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INVESTORS AND KIMBERLEY CATTLE

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The Kimberleys is that part of Western Australia north of Broome. Its development has been based on extensive grazing of cattle and sheep. The major industry is still grazing, together with meat processing, transportation of the products and requisites of the pastoral stations, and other tertiary services. In addition, there is pearling at Broome and Kuri Bay, mining of iron ore at Cockatoo and Koolan Islands, and the cotton irrigated from the diversion weir at Kununurra.

Only cattle stations, meat works, and road transport will be discussed here, an attempt being made to analyse some of the peculiar problems facing investors in these fields. Investment is defined "in terms of economic behaviour rather than in terms of accounting conventions or tax laws".¹ Thus the identifying characteristic of investments is that they tie up capital for long periods in an inflexible manner. As a consequence, investments involve more uncertainty, more forecasting, more judgement, and a more all-embracing view of the firm than do expenditures that are more quickly transformed into cash.

Many investments in the Kimberleys, both past and present, have been and are being made in a climate of decision-making which involves even greater natural and institutional uncertainties and greater difficulties in forecasting than elsewhere. In addition to such demonstrable obstacles, there are obstacles which seem to exist only in the minds of those one might expect to be investors, but which exert a substantial restraint on investment. This paper attempts to describe these features of the climate of long-term decision-making.

Section A—Cattle Stations

In the Kimberleys, cattle are run on the open ranges. Most holdings are about one million acres. Some "units of management" are double this size. Investment in water-points is essential for making grazing available throughout the dry season. Investment in yards is well-nigh essential for effective branding and selection of beasts for sale, and on such large runs, fencing is the first and most obvious step towards control over age at first mating, calving dates, weaning, pasture management, and rehabilitation, yet less than one quarter of the stations have achieved any semblance of control in this way. This small proportion is actively investing in all forms of improvement but most other stations would only have a single "paddock" (something up to 200 sq. miles) for segregating bullocks prior to sale and paddocks for spelling horses during the wet season. These latter paddocks vary from about 5 sq. miles to 20 sq. miles each. Many stations are not fenced along their boundaries. The only control of cattle other than that offered by such paddocks is by

* This paper is associated with more detailed research carried out with the assistance of the Australian Cattle and Beef Research Committee.

¹ Dean, J., *Capital Budgeting*, Columbia Univ. Press, N.Y., 1951, p. 4.

yarding at branding time. When one considers that an unfenced station of a million acres might well carry 10,000 head and market over 1,000 head annually, yet be managed by two or three whites helped by about 20 aboriginal stockboys, it is apparent that control over mating, nutrition, and health of the cattle is almost non-existent. Similarly, in 1960, the Forster Committee reported that in the Top End of the Northern Territory "fencing is almost non-existent . . . Subdivision is desirable on most places, yet very few of the places are even boundary fenced and generally the standard of improvements is lamentably low".²

The original settlement of the Kimberleys was by the overlanders who shepherded their herds on frontages and gradually extended them over the open range. The reasons for an apparent reluctance to change this order of things on the part of many of the present generation of pastoralists arise from the experiences of natural conditions over the long period dating back to those early years, and from their strong convictions of unalterable characteristics of the industry. The following account of existing "technology" proposes to indicate that if the frequently heard belief that the limit of profitable fencing and control is soon reached is advanced as a hypothesis, there is indeed little evidence to refute it. For some pastoralists, there is a high rate of saving from taxation involved in this investment, together with the possibility of capital gains, but from the viewpoint of production economics, and ignoring taxation, the efficiency of the investment is difficult to demonstrate. Even looking at profitability, rather than efficiency, leads one to the conclusion that those who are ambitiously investing at high rates are backing very uncertain chance outcomes.

Technology

Throughout the summer wet season of about 100 days, the cattle are left almost completely alone to breed at random. Cows conceive their first calf as soon as they are physiologically able. Due to the prolonged dry season, which averages 260 days at Kununurra and longer inland, this early conception throws a tremendous strain upon the heifer. One suspects a high mortality, both during gestation and during the prolonged suckling period. Calves are quick to realize the unpalatability (and associated low nutritive value) of the grazing when they reach weaning age and react by continuing to suck as long as possible. It is not unusual to see one-year-old and two-year-old offspring competing with newly-born calves for milk. The death-rate up to this age must also be high. Once steers enter their third year, however, their survival is almost guaranteed. They can cover greater distances to food and water, and are generally hardier than the cows.³

This competition for food and water is almost uncontrolled. Consequently it is a major factor governing the output of the region,

² Commonwealth of Australia, Department of Territories, *Prospects of Agriculture in the Northern Territory: Report of the Forster Committee*, Canberra, 1960, p. 55.

