

HISTORICAL BACKGROUND

OF FOWLERS GAP STATION

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Reproduced from Chapter 1 in Mabbutt, J.A. (ed.) 1973. *Lands of Fowlers Gap Station New South Wales*. Fowlers Gap Arid Zone Research Station Research Series No. 3. University of New South Wales, Sydney.

I. EXPLORATION AND EARLY SETTLEMENT

Patterns of exploration and early pastoral settlement in this area, as elsewhere in the Australian arid zone, were determined by the availability of natural waters, specifically the Darling River and the smaller and often ephemeral supplies along local drainage in the Barrier Range. These provided permanent bases from which activities could temporarily be extended into the adjacent plains after rains. The first European explorer in the area, Charles Sturt who experienced drought conditions on his journey in 1844-5 followed the Darling River to the point that gave the shortest plains crossing to the southern end of the Barrier Range. He then moved northwards along the west side of the Range to Floods Creek, named after one of his party, where he camped for three weeks on a waterhole about 25 km WNW of Fowlers Gap.

From this point Sturt made a short journey across the plains to the east of the Barrier Range between December 13th and 16th 1844, and gave the first report on the condition of the country near Fowlers Gap. He wrote (Sturt, 1849) "immediately on the other side of the range, there was a plain of great width, and beyond, at a distance of between 50 and 60 miles, was a range of hills running parallel to those near the camp. The first portions of the plains were open, and we could trace several creeks winding along them, but the distant parts were apparently covered with dense and black scrub. Descending to the eastward towards the plain we rode down a little valley in which we found a small pool of water; at this we stopped for a short time, but as the valley turned too much to the north I left it". This may well have been Fowlers Creek. His general direction was ENE and at 12 miles out into the plains he "crossed the dry beds of several lagoons"; at 16 miles he "entered dense brush of pine trees, acacia and other shrubs in pure sand". This is consistent with a traverse from Fowlers Creek, across the line of claypans that includes Nucha Lake, and through the sand dunes in the east of the plains to the north end of the Bynguano Range, identified by Sturt with Mt. Lyell. The description of the plains country on the map that accompanies Sturt's journal is appropriate to the floodout of Fowlers Creek on The Selection across the northeastern boundary of Fowlers Gap Station, ".... plains lower than those W fall of Wr to N - plains swampy in winter with pools of water, now dry - grass on the plains tho' barren soil". Periodically he referred to "barren" areas, or to areas with "some grass".

Sturt traversed the area at the onset of drought, and the sparseness of vegetation in the area before European settlement is confirmed by the fact that when Sturt returned a year later, when conditions were excessively dry, he found that all bird and animal life had gone, and his horses and bullocks could barely find enough fodder to sustain their emaciated bodies. It can

be concluded that even before any pastoral occupation took place, the lower pasture layers were scanty on the hills, that on the plains there were grassy areas interspersed with claypans, and that herbage of value persisted close to natural waters during dry periods. The tree cover was probably much denser than now.

In the interval between Sturt's return in 1845 and the departure of Burke and Wills from Menindee in 1860, a line of pastoral stations was established along the Darling River frontage, a pattern to be strengthened by the advent of river on the Darling after 1859. Under the Waste Lands Occupation Act of 1846, the West Darling area formed part of the Unsettled Districts beyond the Nineteen Counties, in which squatting licences could be granted for "runs" capable of supporting 4000 sheep at an assessed stocking rate, but in 1851 the new land district of Albert was formed, comprising all of New South Wales beyond the Darling River north to the 30th parallel. Systematic surveys and allocation of runs began here in 1854 and grazing licences were apparently already being issued by 1850, but settlement continued to outrun the extension of administration in this remote area, and many of the early settlers who took up land west of the Darling did so without licences. The pastoral leases under the 1846 Act were mainly of 32,000 acres for up to 14 years, and there was no limit to the area that could be held by one man provided he held the land in runs of standard size and paid his assessment on the number of stock held on each. In the absence of proper surveys, this led to a good deal of land speculation by middlemen, and a tendency to occupy strategic sites such as waterholes and pockets of better-quality grazing land. Behind the river frontages, back blocks were taken up for temporary occupation after rains; for instance Kinchega Station near the present-day Menindee extended back towards the Barrier Range along Yancowinna Creek and its soakages.

