards, beyond periodically manuring the ground, and keeping it free from weeds. The manure that is made from the crops consumed should be annually returned to the soil, and this will be sufficient to keep your land in high cultivation, provided it was in good heart when laid down.

It is of the utmost importance that all manure made, liquid or otherwise, should be stored in such a way as to convert the whole as far as possible into a semi-liquid state. The most valuable properties of manure (carbonic acid and ammonia) are stored and preserved by the liquid element being present, and prevented from taking flight and being lost in the atmosphere, which is the case with all manure that is exposed and allowed to dry.

Many may think, at first sight, this treatment will involve considerable labour, but in practice it will not be found to do so when once the system is understood and systematically carried out. It will, of course, be necessary that the cultivated patch should be within easy reach of the stable; if it be directly adjoining, the forage may be cut with a common field-hook, and carried in by the boy under his arm, say, twice a-day; but if the ground be at a greater distance, a wheel-barrow will be the more convenient way of carrying. In either case the labour of cutting and carrying is only the question of five minutes in the day, and it will take this time to cut the usual quantity of hay from a rick,

fear of griping. This especially applies when they are given whole and unmixed with chaff.

where soiling is not practised. As I have said before, and again repeat, a Horse, fed as I have described, will be fit for any ordinary work, either to hack, drive in a carriage, do cart-work, or light field-work; but I do not profess, by such feeding, to keep a Horse in such condition as to fit him for the hunting-field, or for fast carriage-work in town, or severe farm-work. *Such* can only be performed by Horses fed upon an unlimited quantity of corn and the best hay; but for such work as *nineteen Horses out of twenty are required to do,* mixed feeding, such as already mentioned, will be found all that is necessary; and a Horse so fed will be found far more healthy, and as well able to perform all ordinary work as when fed upon four times the quantity of hay and corn, and possibly at four times the cost.*

It must, however, be remembered that Horses, like all other animals, differ much in constitution, and consequently it is impossible to lay down fixed rules that shall be applicable to *all.*

Some horses will by nature do more work and keep in better condition when poorly fed, than others which are comfortably stabled, seldom worked, and with ample supply of the best and most nourishing of food. Cob Horses, 15 hands and under, are as a rule, more hardy and better constitutioned than bigger Horses, and will do more work for their size and cost less to keep.

In conclusion, let me say a few words respecting that most vile and cruel harness appendage called the bearing-rein. To say that it is useless is to say little or nothing; it is not only useless, but *cruel* in the extreme. I have never yet seen a Horse that either went better, or looked better, with it than without it. It is practically *impossible* for a horse to draw with any freedom or comfort when reined up tight with this abominable strap. No better proof of its uselessness, nay *hindrance,* can be given than the fact that before a Horse can pull a heavy load

* I may here remark that a small piece of tobacco, the size of a small nut, is an excellent thing to give to a Horse that is taking a long journey, or doing any hard day's work. It is wonderfully strengthening and sustaining to the stomach.

up a hill, it is necessary to *unfasten* the bearing-rein before the animal can utilize his full strength ! !

In the present enlightened (?) age, surely none then, but the most prejudiced and ignorant can continue the use of that which *all* authorities are agreed is both *useless* and cruel in the extreme. Horses, as a rule, have quite enough hardships to endure, without man exercising his ingenuity to add to them.

PART II.

THE

GENERAL MANAGEMENT

OF THE

MILCH GOAT

FOR THE DOMESTIC USE OF

AMATEURS AND COTTAGERS.

BY

KINARD B. EDWARDS.

THE GOAT

AS A MILK PRODUCER.

When we consider the great demand that exists for milk in this country, as well as the cost and difficulty of obtaining it in a pure and unadulterated state, it appears strange that the Goat is so seldom kept by cottagers and others for the purpose of supplying the limited quantity of milk that may be daily required for family use.

We, as a nation, are a large milk-consuming people. A cup of tea or coffee without milk, even in the poorest households, is seldom seen; and as for children's puddings, they are a standing dish, no nursery dinner being complete without one. Milk may also be considered as essential in the rearing of young children, and it is sad to contemplate the many hundreds, if not thousands, of poor children who die prematurely from the lack of it. We also know too well, from experience, that a large proportion of milk sold in villages, as well as in towns, is more or less adulterated, and those only who keep their own cow or goat can be *sure* as to the purity of the article sold under the name of "milk."