³ See Ritson, J. B. and Norman, M. J. T., "A Sample Census of Cattle in the East Kimberley Region", *J. Aust. Inst. Agr. Sci.* 27: 16-19, 1964. They report a weaning percentage as low as 50 per cent, and suggest control of breeding as the chief remedy, through delayed first mating, calving onto good pasture, and weaning into special paddocks to benefit both cow and calf. Fencing would be a prerequisite.

especially in dry seasons which also affect the output of a series of subsequent years. The only restriction placed on stock numbers on all stations, other than natural influences, is the shooting of scrub bulls (mostly unbranded bulls of inferior quality). This probably is insufficient to reduce the conception rate below 100 per cent of all fertile cows. This is suspected of being very different from 100 per cent of all cows, as sterility is thought to be prevalent, and the main cause of the proportion of branded calves to total cows being only about 50 per cent. Thus it is safe to assume that the herds always press on the full capacity of water and grazing with the infrequent exception of a good year following a very severe drought, when calving cannot compensate for preceding deaths.

As soon as the wet finishes and the country is negotiable, horses are prepared and mustering teams set out on horseback from each station. Each "plant" of 10 to 15 men and 70 or more horses works for a month or two scouring the run and bringing cattle into yards for branding, and for the segregation of bullocks. The musterers then take out a second or third lot of horses and continue mustering until either the whole run has been covered once and the best parts more frequently, until the onset of the wet prevents mustering, until the cattle are in too poor a condition, until there are no more horses fit to work, or until race-week. Not a large proportion of horses can be used more than once, and mortality is often high due to accidents, poison plants, and over-work.

When the wet began, many old-timers used to continue mustering the localities where rain had fallen. Cattle would "smell" the rain and congregate in such places, and these "storm-musters" were often highly successful in trapping unbranded "clean-skins" that would otherwise be missed. They also may have served a useful role in controlling cattle at a difficult time of the year, because it is widely thought that these early storms scatter the cattle into otherwise dry localities. The storm may be insufficient to produce lasting surface water and the cattle find themselves unable to manage the return journey to permanent water. So storms from September to November may be a blessing to most because they give green feed and fresh water, but a curse and a cause of losses if they are too light to renew the watering points and then are not followed up either by further rain or by a storm-muster. Not only will cattle be stranded far from water, but the previously dry feed will be quickly rotted. The waning interest in storm-musters may be introducing yet another source of dependence upon uncertain seasonal conditions.

Before the days of the road-trains many musterers took time off to drove bullocks to market. The trip could take from five to twenty-five days. Due to the rigours of the droving trip, especially late in the dry season, the earliest age at sale was for a long time four years if the station was near the coast and five or six years if the station was inland. Now they can be turned off at any age and in much poorer condition than before.

Grazing is almost entirely restricted to native grasses and shrubs. These grow lush in the wet season, even to the point of over-bulkiness, wilt as the dry season proceeds, and rapidly decline in nutritive value and palatability. As the plane of nutrition declines, so does the condition of the stock. Weaned steers are commonly thought to lose in the dry

about half the weight they put on in the wet.⁴ In very prolonged dry seasons cattle no doubt die of starvation, although such losses are said to be confined to cows and calves. This is not to say that entire runs are eaten out. A more common restriction of available grazing than the total quantity of pasture is the number and distribution of water points. Cattle must drink—probably every day when the temperature stays around the century—and can only walk about eight miles between a drink and a feed. In each year, some water points go dry and parts of the runs go out of production as a result. Moreover, the drier the year the more natural, “permanent”, water points go dry, thereby restricting still further the effective grazing and causing repeated concentration of cattle around the same water points and river frontages. At these places the most palatable and most drought-resisting plants are gradually eaten out. The bare and eroded landscape bears testimony.⁵

With little done to disturb this elementary, fearsome conflict between cattle and plants—not to mention dingos, kangaroos, donkeys, ticks, flies, and disease—the size of the herds and the number of calves branded depend largely on the numbers in previous years and on a complex of seasonal conditions stretching back into the past.

The marketing decision is usually a simple one—try and sell all the steers that have reached what is thought to be the minimum age. If they are not sold they may be dead next year or the muster may miss them. So the number sent to market would be influenced by the factors affecting brandings and also by the suitability of conditions for mustering. Good rain in the preceding wet is usually advantageous, but on runs with inaccessible rocky areas, a very wet season may leave rock holes filled with water throughout the dry, with the result that the muster of steers may be reduced because of the large numbers that camp on these rock holes instead of watering in musterable country.