It was in the decade after 1860 that the main movement west of the Darling took place. By this time most of the frontage country had been secured, there was the additional attraction of good reports of pastoral potential from the parties which followed Burke and Wills in 1861-2, and also the stimulus given by the threat of selection in areas further east under the 1861 Crown Lands Occupation Act, which allowed the taking up of pre-emptive leases and small freeholds on land held on pastoral runs. Already before 1860, pastoralists had been exploring the country west to the Barrier Range, which was itself an avenue for travel northwards. For instance when Crawford journeyed to the Grey Range in 1859, chiefly with a view to the discovery of minerals, he found evidence of journeys in the area south of Fowlers Gap by pastoralists from the Darling stations. Among these pastoralist explorers were Wright and Stone, who later accompanied Burke and Wills, and a Robert Gow who was engaged by the Victorian pastoral firm of Clough and Co. to look for pastoral lands west of the Darling, and who in 1861 travelled up Stephens Creek with local men and reported on the Corona area, where scrub cattle and wild horses were found.

The 1863-4 season was particularly favourable for pastoral expansion west of the Darling, for good local rains encouraged occupation of the back blocks at the same time as the exceptional flooding along the Darling frontage caused problems there. The first stocking of pastoral runs near Fowlers Gap dates from this time. In the south the Mt. Gipps run, close to the main Darling settlements and favoured by soakages and water holes along Stephens and Yancowinna Creeks, was taken up and stocked. A Darling River squatter George Urquhart was the first to travel sheep in this area. Further north, Abraham Wallace brought 1400 sheep across the Barrier Range from South Australia and took up Sturts Meadows on Caloola Creek, probably the first pastoral utilisation of the Fowlers Gap country. At first Wallace's settlement was nomadic only, and in times of water shortage he had to leave the

area and move to water at Bancannia or Cobham Lakes, or even further afield. It was not until 1871 that a homestead was built at Sturts Meadows, by which time a flock of 18,000 sheep occupied the run. To the west and north Corona was also occupied in 1863-4 on behalf of Clough and Co., with Robert Gow as manager. It can be assumed that all the easily-watered country in the area of Fowlers Gap had been taken up by 1870, even if not effectively occupied. At this time there were no man-made waters and sheep were shepherded as protection against the dingo. There are many reports of attacks by aborigines on the first stations including one on Corona in 1867.

II. EARLY PASTORAL DEVELOPMENT

The philosophy behind the 1861 Crown Lands Occupation Act and its subsequent amendments was that the "natural" carrying capacity of the land - already held over-optimistically as one sheep to between 9 and 10 acres - could be raised further through the provision of improvements such as fencing and watering points, and by "judicious stocking" and consequent trampling of the ground. The enormous areas of pastoral runs west of the Darling, large parts of them only temporarily occupied, represented a challenge to this view and its aim of establishing closer settlement by resident graziers on medium-sized holdings. Faced with the threat of selection, the pastoralists were also being pressed to introduce improvements - in expectation of increased returns - through increased rentals which were raised from 0.15d per acre in 1861 to 0.37d per acre in 1880. In the event, few Homestead Leases were taken up in the arid area west of the Darling River by *bona fide* selectors. However the burden of higher rentals and the high costs of providing water and fencing for permanent occupation put the individual squatter without capital at a considerable disadvantage. Many of them left the newly-occupied areas in the dry years after 1865, particularly during the period of depressed wool prices in 1868-70, among them Wallace from Sturts Meadows. Their place was taken by the extension of large company holdings such as that of Corona Station, which early in the 1870's incorporated runs to the north and east to take in parts of Sturts Meadows and Cobham, and brought what is now Fowlers Gap Station within its area of more than one million acres.

The Fowlers Gap area was affected only indirectly by the wave of mineral prospecting and mining activity that followed in the region after 1870. In 1869-70 a gold strike occurred at Mt. Browne and subsequently one at Tibooburra. Traffic northwards increased as a result, and the bullock track from Umberumberka through Euriowie and Fowlers Gap to Bancannia and Packsaddle developed into a mail route. The mining episode was short-lived and was virtually over by 1885, but the route remained for coach traffic and for travelling stock. A stock route was gazetted in 1884, with a branch along the eastern foot, of the ranges where it presumably used the natural soakages and waterholes. The Gap may well have received its name at this time. Hardy (1969) refers to a Fowler, "perhaps an early Murray squatter", who may have pioneered the Gap through the Ranges and an alternative suggestion is that Fowler was a bullock-train driver who located the Gap on his journeys northwards. However local reports identify Fowler as a surveyor with one of the early exploration parties (K. Conners, pers. comm.). Certainly the name already existed in 1892, when Fowlers Gap Hotel was built on the route, on the left bank of Fowlers Creek about 3 km, downstream from the Gap itself.