The milk of the Goat is far richer, more nourishing, and more easily digested than cow's milk; and although it is true that the quantity from a single Goat is comparatively small, yet it would in very many cases be ample to supply the requirements of small families, and most cottage homes.

Although the Goat can never be brought into general competition with the cow as a milk producer, yet the Goat possesses certain advantages over the cow. She may be kept by those who are utterly unable to keep a cow, or supply the necessary fodder, shelter, and attendance for so large and important an animal.

The Milch Goat may be kept and stall-fed by any family or cottager who may have a small outhouse or stable wherein to confine and feed her, and also such small area of garden ground upon which to grow the necessary green food and root crops for her support. Very much the same system must be adopted in the feeding and general management of a stall-fed Goat as that described for the cow, only on a very much smaller and more limited scale. A variety of succulent fodder plants should be grown for her use throughout the summer, as well as clover, rye-grass, or meadow-hay, roots, and corn, for winter use. Carrots, parsnips, swedes, are all relished by the Goat, and encourage the secretion and flow of milk. The general cultivation of all the necessary crops, as well as the preparation of the food, have already been so fully entered into in the "Amateur's and Cottager's Cow," as well as in the "Garden Ground," that it will not be necessary in this short essay to enter again into minute details. Suffice it to say that much the same treatment, as to cropping and feeding, should be resorted to both through the winter and summer months.

Goats are often somewhat dainty about their food, and at times refuse to eat up the chaffed prepared food as readily as the cow does. This is especially the case with those that have been taken from mountain runs, where they have had their liberty to browse the sweet herbage, and pick "tit bits" here and there. Goats, however, that have been bred in confinement, are not so fanciful, and such usually prove the most tractable and best milkers.

Cottagers who live upon the outskirts of commons, or in the neighbourhood of green lanes and waste lands, are particularly well-circumstanced for Goat-keeping. In the former case the animal may be allowed her liberty to run at large to find her own living, at no cost and but little trouble to the owner; returning home in the morning and evening to be milked, and receive some sweet hay, corn, or dainty meat as an encouragement. In the latter case (upon road-sides and waste lands), it would be necessary to tie or tether the Goat, removing her to a fresh spot once or twice daily. In such places it would be impossible to allow her greater liberty, as the Goat is well known to be most destructive to trees, both by barking and browsing them; besides, being as nimble as a deer, she is much given to trespass, making short work of such hedges or ditches as would suffice to confine other stock.

A good milch Goat, with a kid by her side, may be purchased in most localities (where they are to be had at all) at a price varying from £1 to £2, according to her age and milking qualities. A Goat is at her prime between the age of two or three years and eight. It is not desirable to purchase one younger than two years, otherwise the yield of milk will be very small, and when older than eight the milk becomes poor in quality, and the animal apt to prove barren. A *good* English Goat will give from one and a-half to two quarts per day (some give three), whilst the best Spanish and Maltese Goats give very much more. The period of gestation with the Goat is five months, and if well fed she will continue to give a good flow of milk for three or four months after kidding. At this lapse of time she should be allowed access to the male (when she next comes in season), and during the period of her pregnancy her yield of milk will gradually decrease, and all milking must be discontinued at least a month or so before kidding. Goats kept in confinement and upon high feeding will breed twice in the year. but this is not desirable. In the ordinary way she has two to three kids at a time, in warmer climates even four, and sometimes five at a birth; two, however, in this country, is most common, and Goats usually continue to have the same number at a birth year after year. The Goat passes through the stages of parturition with comparative ease and safety, and should not in any way be interfered with during the birth of her offspring. An hour or so after the delivery, she should be supplied with a warm bran mash to refresh her. The kids may either be reared to maturity or allowed to suck their mother, and so fattened and killed for the table whilst on the milk. Fat kid is a delicious dish, almost equal to lamb; many people would be prejudiced against the dish, because it is uncommon, or because they have never tried it; such prejudices, however, are usually soon overcome by those who keep them, and whose interest it is to prefer and appreciate it. To cottagers, however, and people of small means, who are unable to indulge often in butchers' meat, a fine fat kid will prove most acceptable, and will be admitted to form a considerable item in the benefit and profit derived from keeping a milch Goat.