As may be gathered from this discursive treatment of the activities and constraints of cattle stations, there have been very few field experiments in the Kimberleys that can possibly aid in the forming of hypotheses. Most hypotheses must arise from the influence of personal experience and the opinions of pastoralists upon a knowledge of animal physiology and behaviour. However, it is possible to test the predominating influence of environmental conditions. This has been done with regression analyses of 37 years of observation from 5 stations. Keeping statistical considerations to a minimum, the result was as follows: the turnoff in any one year was largely dependent upon the number of calves branded six years before; intervening factors significantly reducing the turnoff were the rainfall in September and October both one year and three years previously, the length of the dry season when the beasts were two years old, and the rainfall in the wet season prior to sale; the annual rainfall two years prior to sale had a significant beneficial effect. Altogether, 82 per cent of the variation in turnoff was accounted for by these factors. In the procedure used for fitting this relationship, a large

⁴ Norman, M. J. T. and Arndt, W., *The Performance of Beef Cattle on Native and Sown Pasture at Katherine*, C.S.I.R.O. Land Res. Reg. Survey Tech. Paper No. 4, Melbourne, 1959.

⁵ For an early account of this overgrazing see Teakle, L. J. H., “The Kimberley Project”, *J. Dept. Agr. West. Aust.* 21: 281-298, 1944. More recent attempts at regeneration are described by Nunn, W. M., “Pasture Regeneration in the East Kimberley”, *J. Dept. Agr. West. Aust.* 7: 23-26, 1958.

number of other factors providing alternative measures, as well as others originally thought to be significant, were tested. The latter included prices of cattle, and the amount invested in fences, water, etc., neither of which had a significant influence. Brandings themselves were almost completely "explained" by brandings in past years, rain in September and October in the year itself and three years before, the number of successive droughts, and various seasonal factors two and five years before.

Statistics covering the whole region were not amenable to similar analysis. The range of climatic conditions is too great, and the official herd statistics are aggregates of very rough guesses on the part of pastoralists and accountants.

The overwhelming influences of the irrevocable past and the unpredictable seasonal conditions, exemplified by this statistical investigation, is indeed very much in keeping with impressions gained from interviews with pastoralists. And the suggested lack of influence of investment upon turnoff does not startle them. No wonder then that while most pastoralists have elaborate and idealistic plans for fencing and watering, followed by weaning, culling and segregating maiden heifers, there are few who push ahead with much confidence.

Climatic variation so masks the whole complicated problem of the profitability of investment that all but the most obvious improvements, such as yards, boring for water in dry localities, and fences to keep some of the best ground reserved for horses, are viewed as great adventures and great risks by those who depend upon cattle for a livelihood.⁶

To be more specific, some major issues are enumerated below.

(i) *Funds available for investment.* The net, or disposable, incomes of cattle stations have generally been ample, especially over the past five years, to finance far more investment than has taken place. Complete statistics are not available, but the disposable funds must have averaged from £4 to £6 for every beast sold since the mid-fifties, after deducting depreciation and substantial allowances for owner-managers, but before taxation. However, the incomes were much less in earlier years, and the Forster Committee may once more be quoted on a similar state of affairs in the nearby Top End of the Territory.

"Because of the poor markets in past years there has been no incentive and, indeed, very little money to justify any large fencing programme or similar improvements. There are many big pastoral companies with big interests in the Top End and they have often incurred some odium for sitting on large areas of country and not using it to the fullest extent . . . However . . . no one in the Top End, big pastoral company or small struggling pastoralist, has been able in the past years to make enough money out of the place to put any large amount back into it."⁷

Pastoralists are used to thinking in terms of long periods. They quite possibly regard the recent high incomes as some form of compensation for the many low incomes that came before, rather than an indication of an improving climate for investment.

(ii) *Where does the money go?* In the case of twenty stations in the

⁶ As distinct from investment companies with large non-pastoral interests, for whom the gamble may be relatively small, and the tax-savings considerable.

⁷ Commonwealth of Australia, *op. cit.*, p. 55.

Kimberleys and adjacent Northern Territory it goes as dividends to the various Australian and foreign shareholders in the four major "absentee owner" groups: Vestey's, Hooker's, Peel River, and Naughton's. There are three other stations managed for remote interests and six managed for companies which are centred in the region (including Rowell's and Clementson's former interests).