Unlike the 1861 Act, which had tried to impose a general formula for closer settlement which could apply throughout central and western New South Wales, the Crown Lands Act of 1884 recognized the need for more flexible tenure arrangements to meet the

special needs of the more arid western part which was now constituted as the Western Division. The Act attempted to provide security of tenure for the squatter appropriate to his investment in improvements, whilst yet furthering the cause of closer settlement. The large agglomerations of pastoral runs were now legally consolidated and divided into two approximately equal parts known as Leasehold Areas and Resumed Areas. The holder was granted a Pastoral Lease of the Leasehold Area for 15 years with an option of further extension of five years; he was entitled to an Occupation Licence of the Resumed Area, which was renewable annually, but this area and any vacant Crown Land were available for the selection of Homestead Leases with terms similar to those of Pastoral Leases. Subsequent amending Acts extended the terms of Pastoral Leases to 1918 and of Homestead Leases to 1930. The rent on both Pastoral and Homestead Leases was to be appraised for the first five years by a Local Land Board, the rents to be increased automatically by one-fourth for the second five-year period, and by one half for the remainder of the term, in the expectation of increasing returns following development.

Corona Pastoral Holding No. 195 was gazetted in July 1885, with a Leasehold Area of 828,820 acres in the south and a Resumed Area of 824,100 acres extending to the north. The holder was Dalgety and Co. Most of what is now Fowlers Gap Station was included in the northeast corner of the Leasehold Area, of which the eastern boundary is to be seen in the present eastern limit of Fowlers Gap Station: the old northern boundary survives in the present northern fences of North Mandleman and Sandstone Paddocks.

The improvement of pastoral leases proceeded during the 1870's and 1880's. Natural soakages had already been replaced by wells and earth tanks along stream courses, but after 1879 the mechanical drilling rig appeared. Bores could now be put down at a cost of about 11s. per foot compared with £4 per foot for well-sinking and the increased range of depths allowed a more rational siting of waters. Sandy Creek No. 1 Bore near the stock route in the north of Fowlers Gap Station dates from 1893. The practice of shepherding disappeared, and the sheepfolds which had given rise to severe erosion and dust blowing were replaced by fenced enclosures. With the development of light-weight fencing costing as little as £5 per mile, the grid of five-mile paddocks began to extend across the country, and some of the oldest fences along the eastern and northern boundaries of Fowlers Gap probably date from the late 1880's. There was a general depletion of tree cover in the area to provide fence posts, both in the hills and along river frontages.

These investments were encouraged by an optimistic view of the carrying capacity of the country and by an official faith, expressed in sliding scales of increased rentals, that its potential could be more fully realized by station improvements. Fostered by high sheep prices during the early 1880s, and afterwards by good seasons, flocks of considerable size were built up. From less than 2 millions in 1880, sheep numbers west of the Darling rose to a peak of almost 8 millions in 1894. No figures are available for Corona Station at that period, but in 1877 Mt. Gipps carried 71,000 sheep on 540,000 acres, and Wonaminta Station, to the northeast of Fowlers Gap, sheared 92,000 sheep in 1892.

III. PASTORAL CRISIS OF THE LATE NINETEENTH CENTURY

The last 11, years of the 19th century brought increasing difficulties for the Pastoral Industry in the far west of New South Wales. The increase in sheep had continued through

and had in fact been provoked by a period of declining wool prices after 1884 and by the financial recession and further fall in wool revenues after 1890. This phenomenon of growing stock numbers combined with declining returns whether from natural or economic causes, is so characteristic of the history of the pastoral industry in the Australian arid zone as to invalidate the use of stocking rates as an index either of grazing potential or of prosperity (Duncan, 1972).

