AMBASSADOR COLLEGE UNITED KINGDOM

Your Living Environment

Vol. III Nos. 9 and 10 September/October 1972

FARM MAINTENANCE AND CONSTRUCTION

"One look at the boundary gate as you drive up to a farm property can tell you all you need to know about the manager".

An exaggeration perhaps — but one that contains more truth than most of us realize! Often it is not until after you have been in the market for a farm, or an even larger property that you come to realise how much can be learned from that *first* impression.

It is simple really — would you expect to approach a *mansion* or a *palace* through a little old twisted-wooden front-gate, hanging by one hinge and held up at the other end by a loop of used baling twine over a drunken gatepost?

On the other hand would you expect to drive through the gold-decorated gates of Buckingham Palace and come to a tumble-down *shanty?* The answer to these questions is all too obvious, but these extremes serve to illustrate that the front entrance to any property is a good indication of what one can expect on the inside.

WHY ARE SO MANY FARMS RUN-DOWN? Why do the few keep their property neat and clean, well painted and in good repair? Why are so many content to live on a pile of rusting farm machinery, old tyres, bottles and tins? Why do some plant groves and avenues of majestic trees, while others live in the shimmering heat of an open plain? To be a little more personal — how do you keep your property?

In this issue of *Your Living Environment* we want to focus on some of the more common problems in farm maintenance, construction and management. We will treat these problems and their solutions as they have basically affected our own farm here at Ambassador College, Bricket Wood.

It is highly significant to the average reader that God allowed our Department of Agriculture to begin in a run-down situation and with virtually no money. Few farmers will have any difficulty relating themselves to that kind of situation! Such conditions are common-place in all farming communities. And furthermore, like most farmers we felt we had insufficient acreage. Some would not regard 4/5,000 acres as "big" but to drop down to 130 can come as quite a shock! It feels like being commissioned to do a portrait and then learn that your canvas is limited to the size of a small postage stamp!!

Of the 130 acres the College owns only 90 can be used for agricultural purposes. The other 40 is an area that we rent rather precariously for six months out of every year! Still, call it 130 acres all told.

Having worked with 1,200 acres of grain, up to 700 head of cattle and at times 3/4,000 sheep, it was quite a contrast to find oneself reduced to about 19 cows and calves, three sheep and two goats!

The start of the Agriculture Programme in Britain sounds almost depressing doesn't it? On the contrary, it has always been a most exciting challenge! Most toughened and seared old farmers will find that difficult to *'swallow'*, but bear these points in mind:

First, we are looking back now in retrospect.

Secondly, it was easy to overlook the run-down improvements because it was still evident that the old Hanstead Farm had been a model of efficiency.

Thirdly, it took some time to fully realise how little money was available to implement the Agriculture Programme. In fact there was usually

AMBASSADOR COLLEGE (U.K.) LTD.

plenty of money, it was just that the College Business Manager always had at least ten people with plans to use it!!

Fourthly, the mustard-seed beginning of the Agriculture Programme was no bother at the time. We all *knew* that God would provide His College with the land we needed!

He did too, but there were some things we did NOT realise! He did *not* provide it when WE wanted it, or as *much* as WE wanted, or of the *quality* WE wanted. Neither did He provide it in the *way* WE thought it would come.

When we woke up to the fact that our Father in heaven, (the *richest* person in the universe) had given us some of the *poorest* land in England we began to wonder! It left us with two alternatives:

First, we could begin to despise God's blessing. *Secondly,* we could accept it gratefully, knowing that there must be a good reason behind it. No doubt you hope we were smart enough to choose the second course. We did and over a period of time *three* important facts have emerged:

First, it is not logical to expect God to give even His own College *more* land until we learn how to use that which we already have. *Secondly,* if He gave us fertile land we could perpetuate wrong soil management practices for years before either finding out our mistakes, or having to admit them. Remember poverty-stricken soil reveals mistakes in a hurry!

Thirdly, had God given us rich soil our successes could be dismissed with the comment — anyone could get those results with land as fertile as that which Ambassador College uses. Such of course is not the case.

Now following these general comments on the College farm area, let us look at some of the areas where improvements have been carried out.

FARM BUILDINGS

In recent years we have formed our own *Farm Construction Crew* in The Agriculture Department. This not only makes us less dependent on certain other College Departments (who are usually well loaded with work) but it provides many satisfying job-opportunities. In addition it has put a real prod on some of our men to go out and seek special training in various trades.