Lest this preponderance of absentee ownership—29 compared to 26 owner-managed stations of significance, including the Emanuel interests—be taken as evidence of a general lack of genuine concern with the region except as a gold-mine, it should be pointed out that details to hand show that the investment behaviour of owner-managers, absentee owners, companies, and partnerships is substantially similar on the average, and extreme cases occur in all classes.

Hired managers are almost unanimous in their pleas for more investment in fences and water. One can too easily gain the impression that absentee owners are a stingy lot. But if the owner-managers are any guide, the hired managers would be less inclined to invest if the stations were their sole source of income. Absentee "landlords" have attracted criticism the world over, and they are not common on the Australian rural scene, but industry functions effectively with a similar structure and there seems no reason why it should be unsuitable for cattle stations.

In the case of the owner-managers who are not re-investing, the money is leaving the region. That is, if there is any left over from a very considerable increase in the standard of living, including sending children down to public schools, putting down floors instead of stamped earth, giving the wife a holiday, and the like.

(iii) *Attitude to debt.* A large proportion of rural development in Australia is financed through banks and pastoral companies. It has been pointed out that few station owners should need to borrow in order to invest, so the general attitude to debt is of academic interest. However, it has been informally investigated, and some pattern has emerged amongst the old-timers. The depression, periods of drought, and the war, kept their fortunes at a very low ebb for a long period. Those who survived saw other properties sold and other owners walk off in despair. They have come through firmly resolved to keep something aside as a buffer against such hard times, and with a determination not to go into debt. Were they to seek loans, access to the usual sources would probably be difficult. Most banks are reluctant to lend on the leasehold tenure and stock firms are generally not interested because cattle stations do practically no business with them since cattle are sold directly to the meatworks. However, some of the larger, diversified interests have obtained credit from both sources.

Requests for loans are more likely to come from people buying stations. Current prices would be anything from £100,000 to £250,000 for a million acres stocked with cattle, but this expenditure is, of course, not an investment at all but merely a transfer payment. What is more, the vendor is likely to shift down to Perth and the transfer will not even involve an inflow of capital to the region.

(iv) *Tenure.* All stations are held on leasehold under the Western Australian Land Act. Leases which were due to expire in 1984 have invariably been extended to 2034 by an amendment suggested by the Pastoral Leases Committee.

The insecurity of leasehold has been suggested as a rationale for low levels of re-investment. Freehold would undoubtedly be preferred by the leaseholders for personal reasons, but the reasons seem to have little connection with the national welfare or with the likely rate of improvement. Fixed improvements and the leases themselves are perfectly negotiable and so are the cattle. No leases have been resumed except in the most flagrant cases of misuse, and all the improvements probably have working lives less than the duration of the lease. The inhibitory effects of leasehold have probably been exaggerated.

(v) *The size of the holdings.* Section 113 of the Land Act limits the lease held by any interest to one million acres. Most managerial units are in fact just less than this size, but a number of groups of companies control several million acres and there is really no effective bar to planning operations on as large a scale as desired.

The sheer size of the holdings has two effects that might inhibit investment. Firstly, any effects of relatively small projects such as irrigating a little lucerne, using urea licks, introducing a few new bulls, etc., are easily lost when, after the lapse of years, it comes to selling the thousand or so steers amongst which any benefits might be distributed. Secondly, where a single owner-manager, or even a few men in partnership, receive the entire net returns from a station, their pecuniary desires are easily satisfied because the returns are large in absolute terms even if they do not represent a high rate of return on capital. The incentive to increase returns may thus be slight.

However, a range of station sizes exists, and the same sort of passive role is found amongst large and small alike. A stricter interpretation of Section 113 might not stimulate investment at all. As for reducing the runs still more, a point is reached, probably in the vicinity of a turnoff of 500 head per annum, at which it is impossible to cover the fixed costs of a full-sized mustering plant, with existing mustering techniques. Were a reduction in size to induce a substitution of fencing for musterers, a better system of animal husbandry might result through closer and better control, but pastoralists evidently don't think it would pay well enough because their plans never extend to this amount of fencing.

Under farming conditions in a more uniform environment one might expect to be able to find any economies of small-scale production demonstrated on small farms. In the Kimberleys, the demonstration effect is absent. There are any number of small holdings from 20,000 to 160,000 acres or more, but the smaller holdings are almost invariably on the poorer country and most have a long history of abandonment and failure to carry out the improvements required by the Land Act. The development of spray irrigation and cattle fattening at El Questro may prove to be an exception. The most successful small-holders have been butchers and cattle-rustlers. The smallest independent and successful cattle stations are well over 300,000 acres in total.