The long drought that followed 1895 found the area severely overstocked at a time when there were few opportunities to transport sheep. Stock prices fell and a thriving boiling-down works was established at Menindee in 1891. Sheep numbers decreased sharply in the drought years after 1895, to less than 3 millions by 1901, but it is generally held that at this period much of the saltbush country and other perennial pastures underwent a deterioration from which they have not since recovered, particularly in holding paddocks, along stock routes, and near watering points. The southern part of Fowlers Gap Station, the frontages of Fowlers Creek, and much of the plains and foothill country to the east and north still reflect this degradation. Considerable soil erosion ensued, sand drifting was widespread, and dust storms were noted to be more common.

To this was added the problem of rabbit infestation from 1890 onwards. The rabbit had spread across the Darling River in 1884 and by 1886 had reached the Queensland and South Australian borders. Rabbits reached plague numbers several times in the following decades, and during drought they caused severe depletion of pasture grasses and widespread ringbarking of edible trees and shrubs. Damage was particularly extensive in the Resumed Areas, in which the pastoralists naturally took less interest and which therefore served as breeding grounds. The dingo population also increased, since the rabbit formed a new food supply. State Governments took action to construct netting fences along the border with South Australia in 1886 and with Queensland in 1887, but under the Rabbit Nuisance Act of 1883 much of the cost of rabbit control was levied on the pastoralist, particularly in the payment of bounties. After 1889 the landholder was faced with penalties for not controlling rabbits on Leaseholds. Rabbit depredation was particularly severe in areas of calcareous shale, as in much of the undulating country on Fowlers Gap Station: this may previously have carried perennial shrubs but no shrub cover survives today. In these areas some of the large warrens - now only periodically occupied - were originally those of the native bettong (*Bettongia lesuri*) which was driven from the area by the invading rabbit.

In its aim of bringing closer settlement, the Crown Lands Act of 1884 was as unsuccessful as that of 1861. The Homestead Lease, initially of 5760 ac and increased to 10,240 ac in 1895, was entirely inadequate for most of the area, and only small parts of Resumed Areas were selected along the river frontages and near the market centres of the mining settlements. The Selection Station which borders Fowlers Gap on the northeast doubtless owes its name to the taking up of a Homestead Lease in the Resumed Area of Corona Station, on the favoured country of the Fowlers Creek floodout.

Although it did not serve the needs of the smaller grazier, the 1884 Act nevertheless succeeded in antagonising landholders, whose rentals were progressively increased from 2.23d per sheep in 1879 to 8.95d. in 1900. Arrangements for compensation for improvements taken over by selectors were unsatisfactory, and led to the neglect of Resumed Areas at the cost of further overstocking of Leasehold Areas. Even on the Leaseholds, the conditions of

tenure were not considered secure enough to justify the investments called for.

As in 1868-70, falling wool revenues after 1884 hit family squatters and smaller holdings hardest. The majority of family properties and many pastoral company leases passed into the hands of the foreclosing banks and mortgage companies at this time, among them Corona, which passed to Goldsbrough Mort and Co. Homestead Leases were even harder hit and Hardy (1969) reports that less than a quarter of the selectors who had taken up lands under the 1884 Act remained in the area by 1901. The critical situation led to the establishment of the Royal Commission of 1901 "to enquire into the position of Crown tenants in the Western Division". In its findings, the Royal Commission stressed the environmental problems of drought, rabbits, overstocking, and "sand storms" as principal factors in the depressed state of the pastoral industry; nevertheless it also named as contributory factors, lower wool prices, depressed values of properties, and the comparatively short terms of pastoral leases which made finance hard to obtain.

IV. GENERAL RECOVERY AND SUBDIVISION

Many of the recommendations of the Royal Commission were embodied in the Western Lands Act of 1902, which brought important changes to land tenure in the Western Division. It was now recognised that the harsh and unreliable climate and low productivity made the area unsuited for close settlement, as was apparent from the small extent of Homestead Leases taken up before 1901 (13.6 per cent of the Western Division) and the high rate of failure (Heathcote, 1964).

More realistic assessments of carrying capacity at one sheep to 15-25 ac were introduced for the far western country, based on inventories of land properties which took into account the degradation of the previous 20 years. Additional land was to be obtained by a withdrawal of up to one-eighth of the large pastoral leases. All leases were to continue to 30th June 1943 and there was to be no further alienation of land to freehold in the Western Division. Relief was also offered to a depressed pastoral industry in the form of lowered rentals, now based on the capacity of the land, on a sliding scale of 2d to a maximum of 7d per sheep area. The special problems of the Western District were recognised administratively, in that it was now removed from the Lands Department and placed under the control of a Western Lands Board.