We have now settled on a general type of building and construction pattern. We buy in prefabricated wooden buildings in sections and do the foundations, side erection and roofing with our own men. Though this may not have proved to be the quickest method we think it is very economical.

Much to the amazement of the construction company supplying the buildings, our crew literally turned them inside out, or to put it more literally — *outside in!* By doing this we end up with a fully lined wooden building and use the material of our choice on the outside walls. That which is proving to be most serviceable and attractive is box-profile galvanized metal sheeting that has been factory-covered on the outside with a pleasant blue PVC finish.

All roofing has been done in Big 6 asbestos sheeting. Guttering and downpipes are also asbestos and each building is set on 9" x 9" x 18" hollow concrete blocks, resting on excavated concrete foundations. Where large-stock are housed, the *con-block* construction is continued to a height of 5'6". This allows for a build-up of farmyard manure to a depth of 3' during winter, if desired.

The type of building described has been used (with appropriate modifications) as a cattle-barn, hayshed and garden-shed/vegetable storage unit.

Tentative plans are now in hand to erect one for poultry and another for machinery/grain storage, but as yet we do not have approval for these.

It has been our experience that lack of trade skills in our own farm staff is largely offset by the care they take over their job. This is no substitute for proper qualifications, but their relatively "unskilled" work has been better than the botched jobs done by some contractors. They are at least on hand to correct mistakes when they arise. This can't always be said for contractors.

One such disastrous example of this occurred recently on a contractor-erected building when one of our men fell 18' through an asbestos roof onto the concrete floor below! His life was spared, but he suffered major injuries. Close examination revealed that one end of this particular sheet had never been pushed up far enough toward the ridge-cap, to be supported by the beam underneath. That building was erected 15 months ago and in painting the roof recently, our man fell straight through to the floor.

ROAD CONSTRUCTION

In spite of the fact that most of the College Farm is gravelly land and the total area very small, we have found a great need for roads. Though the perimeter is fringed with a tar macadam road, internal roads are needed to service some fields.

We managed for years with the natural surface, but it always degenerated into an unsightly mess

in winter. This was especially true around gateways and other points of heavy traffic concentration.

Rather than create the usual drainage ditches on either side of a *formed* road, we used our tractors and trailers to cart in road base from a neighbouring gravel pit. They had plenty of coarse stone in a clay base to lay down as a solid foundation.

Preparation of the underlying surface to receive this material involved shallow ripping or chisel ploughing. Any grass and organic topsoil was removed to a width of 10′ and an average depth of 3 to 4″.

After levelling, a heavy roller was brought in to thoroughly consolidate the imported material. This preparation work may be heavy at times and arduous, or even tedious, according to the type of mechanical equipment available for the job. Regardless of that, it is worth doing the job well. A solid foundation is there for all time, but a job half done will continue to give trouble. It will undermine the surface material for years, regardless of how much one spends on the *finish.*

No effort should be spared to produce a smooth even surface on the base material. In some sections we failed to do this, in our haste. Our finishing contractor would have done us a favour to have refused to apply his tar finish to these uneven areas.

That was the final stage — spraying with tar and spreading a light dressing of gravel. The final process was repeated and then we used the road for one winter. It was our intention to bring the contractor back for one or two tar and gravel applications.

Both parties had miscalculated on the speed, weight and concentration of traffic throughout that winter. It was also wetter than usual. Base preparation had been good, except for unevenness, but the surface broke up. Water penetration followed and we managed to produce a fine *crop* of potholes by the end of winter!

Instead of repairing the potholes and applying finishing coats of tar and gravel we made a decision to switch to concrete construction.

To some, especially overseas readers this will sound like a very costly move. It is not really, when all the facts are known. For example the British Ministry of Agriculture makes special financial grants available for farm-road construction. A grant can cover as much as 40% of the total cost involved and they are *not* payable on tarred roads. Presumably the latter have been judged unsatisfactory for farm use under local conditions.

In addition to these facts, we had no foundation costs in building the concrete type roads. These had already been met in the initial stages of tarred construction. That which remained of the original road following the tough winter and heavy traffic, formed an ideal base upon which we poured our concrete.