Probably 400 square miles (256,000 acres) of good musterable country carrying 20 beasts per square mile would be sufficient to support the basic plant. The required area at the modal stocking rate of some five beasts to the square mile would be one million acres.⁸ Quite apart from any consideration of such figures, it is obvious that no sweeping

⁸ See C.S.I.R.O., *General Report on Lands of the West Kimberley Area, Western Australia*, Land Res. Series No. 9, Melbourne, 1964, p. 178.

proposal to reduce areas could satisfactorily deal with the diverse pastoral lands of the Kimberleys.

(vi) *The discontinuous production function.* A ten mile square bullock paddock is not overlage by Kimberley standards. The 40 miles of fencing, assuming no natural boundaries, will cost from £7,000 to £10,000. Until it is completed, its effectiveness will be nil. Not only is this a large lump sum to spend before seeing the benefits begin but it takes a long time to put down 40 miles of fencing, especially if it is done with station labour.

(vii) *The profitability of fencing.* The possibility of demonstrating the profitability of fencing is small. The costs are easily assessed, but the likelihood of clearing some desired profit is almost impossible to estimate. If a return of ten per cent on the investment of £10,000 is required, about sixty to eighty extra bullocks must be sold per annum just to cover the interest. One can at least present this figure to the pastoralist as an idea of the effect his fencing must have in order to pay. But in the absence of knowledge concerning the interplay between fencing, control, competition between bullocks and cows, possibility of introducing Zebu blood, effectiveness of mustering, pasture regeneration, and the like, neither the pastoralist nor the economist is likely to be able to predict the final profitability of the venture.

The Forster Committee remarks that "the native pasture is simply not good enough to grow good beef. There does not seem to be much that can be done about it (besides improved fencing) short of a quite expensive pasture improvement operation." They make a similar calculation to that above and conclude that "the carrying capacity of the country and the prices of cattle are so low that subdivision is just not profitable in a great many cases."⁹

Prices have been well maintained since the Forster Committee reported in 1960 and the age at turnoff has been reduced by the road trains, but nowhere in the increase in incomes can evidence be found linking it to investment in fencing. The major increases in turnoff that have occurred since the War are clearly due to the creation of new outlets, the advent of road transport, and the development of a market for bulls, cows, and other animals that would never have been accepted before the trade with the United States began. Investment in fencing and water may not have been without effect, however. The consensus of opinion amongst pastoralists seems to be that overstocking has led to a decline in carrying capacity of the native pastures. That output has been maintained in the face of this decline indicates the possibility that investment has at least had a compensatory effect.¹⁰

(viii) *Disinvestment.* The decline in carrying-capacity that has resulted from uncontrolled stocking may be thought of as a disinvestment in natural resources.

The Land Act Amendment of 1963 aims at controlling this disinvestment by stipulating that a lessee shall manage and work the land according to the most sound and approved methods of pastoral husbandry in relation to cattle and to the management, conservation, and regener-

⁹ Commonwealth of Australia, *op. cit.*, p. 59.

¹⁰ In this regard, the advantages of controlling stock through fencing were first demonstrated in the Pilbara by Nunn, W. M. and Suijdendorp, H., "The Value of Deferred Grazing", *J. Dept. Agr. West Aust.* 3: 585-587, 1954.

ation of pasture for pastoral purposes. Any lease is liable to forfeiture if not stocked to capacity, having regard for seasonal conditions and length of tenure, or if the lessee permits deterioration to such an extent as to necessitate a lengthy period of protection from grazing to effect regeneration of pasture. Whether these clauses will have the desired effect remains to be seen.

Prior to the amendment, the resumption of 1,000 square miles of badly eroded land on Vestey's stations had begun. Resumption is almost completed and one third of the cost of fencing out the cattle (£230 per mile) is being borne by Vestey's. They are believed to be getting the land back again once regeneration is completed, so it is not a bad bargain. The regeneration is expected to cost £240,000. The productivity of the kapok bush and introduced grasses is expected to exceed that of the original vegetation, but the figure of £240,000 is a rough indication of the disinvestment on this area of 1,000 square miles alone. Moreover, the runoff from this eroded country enters the Ord River and could cause a major silt problem in the main dam, if not checked by the measures now being used.¹¹ The Ord River in flood can be 1·5 per cent silt by volume. The average silt content of 0·5 per cent indicates that some ten million tons of silt would enter the reservoir each year.¹²

(ix) *The Land Act and investment.* The Land Act was amended on the advice of the Pastoral Leases Committee, which reported in March 1963. Pastoral lessees now must submit plans showing existing improvements, improvements carried out each year, and proposed improvements. The annual expenditure on improvements must not be less than two and a half times the rent paid in each year until approved improvements have been completed. Excess expenditure in any year is carried forward.