In 1903 a new lease No. 243 of Corona of 827,738 ac, restricted to the former Leasehold Area, was granted to Goldsbrough Mort and Co. for a term of 40 years. An early pasture map of Fowlers Gap which may date from that time shows that four paddocks had been fenced off in the Station area, namely:

Gap Creek Paddock

Fowlers Gap Paddock (including Sandstone, South Sandstone and Holding Paddocks)

North Mandleman Paddock (Salt Paddocks Nos. 4-6, plus Mantappa, now part of Rowena Station)

Mandleman Paddock (remainder of Fowlers Gap Station area)

Gap Creek Paddock was described as "only annual saltbush" and North Mandleman as "saltbush". In Fowlers Gap and Mandleman Paddocks there was open saltbush on the flats and rolling country, scrubby mulga, belah and saltbush, chiefly annual, on the hills north of Fowlers Creek, and saltbush, a little mulga and scrubby belah on the hills to the south. The

poor condition of the country between the hills and Fowlers Creek which formed part of the stock route was noted, it being badly wind-eroded and containing only sparse annual saltbush and grass. Signs of degradation were also apparent in the absence of perennial saltbush from Gap Creek Paddock, but there was as yet no mention of copperburr. The assessed stocking rate was stated to be one sheep to 15 ac, compared with the present estimate of one sheep to 20-25 ac.

The original outstation on Fowlers Gap, a three-roomed stone cottage, had been built in 1892 on the left bank of Fowlers Creek just above the confluence with Homestead Creek. In 1895 a small hut was built in Mandleman Paddock, and it is likely that Mandleman Tank (now Saloon Tank) was built about that time. Other improvements followed after the granting of the new lease in 1903, for instance Sandstone Tank (Schmidt's Tank) in 1905 and Warren's Tank in 1910. Two of the series of Public Watering Points established along the Stock Route at droving intervals of about 20 km were sited on or adjacent to the Station; Fowlers Gap Tank (PWP 577) was approved for construction near the south boundary in 1906, and it is likely that Bald Hills Tank in the north of the property was excavated at about the same time. By 1910 the original homestead had apparently fallen into disrepair and a three-roomed wood and iron cottage was built to replace it; this was eventually dismantled in 1940 when the stone cottage was repaired and again brought into use.

In 1911 the Corona lease was transferred to Thomas Brown and Henry Dutton, but in 1917, as the Corona Pastoral Co., it passed to Sir Sidney Kidman and became the headquarters of the belt of large leases owned by him, which extended north almost to Tibooburra. At that time, Corona was reported to carry 50,000 sheep (1 sheep to 16 ac) and 1,200 head of cattle.

The Royal Commission had recognised the need to combat overstocking and the degradation of pasture lands, but control of stocking was not enforced under the 1902 Act. Protective measures were confined to requirements to control vermin and remove noxious scrub, and restrictions on the removal of timber or edible shrubs. Rabbit numbers, which had fallen markedly towards the end of the long drought of 1895-1902, were a recurrent problem and the Corona records of 1905 include an order to destroy rabbits. In 1912 the north border of Corona was netted against the rabbit-infested former Resumed Area, including the northern fences of Mandleman and Sandstone Paddocks. Dingoes were also a perennial problem on the border stations and a Border Fence Trust was formed in 1912, by which the Queensland Government was recompensed to render the former rabbit fence dog-proof. Kidman earned local disapproval by standing out from this arrangement, and had his own protective fences erected, for instance the north-south fence along the western boundary of Fowlers Gap against Floods Creek Station was built in 1924. However, the Wild Dog Destruction Act of 1921 enforced dingo control through a general rate which is paid into a Fund and administered by a Wild Dog Destruction Board. The dingo is no longer a problem in the area, its place having been taken by the fox, which was introduced only too successfully into Victoria in the late 1870's. As with the dingo formerly, the number and range of foxes fluctuate with seasons in response to rabbit numbers.

The period from 1902 to 1924 was generally one of recovery following the severe droughts of 1895-1902. With better rainfall and more favourable leasehold conditions, the Western Lands Board reported in 1903 that the "pastoral industry in the Western Districts is now on a reasonably sound basis". Under the influence of rising wool prices sheep numbers in New South Wales west of the Darling recovered sharply to almost 4 millions in 1907.