The tarred road was crowned in the middle and to save cement this crown had to be marginally lowered in places. We aimed at a minimum depth of 3″ in the centre and 4″ under the wheeltracks. An inch of side-slope was deemed sufficient to produce the desired run-off of rain-water.

Concrete was delivered ready-mixed from a gravel-washing plant less than a mile away and a large number of channelled steel *forms* were hired in for the job. The latter are held in position by iron spikes supplied with the forms.

Spreading was done with shovels and rakes and tamping with a spring-mounted small engine on a heavy wooden beam. The desired rough *fatty* finish (for English winter conditions) was produced by a light hand tamping with a smaller wooden beam.

Cement was poured in 15′ bays, each divided by a ½″ expansion joint of heavy *cardboard-felt.* During the early part of this construction the weather was unusually hot and dry, especially for England. This produced problems of serious cracking as long as the cement mix was *going-off* too quickly. We also made the mistake of thinking that we could get away with a covering of plastic sheets. Plastic, as they say is used for everything — well, this is one thing it should not be used for, at least under these particular conditions! We then changed to a hessian covering and this worked fine as long as our men kept it damped down.

STOCK-PROOF FENCING

The world owes much to British agriculture. It has taught man many things, but it is our considered opinion that FENCE CONSTRUCTION is *not* one of them! This is a puzzling phenomenon. Perhaps the reason is the nation's long-standing reliance on hedges and stone walls. Whatever it is, its destitution of sound fencing is exceeded only by its deplorable farm-gates!

Our efforts in this direction have been quite varied and so too have our successes. Various excuses could be given, but they are unimportant. That which we have learned is what might be of interest to the reader.

The Yule estate had been fenced in the context of horse-stud management. Though unsuited to the needs of Ambassador Agriculture Programme

it has been economically inadvisable to replace many of these old fences. Some readers will be a trifle shocked to learn the dimensions of the standard Yule fence; 52" high, 3 softwood rails of 4" x 1½" and the bottom rail 6" apart. The general impression of such fencing is one of either luxury or extravagance, according to your own personal viewpoint.

The great weaknesses of this fencing design are, (apart from the enormous cost) that the bottom rail is at least 5" too close to the ground and the top one is 6" higher than necessary for cattle. Both of these weaknesses combine to create too much space above and below the middle rail. Young calves slip through the lower space and adult cattle put their heads through the top. There is an old saying that where an animal can get his head the rest will follow. The number of rails our men have replaced over the years would seem to prove this point.

Cracking has always been a traditional problem with concrete fence posts and in this direction our breakages were greatly increased by the unduly large spaces between the rails, as mentioned above.

STEEL FENCING MATERIALS

Available fencing materials in iron vary greatly from one country to another, so one has to become familiar with whatever is available.

Unlike some other areas, iron posts seem to be rather unpopular in Britain. This is at least partly due to the corrosive nature of British climatic conditions, but also inferior L-shaped design. The star-post, available overseas, has much more strength and length of life.

Barbed-wire seems to be something that is almost abhorred by British agriculture because of its dangerous potential to cut and tear. But it seldom produces bad results if each strain is at least four to five chains long, kept in good repair and under high tension. It is not fair to assess barbed-wire as dangerous if one stretches it by hand between a few half-rotten spindly stakes! Barbed-wire in a slack and collapsing old fence is a definite stock hazard and has *no* place on *any* farm!

One of the most economical fences that is proof against all stock — sheep, cattle and horses is what is variously called *hinged joint, ringlock* or *woven wire.* With two *barbes* on top, this fence is almost man-proof as well as stock-proof! It is not only effective, but quick to erect if you have the necessary wire-straining equipment. Though it is *horse-proof* it should NOT be used around horses, because they can never resist the temptation to paw it with their hooves. This destroys the fabricated structure of the wire-mesh and injures the horses.

ELECTRIC FENCES

Electric fences come more within the field of animal husbandry, but we must mention them in this article because we have depended on them so much. To us they have been invaluable — once the animals have been trained to respect them. Therefore *men* ultimately determine its effectiveness. (The *operator* may need more training than the livestock).

We have had some experience with both *battery* and *mains* electricity. There is certainly a place for the battery operated fence, but our best results have been with electric power from the mains supply. It may only be that it is less subject to *operator* failure rather than battery failure. We have installed many hundreds of yards of permanent mains fencing. It can be made to look very neat. Our wire for example is supported between white-painted 2 x 2" posts at 15 yard intervals. So far it has not been used on sheep, but we are going to try running a double wire for them. Here again success may require training animals to respect the electrified wire within the confines of a regular fence.