Annual rents vary from six shillings to twenty-five shillings per thousand acres. In the words of the Committee, "rents vary between one per cent and three per cent of the total costs of the operation of a station."¹³ With rents so small, the Act will not embarrass many stations. Only one pastoralist amongst those interviewed by the author seemed at all concerned. He had a very small station, and operated under severe capital rationing, just managing to clear costs. His livelihood could almost be described as subsistence agriculture and herding.

It is not yet clear just what will constitute "approved investments" but this new Act should serve to get the worst cases of inertia moving towards some sort of improvement without risking any great financial losses.

(x) *Aboriginal labour.* A safe prediction is that the aboriginal stockmen will be receiving some form of basic wage in the near future. Most pastoralists expect this to follow proposed changes in the award in the Territory. At the moment an aboriginal stockboy may receive upwards of £3 per week, all found, plus assistance in keeping his many and varied dependants. A basic wage would increase the costs of maintaining fully-staffed mustering plants on many stations. The expectation of this

¹¹ Western Australia, Public Works Department, *Ord River Project*, W. A. Govt. Printer, Perth, 1960.

¹² Western Australia, *Parliamentary Debates; Legislative Assembly*, 29 Aug. 1961, p. 658.

¹³ Western Australia, *Report of the Pastoral Leases Committee*, W.A. Govt. Printer, Perth, 1963, Para. 138.

important change might well be frightening potential investors. On the other hand, it may also be leading them to think about the possibilities of substituting fencing for musterers and, of course, of substituting white stockmen for aborigines. A basic wage for aborigines will surely force some of them into the ranks of the unemployed and they and their dependants will leave the stations for the towns of the Kimberleys.

(xi) *Summary.* The most serious problems concerning investment in the Kimberleys are the almost complete lack of research findings which might aid in budgeting and planning profitable improvements; and the disinvestment through the decline in palatable and nutritious pasture species and through erosion. The words of the Forster Committee are again relevant: "The gaps in knowledge, so characteristic of a frontier . . . (are) wide. These gaps will remain one of the north's problems for many years to come. Nor should it be forgotten that the history of development in the Territory is full of failures of one kind or another, which infuse a note of despair into any new plan to develop the north".¹⁴

The State Government proposes to establish a research station near Fitzroy Crossing. This is an important step. Its aim is "to tackle the problems of low beef carrying capacities and lambing percentages . . . on pastoral stations in the West Kimberley". "One of the research station's priority objectives would . . . be to establish and demonstrate how to control both pastures and stock so that original carrying capacity can be restored and even increased. This would inevitably lead to the marketing of more and better cattle."¹⁵

Another recent move is the inauguration of a campaign to eradicate tick and control pleuropneumonia. This disease is not frequently diagnosed in the Kimberleys nowadays, but the scare is enough for the entire area to be under quarantine. No cattle can come south for fattening. Eradication would have beneficial effects under the existing system, and the benefits of free movement south could be even greater.¹⁶

Section B—Meatworks

In 1914, after an unsuccessful attempt to interest an investor in constructing a freezing works at Wyndham, the Western Australian Government built one and it opened in 1919. It has operated on a profit-sharing basis ever since except for 1921, when it was closed on the advice of a select committee, and 1942-44.¹⁷ "Heavily subsidised over the years; it has kept alive the beef industry during some of its lean periods. Killing is, of course, seasonal and the killing season for fat cattle lasts for three months."¹⁸ "Actual slaughtering operations commence and conclude practically at the same times each year—starting at

¹⁴ Commonwealth of Australia, *op. cit.*, p. 10.

¹⁵ Press Statement by Premier Brand, 7 Sept. 1964. Lest this be taken as evidence of great forethought by the Government, it should be noted that they sold Moola Bulla station in the 'fifties when it was ideally suited for this same purpose.

¹⁶ Also see Commonwealth of Australia, *op. cit.*, p. 51

¹⁷ Historical notes are taken from Bolton, G. C., "The Kimberley Pastoral Industry", *University Studies in History and Economics*, July 1954, p. 7, and from Western Australia, *Parliamentary Debates; Legislative Assembly*, 5 Sept. 1963, p. 837.