They continued to fluctuate about this figure, for the decade 1910-20 was also one of drought, but although they exceeded 5 millions in 1925 they never again attained the peak of the early 1890's. This is generally attributed to the deterioration of carrying capacity of the natural pastures following the heavy stocking which continued into the drought years after 1895, and it has been claimed that such stability as has been achieved has been the result of man-made improvements, particularly the provision of additional watering points which have brought more land within the reach of stock (Perry, 1970).

Wool prices slumped badly during the depression years 1928-32, yet sheep numbers were generally maintained until late in the long drought period of 1940-45, again demonstrating that the high stocking rates encouraged by good seasons and favourable prices are maintained with falling prices, as a counter to diminishing revenue.

The records of Corona Station during the 1920's and 1930's reflect the state of the pastoral industry in the region generally, with periods of drought and occasional better seasons, rabbit plagues, stock losses and strongly fluctuating sheep numbers and repeated requests for relief from rentals on the basis of diminished carrying capacity.

Apart from lower or deferred rentals, another form of relief requested was extension of tenure to give greater financial manoeuvre. In 1930 existing pastoral leases were offered an extension of up to 25 years, but in return for withdrawals of up to half their Leasehold Areas for further subdivision. Under the Western Lands Amendment Acts of 1932 and 1934 this was redefined as "one quarter of their land immediately, an eighth in 1943, and an eighth in 1948" (King, 1957). These areas were to be used to establish new Western Lands Leases and to build up smaller holdings to economic size. However the Corona Pastoral Company did not fully exercise this option, and the lease as gazetted in June 1932 was to continue only until October 1947.

The Amendment Acts were in response to strong pressure for land in conditions of high unemployment. They emphasised the concept of the home maintenance area - a rural equivalent of the basic wage - capable of supporting 3-5000 sheep in the more accessible parts of the Western Division and up to a maximum of 10,000 in the more remote and arid areas. They introduced the right to extend existing leases to perpetuity and to grant new leases, subject to a restriction to a home maintenance area in both cases. The majority of the large land-holders accepted the offer of extended leasehold in return for giving up part of their area, but there was some resistance west of the Darling, notably from the Kidman group of companies, which preferred to retain interim control over its entire areas with the intention of eventually transferring its interests to Queensland and South Australia. The Corona holding was thus to remain intact until the termination of the lease in 1947, when it would become due for complete subdivision.

The Act of 1934 also established the Western Lands Commission under the direction of a single Commissioner. The closer supervision of land use which now characterises Western Lease Holdings was instituted; Local Land Boards were set up to decide on lease allocations, and such allocations included for the first time a restriction on the numbers of stock that could be carried. The process of land subdivision, which had previously been relatively slow west of the Darling, began to speed up after the 1934 legislation, but it was to be significantly advanced by a wartime Labor Government which in 1943 directed the simultaneous withdrawal from pastoral leases of areas which under the 1934 Act were to be ceded separately in 1943 and 1948. Complete enforcement of subdivision followed with the

1949 Amendment Act, which in the face of new demands for land from returned ex-servicemen fixed the maximum holding of further leases in the Western Division at two living areas. Heathcote (1964) records that 96 per cent of the Western Division had been divided into living areas by 1956, and that all the large old pastoral leases had been broken up. The 1949 Act reinforced the control of land use, in that it empowered the Minister for Lands to order the de-stocking of leases to prevent undue deterioration and to allow regeneration of pastures. A 1945 Amendment had also made mandatory a review of sale prices on transfer, in order to prevent undue increases in the price of land and its use for speculative purposes.

The Pastoral Lease of Corona was due to terminate in 1947 and pastoral inspections were carried out in 1945 in anticipation of subdivision and give the following picture of Fowlers Gap Outstation at that time:

Fowlers Gap Paddock - mulga, dead-finish, black oak and berrigan, good saltbush and copperburr. Carrying capacity, one sheep to 25 ac, or 843 sheep
Mandleman Paddock - good saltbush and copperburr. One sheep to 22 ac, or 1230 sheep
North Mandleman Paddock - one sheep to 22 ac, or 588
Warrens Paddock - one sheep to 25 ac, or 660 sheep
Gap Creek Paddock - one sheep to 25 ac, or 242 sheep

This assessment makes the first mention of copperburr on Fowlers Gap, suggesting that deterioration Holding No. 1236, with an area of 92,100 ac, was thus allocated a carrying capacity of 4100 sheep. No part of the block was indicated as showing severe erosion.