On one farm we have seen, portable electric fencing has even been moderately successful with free-range poultry.

PLASTIC FENCES

Another product that appears to be successful as a mobile fence for sheep and poultry is an electrified plastic fence of hinge-joint pattern. It appeared to be working very well with ewes and lambs on the Wiltshire Downs and if it will contain some of the British breeds it needs no further recommendation.

Locally produced plastic-covered chain-link fencing wire is a very attractive proposition until one hears the price, but at times the additional expense may be worthwhile.

Plastic-covered wire may raise a smile with readers in some countries where conditions are very different to those existing in Britain. However it makes more sense under some extreme conditions than the writer realized. At a recent Hill-farm open day near the Manchester industrial complex one of our guides said the farm receives a ¼ ton of atmospheric pollution *per acre per year!* Galvanized-wire fence in that area lasts about THREE years!! Under such conditions plastic-coated wire may be the *only* acceptable form of iron fence.

NETTING

Only in our *Poultry Section* have we found it necessary to use wire-netting. 6′ wide x 19 guage was used, but it is much too light and is rusting rapidly after only *three* years. In conjunction with steel posts, it retains the birds and excludes foxes. Netting, 5′6″ high does not guarantee protection, but it has kept them out during daylight and we lock the birds away overnight.

HEDGES

Correctly managed hedges can be an acceptable stock barrier. We think most hedges are kept too low. If allowed to go up to 10′ or 20′ high, they would offer far more protection for animals and pastures in both winter and summer. Two of the arguments used against this are *first* — the base thins out to where it is no longer stock-proof and *secondly* — shading lowers overall production of adjacent farmland.

Figures have been produced in a number of countries to dispute the latter claim and, to say the least, the former point (thinning out) is open to discussion. Even if some do lose their bottom density, the advantages of height may justify a single-strand electric fence on one side of the hedge.

WOODEN RAILS

Where appearance is paramount and expense can be justified, a white-painted wooden fence is, in our opinion, best of all. Where the farm fields and the college campus meet, we have settled for this type of fence. Its dimensions are as follows: 46″ high, 3 softwood rails of 6″ x 1½″, the bottom rail 10″ above ground level. Between the top and middle rail is theoretically 8″. In practice the latter is nearer 9″, (6″ rails are NEVER 6″).

The ratio of space to solid timber between ground level and the top of this fence gives it a solid and substantial appearance. Big stock can't get their heads through it and quiet cattle won't go over it. Keeping stock fences to minimum height is economic in construction and reduces the tendency to lean over or be pushed over, with advancing age. This is especially true on undulating or hilly land and all too common in cattle yards. (Many a 6′ 6″ or even 6′ cattle yard has been pushed over years before its time, when one of 5′ 2″ would have remained upright).

STAYING, BRACING, OR STRUTTING

When it comes to staying or strutting straining posts and any others in need of bracing against the pull of wire under tension, there is a long history of argument in many countries. The system used and its method of application have both been the subject of many heated discussions by stockmen everywhere.

Some say the best method is the commonly used *strut* with one end let into the ground beside the fence and the other end running up at an angle toward the upper part of the post, bracing it against the direction of pull by the fence wires. Others go for bracing and counter-bracing with twisted wire-ropes. Still others manage with a cap-rail from the straining post to the first regular post in the fence-line and a single wire-rope from the top of this post back to ground level on the straining post.

We feel that most of these systems can be successful if properly employed and at times local circumstances may determine which is best to use. The first we mentioned is the most common and perhaps the simplest of all, but there must be at least 500 variations of what should be one very straight-forward procedure. The bracing of straining posts is as good an indication as any that farmers are the same the world over. 80% of their efforts become ineffective in the first five years of the life of a new fence and believe it or not, some are counter-productive from the start!

Three main problems occur in the angled-strut method of bracing posts. *First* is that the strut itself is too *small,* and the timber too *young.* It decays years ahead of the rest of the fence. The *second* is at the end let into the ground. It must have some kind of baseplate behind it that is considerably larger than the diameter of the strut itself. This can be metal, (in the form of an old cultivation disc e.g.) or a large flat stone, or even concrete. Without one of these, or something similar the straining post under pressure will force the bracing rail to move in the soil and at least all the top wires will lose their tension.