¹⁸ Kerr, A. M., *Northwestern Australia*, W. A. Govt. Printer, Perth, 1963, p. 142.

the end of April and concluding in the second week in September."¹⁹ As road transport extends the period in which cattle can be sent to market, the killing season will doubtless be extended. At the moment, the daily capacity of the works is only used for some 160 days out of the 200 or more days on which the roads should be negotiable. There is evidently unused capacity.

During the War, just before Wyndham closed down, the Broome works were opened by the ex-manager of Wyndham and his brother. The works were operated with considerable assistance from the State right up until their sale to Norwest Development Corporation, the company floated by Clementson in 1963. The works held liabilities of £207,000 at the time of its sale and its assets were worth £153,000. N.D.C. paid £146,000 to the former owners, £7,000 to creditors, and the Rural and Industries Bank advanced the remaining £200,000, meaning that the vendors thus transferred their debt to the State.²⁰

At the same time, N.D.C. bought three cattle stations and, for £100,000, Kimberley Meats Ltd., a small independent meatworks at Derby. Kimberley Meats had been trading at a loss. N.D.C. promptly closed Kimberley Meats, demolished the Broome Meatworks and invested about £1m. in a new one.²¹ These changes followed an announcement by the State that a deepwater port would be built at Broome, rather than at Derby, but N.D.C.'s intentions to play a large part in the development of Broome as a preferred outlet for cattle met with setbacks when the deep-water facilities were not ready in time and meat had to go out on lighters to the anchored ships. Also the new works were late in opening.

The Broome works introduced road trains into the Kimberleys and as early as 1953 about 70 per cent of their cattle were trucked in. By 1963 almost all cattle were trucked in by semi-independent operators, but when the new works were late opening in 1963, the considerable trucking capacity lay idle because the truckers were not permitted to work for other firms and haul to Derby. Two of these firms reacted by buying their own road trains with the result that they attracted business to Derby which otherwise might have gone to Broome. These problems could well recur in 1965, as the deepwater facilities are still not ready. The group's operations in 1965 will be watched with interest, as it tries to justify the million pound investment and pay off the Rural and Industries Bank loan by 1971. Clementson, the architect of the earlier moves, is reported in the press to have resigned from the boards of N.D.C. and its parent and subsidiary companies.²²

The third processing works in the Kimberleys was opened at Glenroy in 1949. Cattle from surrounding stations were guaranteed to be brought in to this private inland works, where they were killed and air-freighted by MacRobertson-Miller Aviation Co. and later by Australian National

¹⁹ Western Australia, *The North West of Western Australia*, W.A. Govt. Printer, Perth, 1962, p. 17.

²⁰ *West Australian*, Sept. 4th, 1964.

²¹ *Loc. cit.*, and *West Australian*, May 28th, 1964. The total investment, including borrowed money, was about £1,900,000.

²² The executive director of N.D.C. is now Mr. Alan Ferguson. A private company which he controls has recently taken over Globe Meats, a firm which buys many cattle over the wharf at Derby for shipping to Fremantle and South East Asia.

Airways (a shareholder) to Wyndham, 186 miles away. In its first ten years, Air Beef, as the scheme was called, received £101,100 in subsidies from the State Government.²³ After 1959, the boned meat was flown 156 miles to Derby and packed by the associated Derby Meat Processing Company.²⁴ This Company recently joined the battle with the Broome interests by issuing a prospectus for a public issue of shares worth £300,000.

Meat is no longer flown to Derby, but carted in freezer trucks along the new "beef road" which opened on 15th May, 1963. The reduction in costs which this development should produce might enable the Glenroy works to offer higher prices than those its suppliers have been complaining about for some years. However, its prospective growth will surely add to the existing excess capacity in slaughtering and processing facilities, an overcapacity that has been fostered by subsidies and recently re-emphasised by the possibility of road transport extending the killing season. The export of live cattle from Derby to southern ports has always offered competition in the West Kimberleys, and Emanuels' have recently re-opened the trade route to the Philippines with some success.

Section C—Transport

As mentioned before, the competition between Derby and Broome was accentuated by N.D.C.'s resolve to forbid its road train operators hauling to Derby even though the Broome works had not opened. They were months late in opening, and Emanuels', who are also shipping agents in Derby, saw to it that a road train company was established to service their needs. Stein, a recently arrived pastoralist, made similar arrangements. The result, once more, is a short-term overcapacity. However, pastoralists are quite obviously going to use road transport whenever possible, and demand will increase to take up the slack. At the existing charges trucking is attractive. Reliable drovers are rare; the use of musterers as drovers involves a high opportunity cost; the road trains carry cattle otherwise too weak to make the journey, require smaller mobs, and work late in the season when the droving routes are eaten out and dry, and cattle easily lose condition. The very severe dry season in 1964 converted many sceptics, and trucking is clearly here to stay.