Goats have but two teats. They are sometimes milked from behind, and sometimes from the side (as with the cow). They do not give their milk as readily or as freely as the cow, and require coaxing. To induce the Goat to let down her milk, it is

also necessary, during the operation of milking, to continually jerk the closed fist against the udder, imitating the butting action of the kid or calf when sucking.

As the capacity of the Goat's udder is small, it is desirable that for the first three months after kidding she should be milked three times daily—morning, noon, and evening; and after this time, or so soon as her milk begins to fall off, twice will suffice. It is of the utmost importance with the Goat, as with the cow, to milk very clean—that is, to draw the udder *dry*, and clear it of the strippings; and this will always be found the richest portion of the milking. Goats that are not milked clean soon drop off their milk, and will eventually run dry. The milk of the Goat is highly nutritious, and a surprising quantity of cream rises upon it when allowed to stand any length of time. Medical men commonly recommend Goats' milk for infants and delicate people, as being more easily digested, and less likely to curdle on the stomach.

As Goats vary very much in the quantity of milk they yield, it is necessary to be very cautious in your purchase. A good, prominent, capacious udder denotes a large yield, as well as the size and condition of the kid she is rearing. It is always well to purchase a Goat with a kid by her side, as she is then in full profit, and you can judge for yourself of her milking powers by actual measurement. Large droves of Goats from Wales, Ireland, and Scotland are periodically driven through many parts of England, for the purpose of sale in the chief towns and villages. They may also be often seen standing in small droves for sale in the open spaces of our large towns. These animals are also common at most of our seaside resorts, where they are used for drawing small carriages, as well as for milking.

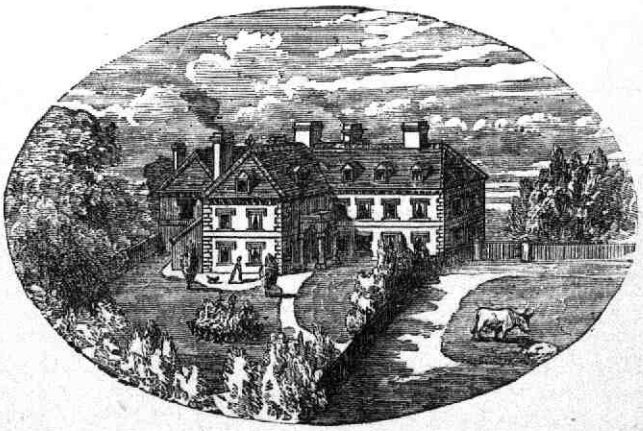
If more attention were paid to the breeding and rearing of Goats, especially for milking purposes, I believe their yield of milk might be very much increased, so as to become a really valuable acquisition to our dairy. As with cows, the offspring of good milking Goats almost invariably inherit their mother's good qualities, for which reason it is desirable to rear to maturity all she Goats that are bred from good milking mothers.

The advantages to be derived by cottagers who may be able to keep a Goat are very great. It will give pleasure and occupation to children to attend and feed them, and encourage and

train them to be kind and gentle to animals. The actual profit to be derived from a single Goat is not, of course, worth consideration, except in places (towns) where there is a ready sale for the milk at a high price (2s. per quart being commonly charged for it, when required for rearing delicate infants). Although, as I have said, the profit is small, the convenience in very many cases will be found to be very great, especially in places where there is a difficulty in getting pure and unadulterated milk. A quart or quart and a-half of really rich milk daily, and produced at little cost, is an acquisition to any household, and more particularly to the cottager, who, unless so producing it himself, would be obliged to do without it altogether.

In conclusion, I would say to all who are consumers of milk, and are in a position to produce what they require, "Keep a cow if you can; if you can't keep a cow, keep a Goat."

FINIS TO PART II.



BURBAGE HALL, LEICESTERSHIRE.

W. J. JOHNSON PRINTER, 121, FLEET STREET, LONDON, E.C.