V. CONSERVATION AND RESEARCH IN THE -WESTERN DIVISION

Although the 1901 Royal Commission had recognised the deterioration of pastures and consequent wind erosion as major problems of the region, there was no protective legislation until the Acts of 1934 and 1949. A visit in 1934 by E. A. Buttenshaw, New South Wales Minister for Lands, to the United States, then in the throes of the dustbowl years and in the early stages of its soil conservation measures, may have influenced the setting up of a New South Wales Erosion Committee in 1934, the passage of a Soil Erosion Bill in 1937, and the establishment of the Soil Conservation Service in 1938. The change towards a conservationist policy was certainly reinforced under the widespread move for planned postwar construction and development under the McKell Government, and a Department of Conservation was formed in 1946. Doubtless the need for soil conservation measures was given point by the drought that set in after the good seasons of the early 1930's and continued through the war years, again under the impact of rising sheep numbers, and which hindered considerably the progress of subdivision under the Western Lands Commission.

The problem of drought and soil erosion in arid Australia was surveyed scientifically for the first time in the late 1930's, notably by Ratcliffe for the CSIRO in South Australia and southwest Queensland (Ratcliffe, 1936, 1937). Morris successfully established a saltbush regeneration area around Broken Hill in 1937, to combat the nuisance of dust storms. However, the major contribution in the Western Division was the work of Dr. N. C. W.

Beadle, who as an officer of the Soil Conservation Service carried out a wartime survey of vegetation and pastures in the Western Division with special reference to their deterioration under grazing and resultant soil erosion (Beadle, 1948).

Beadle's work underlined the necessity for field experiments by the Soil Conservation Service, and negotiations were begun to transfer of one of the Corona leases that contained suitable country. As a result, Fowlers Gap Block No. 1236 of 92,100 ac, the smallest of the Corona blocks, was granted to the Conservation Authority of New South Wales* under Special Western Lands Lease No. 7318, for 20 years from January 1st, 1952 "for conservation purposes".

A first necessary step was to survey pastures and conditions of soil erosion on the Fowlers Gap Rural Investigation Station, as it had now become. This was carried out later in 1952 by Dr. Beadle, who had moved to Sydney University in 1950, and his students. Their surveys show annual pastures with bassias and copperburrs on the plains country in the east of the Station and also along much of the eastern footslopes as well as on the continuation of the stock route of the Homestead, short grass-forb pastures along the river frontages, and ephemerals on the light calcareous soils in the southwestern sector of the property. Much of these areas were characterised by severe to moderate wind erosion. It was noted that between 75 and 90 per cent of all the mulga the Station was dead, with no evidence of regeneration.

Professor Beadle continued these studies from the University of New England, to which he moved in 1955. Seven kangaroo-proof enclosures were fenced off, across a characteristic range of country, and permanent quadrats were maintained in them to measure the progress of natural regeneration. Unfortunately their value was seriously diminished through their occasional use as holding pens for travelling stock! Postgraduate research from the Department of Botany, University of New England, continued into the 1960's and included the general ecology of the Station, patterns of soil salinity and vegetation and their modification by grazing, and studies of the root form and nodulation of *Acacia aneura* (mulga) and of the ecology of rhizobia of pasture and indigenous legumes in native vegetation communities. Unfortunately, some of the records of this including a small herbarium based on the Station, were destroyed in 1962 when the shearers' quarters, built in 1953, burned to the ground.

Officers of the New South Wales Conservation Service began experimental work on the Station in 1954, when a regeneration area of about 1300 ac, now known as Conservation Paddock, was fenced off in the northwest corner of Warrens Paddock. This was kept free from sheep but was open to grazing by feral animals. The studies included the effectiveness of ponding banks in conjunction with water spreading, for the reclamation of scalds (Newman, 1966), and effectiveness of ripping and checkerboard furrowing in scald reclamation; the effect of contour furrows and trenching on the regeneration of bladder saltbush (*Atriplex vesicaria*); the progress of regeneration of cotton bush (*Kochia aphylla*) and also of bladder saltbush in degraded sites as shown in repeated measurements along permanent transects; measurements of the extension of scalds; the effect of animal repellants as a counter to attacks on tree seedlings, particularly by rabbits; dung sampling to compare grazing intensity in an unstocked and an adjacent stocked paddock (Warren, 1971); and the

* This consisted of the Commissioners of the various branches of the New South Wales Department of Conservation, together with the Under-Secretary of that Department.

role of stone in stabilising surface soil.