That trucking might pay the trucker and the pastoralist is not a complete justification for the beef roads. The margin of net benefit may not be great enough to cover charges on the capital costs of these roads and the substantial maintenance costs. In other words, the benefit:cost ratio relating to the public investment in beef roads may not exceed unity. While on the subject of the benefits from trucking, some statements by the Minister for the North-West may be quoted:

"By building better roads to enable cattle to be transported by truck instead of being droved overland on foot, we expect, in a few years, to at least double beef production in the Kimberley. This will be

²³ Kerr, *op. cit.*, p. 143.

²⁴ Holmes, J. M., *Australia's Open North*, Angus and Robertson, Sydney, 1963, p. 260. Holmes discusses the increases in turnoff and quality that resulted from Air Beef. He quotes from Grabowsky, I. H., "The Contribution of Air Transport", in *Northern Australia—Task for a Nation*, Angus and Robertson, Sydney, 1954.

possible because when cattle are carried by truck they can be sent to the killing works on the market a great deal younger . . .”²⁵

“This development has naturally led to some improvements in Kimberley meatworks. The Wyndham works have been improved, and planning is in progress to completely rehabilitate them and modernise them in the near future”.²⁶

The effect on the number turned-off of turning cattle off younger may conveniently be studied through an equilibrium model of cattle-numbers and available grazing. By its use, knowing the branding percentages and the existing proportion of turnoff of five-year olds to total herd numbers, and assuming that additional cows will be substituted for steers, one can show that a reduction in the age at turnoff from five to two could indeed double the number of cattle turned off in typical situations. The production of meat would not be doubled, however, due to the lower average weight at the younger age.

Conclusion

The last two years have witnessed an acceleration of activity and interest in producing and handling cattle. On the one hand, pastoralists have at last begun to re-invest in fencing some significant proportion of their disposable incomes, as well as continuing to invest in the proven avenues of water and yards. On the other hand, the growth of road transport of cattle and the enlargement and improvement of processing works have also been remarkable, largely in response to, or in anticipation of, social overhead investment in roads and port facilities.

There appears to be a slight imbalance at present, because the rate of increase in meat production is lagging behind the growth of services. Whether or not the investment in fencing will in time help to correct the balance is a question which the author, being a disciple of the dismal science, is unwilling to answer. The paucity of evidence and the many imponderable factors shroud in uncertainty the relationship between the costs of fencing and the returns from taking up some of the obvious and considerable room for improvement in calving percentages and rates of survival of cows and calves. The uncertainty must be reduced if economic planning is to proceed with any confidence.

The Editor of *The West Australian* once echoed the attitude of the Minister in remarking that “the Kimberleys have an unhappy past to live down. The real challenge to the Federal and State governments is to create an atmosphere of confidence and enterprise that will lead to revolutionary changes in thinking beyond those inspired by better roads and ports”.²⁷

²⁵ Court, C. W., *The Western Third of Australia. Its Development and its National Significance*, W. A. Govt. Printer, Perth, 1962, p. 15.

²⁶ Western Australia, Department of the North West, *Summary of Current Major Developments in the North of Western Australia*, mimeo., Nov. 13th, 1964, p. 3.

²⁷ *West Australian*, Nov. 19th, 1962. The present situation in the Kimberley cattle industry is very similar to the static-cum-transitional stage of economic growth stage theories. It is characterised by conventionalised decision-making, resistant attitudes, static technology with little innovation, an overwhelming importance of (underpaid) labour as a factor of production, very little use of mechanical power, and deficient institutions for research and extension. See Ruttan, V. W., “Growth Stage Theories and Agricultural Development Policy”, *Aust. J. Agric. Econ.*, this issue.

This is indeed the real challenge, but an atmosphere of confidence and an atmosphere of uncertainty are mutually exclusive, and the latter is only dispelled by greater knowledge. In this region there is a profound shortcoming in technical knowledge which the State can reduce by organized research. In this aim it may be aided by observation of the successes and failures of those who are now investing in uncertain ventures, be they long-sighted, sagacious judges of the industry, professional gamblers, or optimists acting in blissful ignorance.