The *third* trouble-spot is the point at which the strut meets the side of the straining post. Here there can be at least TWO problems. *One* is the method of securing the strut to the post. Some don't bother, they just lean it against the post and hope for the best! Some drive a large nail through the end of the rail and into the post and don't even hope for the best! Others at least take a couple of rough axe cuts out of the side of the post and rest the top end of the strut in the axe cut. These and many other variations are almost equally ineffective in the long-run.

The best method we have seen takes a little longer, but it will outlast the life of any strut. One simply squares the top-end of the rail,

preferably with an adze. Then bore and chisel an equivalent hole in the side of the straining post, (immediately below the appropriate wire) thus producing a mortise and tenon joint. Drive the mortise into the tenon and then force the other end into a shallow hole in the ground in front of a tight-fitting base-plate. All angles, on the mortise and tenon can be cut so that no water runs into the joint, or a piece of galvanized sheet metal may be nailed on the top side to run the rain off.

The other problem is the most contentious of all — the height above the ground at which the strut meets the side of the post. This point must not be *too* high, or *too* low, but in getting it just right there are two factors to be taken into account. One is the *length* of the strut and the other is the *angle* at which it meets the post. (If this begins to sound complicated to those who have never erected a fence, be assured, that it is not so. The whole thing is babyishly simple, though few get it right and many disagree.)

If the length of the strut and the contact point on the straining post produce an angle underneath the mortise joint of less than 45°, trouble may occur. If this angle is decreased to something of the order of 30°, the strut will in time actually lift the biggest straining post right out of the ground, just like a hydraulic jack! The more *tension* is applied to the fence wires the more *lifting* power is increased, even on a post that is below three feet in the ground and well rammed!

If the point of contact between the *post* and the *strut* is too *low,* the base of the post will tend to move and under extreme conditions the wires will pull the post over the top of the strut. To say the least they will both become unstable and be easily pushed out of line. Whatever happens when any of these systems go wrong, the end result is *always* loss of tension on the fencing wires. Then stock quickly begin to demolish even the best of wire fences.

Our reason for leaning so heavily on this aspect of our subject is that *more* fences have been destroyed through incorrect bracing than by atmospheric pollution, wild and unruly animals, old age and all the other causes put together!

GATES

Regarding gates — both *timber* and *metal* have their strong points. Metal may last longer, but wooden ones may be easier to repair. As to appearance, opinions are quite divided. Gates of wooden construction tend to be heavier and sag more often. Some don't like to hang any gates on the same posts that have the tension of the fencing wires on them. If the gate is kept closed at most times and hangs in the same line as the fence, its weight will exert a small and constant balancing effect against the tension of the wires. This will tend to take some of the load off the base-plate of the strut.

Where one is not confident about the effectiveness of the post bracing, it is probably better to hang the gate on a separate post placed next to the straining post and fortify with concrete. Otherwise the gate will need repeated levelling to counter the movements of the fence straining post under pressure. (These are adjustments that few people ever get around to and so it is best to avoid the mistakes in the first place.)

When gates go out of alignment the catches cease to work, they no longer swing properly, they look awful and everyone hates them *except* their owner! He always exhibits a remarkable capacity to live with the appearance and inconvenience of his *own* gates. They are like pets and children — your *own* are fine, but those of *other* people are hardly bearable.

Regardless of how we may excuse our own shortcomings — other people *don't* and the condition of those gates will tell the visitor all he needs to know about your farm and much more *before* he so much as sets foot on your land. Farm *construction* and *maintenance* is one of the agriculturalist's biggest weaknesses. To the mind of a city-dweller, a farmstead is synonymous with *unpainted, shoddy, 'quaint' buildings, creaky gates, sagging fences, rusting machinery* and *uncut weeds* with a few chickens, pigs and geese scattered about to make the tangle more interesting. No wonder that the bulk of our population has a perverted idea of the rural environment. Most of them have never seen a right one!

Farming cannot and will not rise to its God-intended level of importance until *major* positive changes take place in the standards of farmstead appearance.

We should all watch our maintenance and construction and don't let it condemn us in the eyes of God or other people.

Meanwhile this Department of Ambassador College intends to continue research into farm fences and other construction so that we may make further recommendations in the future to all who are interested.

7209

Printed in England by Ambassador College Press, St. Alban