In 1953 a sublease of the Station, other than the experimental areas, had been granted to O. J. Hayes, at first for a period of five years and subsequently for a further seven years. These were years of recurrent drought, and the lease records indicate periodic plagues of kangaroos and rabbits, particularly in the dry year of 1957, when trees were ringbarked and pine seedlings were killed. This was particularly unfortunate as these represented the first regeneration of pine in the memory of pastoralists in the Western Division. Sheep numbers accordingly fluctuated strongly; for instance permission was granted to raise the stocking to 4200 sheep temporarily in 1956. Hayes was eventually extended Permissive Occupancy through the year of 1965 because of general drought in the area. Nelia and Homestead Lake (Gum Creek) Dams were constructed during the period of this sublease.

Towards the end of 1965, the Station was inspected in connection with the termination of the sublease. The Pastoral Inspector's report indicates that the pastures were in poor condition at that time. North Mandleman Paddock carried practically no feed, Warrens and Mandleman Paddocks were also grazed out, the area around Mandleman Tank was completely bare, Sandstone Paddock contained bare areas with incipient sand drifting, and East Bald Hills Paddock was also bare. The only signs of regeneration were in South Sandstone and Bald Hills Paddocks. The condition appears to have resulted from drought periods of heavy grazing.

In the period since the lease was granted to the University of New South Wales, there has been considerable investment in the development of the Arid Zone Research Station. The rebuilt shearers' quarters have been extended, two cottages built for Station staff, a dormitory block has been constructed for use by visitors, including students and post-graduate workers on the Station, and a laboratory has also been created. On the Station itself, 90 miles of fencing has been renewed or newly erected, including subdivisions for experimental purposes. A second tank of 10,000 cu m has been constructed adjacent to the former Sandstone Tank, Planet Camp Bore, sunk in conjunction with the drilling of Bancannia No. 1 Oil Well in 1967-8 has been equipped, and an extensive system of water reticulation has been established in order to bring surface and groundwater to all parts of the property and to assure supplies to the Homestead complex. This investment was recognised when the University of New South Wales was granted a Lease in Perpetuity early in 1972.

In these developments, the University has benefited from the advice of its Consultative Committee which contains representatives of local pastoralist organisations, and of the Pastoralist Advisory Group, a smaller body of local graziers, who frequently meet with executive officers of the University. Much of this initial development was guided by Associate Professor I. L. Johnstone as Director of Field Stations, and by Professor T. K. Hogan as Director of the University's W.S. & L.B. Robinson College, with which the administration of the Station is closely linked. The Minister for Lands, the Hon. T. Lewis, has maintained personal interest in the development of the Station and the University has received considerable assistance from his Department, particularly in the provision of air photography and a topographic map of the Station.

It is a condition of the University's lease that the facilities of the Station be made available to other organisations concerned with arid zone investigations, and there has been close collaboration with the New South Wales Soil Conservation Service, which has recently stationed an officer at Broken Hill. This collaboration is reflected in the authorship of this

volume [Lands of Fowlers Gap Station, New South Wales], and of the following number in the Fowlers Gap Research Series.

VI. ACKNOWLEDGMENTS

Apart from the references cited, this history has drawn upon an unpublished manuscript "A short historical background of the Fowlers Gap area" by Dr. I. L. Johnstone, formerly Director of Field Stations, University of New South Wales, and on information from the files of the Western Lands Commission in Sydney which was kindly obtained by Dr. Juliet Burrell of the School of Geography, University of New South Wales. I am grateful to Mr. G. R. Woods, Western Lands Commissioner, for permission to quote from this source, Messrs. R.W. Condon and H. A. Kilby, Assistant Commissioners, for their helpful advice, to Mr J. C. Newman for information on work on Fowlers Gap Station carried out by the Soil Conservation Service, and to Mr. K. Connors for valuable local information. Professor N.C.W. Beadle kindly supplied information on earlier work on vegetation and pastures at Fowlers Gap.

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